

UCLA

GENERAL  
CATALOG  
1978-1979



UNIVERSITY OF CALIFORNIA, LOS ANGELES MAY 1978

# GENERAL CATALOG 1978-1979



UNIVERSITY OF CALIFORNIA LOS ANGELES MAY 1978

\$ 1.50

## A WORD FROM THE CHANCELLOR . . .

*"Continuous growth and a high enrollment at UCLA have combined to create one of the most exciting, richly diverse academic and cultural environments anywhere in the country."*

*That quotation is from a national publication describing U.S. universities, and I cite it not as an endorsement of UCLA but as a challenge to all students to take full advantage of the many opportunities available here.*

*Even a cursory examination of this catalog will indicate the wide range of intellectual fare provided by the University's sixty-nine departments in thirteen schools and colleges.*

*I hope that as you make your selections from the more than 6,000 courses available, you will avoid the path of narrow vocationalism and choose instead to enrich your learning with a spectrum encompassing the breadth of man's intellectual heritage.*

*The opportunity to make such choices is one of the great advantages represented by this publication; your wisdom in doing so will help to enrich your life no matter how you earn your livelihood.*

### **UCLA • Volume 18, Number 10 • May 30, 1978**

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The registered cable address of the University of California, Los Angeles, is UCLA.

### **About the General Catalog . . .**

Although efforts have been made to assure the accuracy of this catalog, all courses, course descriptions, instructor designations, and curricular and degree requirements contained herein are subject to change or deletion without notice. For current information and special rules and requirements, consult the appropriate department, school, or college, or the Graduate Division.

### **Other Information . . .**

Other information about UCLA may be found in the announcements of the schools of Architecture and Urban Planning, Dentistry, Education, Engineering and Applied Science, Law, Library and Information Science, Management, Medicine, Nursing, Public Health, and Social Welfare; and in the announcements of the College of Fine Arts and The Graduate Division.

# Contents

CALENDAR .....	iv	Economics .....	97	Medical History (See Anatomy) .....	171
MAP .....	vi	Business-Economics Education .....	100	Meteorology (See Atmospheric Sciences) .....	171
THE UNIVERSITY .....	1	Education .....	100	Microbiology .....	171
ADMISSION TO THE UNIVERSITY .....	5	Engineering and Applied Science .....	105	Microbiology and Immunology .....	171
GENERAL REGULATIONS .....	8	English .....	118	Military Science .....	173
EXPENSES, FINANCIAL AIDS AND HOUSING .....	11	English as a Second Language .....	122	Molecular Biology .....	174
STUDENT SERVICES AND ACTIVITIES .....	16	Environmental Science and Engineering .....	123	Music .....	174
COLLEGES, SCHOOLS AND GRADUATE DIVISION .....	20	Ethnic Arts .....	124	Naval Science .....	178
COURSES OF INSTRUCTION .....	51	Folklore and Mythology .....	125	Near Eastern Languages and Cultures .....	179
Aerospace Studies .....	52	Foreign Literature in Translation .....	127	Neuroscience .....	183
African Area Studies .....	52	French .....	127	Nursing .....	183
Anatomy .....	53	Genetics .....	130	Oriental Languages .....	186
Medical History .....	54	Geochemistry .....	130	Pathology .....	188
Anthropology .....	55	Geography .....	130	Pharmacology .....	189
Applied Linguistics .....	60	Geology (See Earth and Space Sciences) .....	134	Philosophy .....	189
Archaeology .....	61	Geophysics and Planetary Physics .....	134	Physics .....	192
Architecture and Urban Planning .....	62	Geophysics and Space Physics (See Earth and Space Sciences) .....	135	Physiology .....	195
Art .....	66	Germanic Languages .....	135	Planetary and Space Science (See Geophysics and Space Physics) .....	196
Asian American Studies .....	70	Scandinavian Languages .....	137	Plant Science (See Department of Biology) .....	196
Astronomy .....	70	History .....	138	Political Science .....	196
Atmospheric Sciences .....	71	Humanities .....	145	Psychiatry and Biobehavioral Sciences .....	201
Bacteriology (Microbiology) .....	73	Immunology .....	145	Psychology .....	205
Biochemistry .....	75	Indo-European Studies .....	145	Public Health .....	210
Biological Chemistry .....	75	Integrated Arts .....	146	Radiological Sciences .....	215
Biology .....	76	Interdisciplinary Colloquia .....	146	Romance Linguistics and Literature .....	217
Biomathematics .....	80	Islamic Studies .....	147	Slavic Languages .....	218
Chemistry .....	81	Italian .....	148	Social Welfare .....	220
Classics .....	85	Journalism .....	150	Sociology .....	221
Communication Studies .....	87	Kinesiology .....	151	Spanish and Portuguese .....	224
Comparative Literature .....	88	Latin American Studies .....	152	Speech .....	227
Computer Sciences .....	89	Law .....	155	Statistics .....	227
Council on Educational Development .....	90	Library and Information Science .....	156	Subject A: English Composition .....	228
Dance .....	90	Linguistics .....	157	Theater Arts .....	228
Dentistry (Oral Biology) .....	91	Management .....	161	Zoology (See Department of Biology) .....	233
Earth and Space Sciences .....	92	Mathematics .....	167	<b>ADMINISTRATIVE OFFICERS</b> .....	233
				<b>INDEX</b> .....	236

ON THE COVER: ROYCE HALL, the enduring symbol of UCLA. One of Southern California's major architectural landmarks, and home of the Performing Arts at UCLA, Royce enters its 50th year of service to the University and community on September 23, 1979.

# CALENDAR

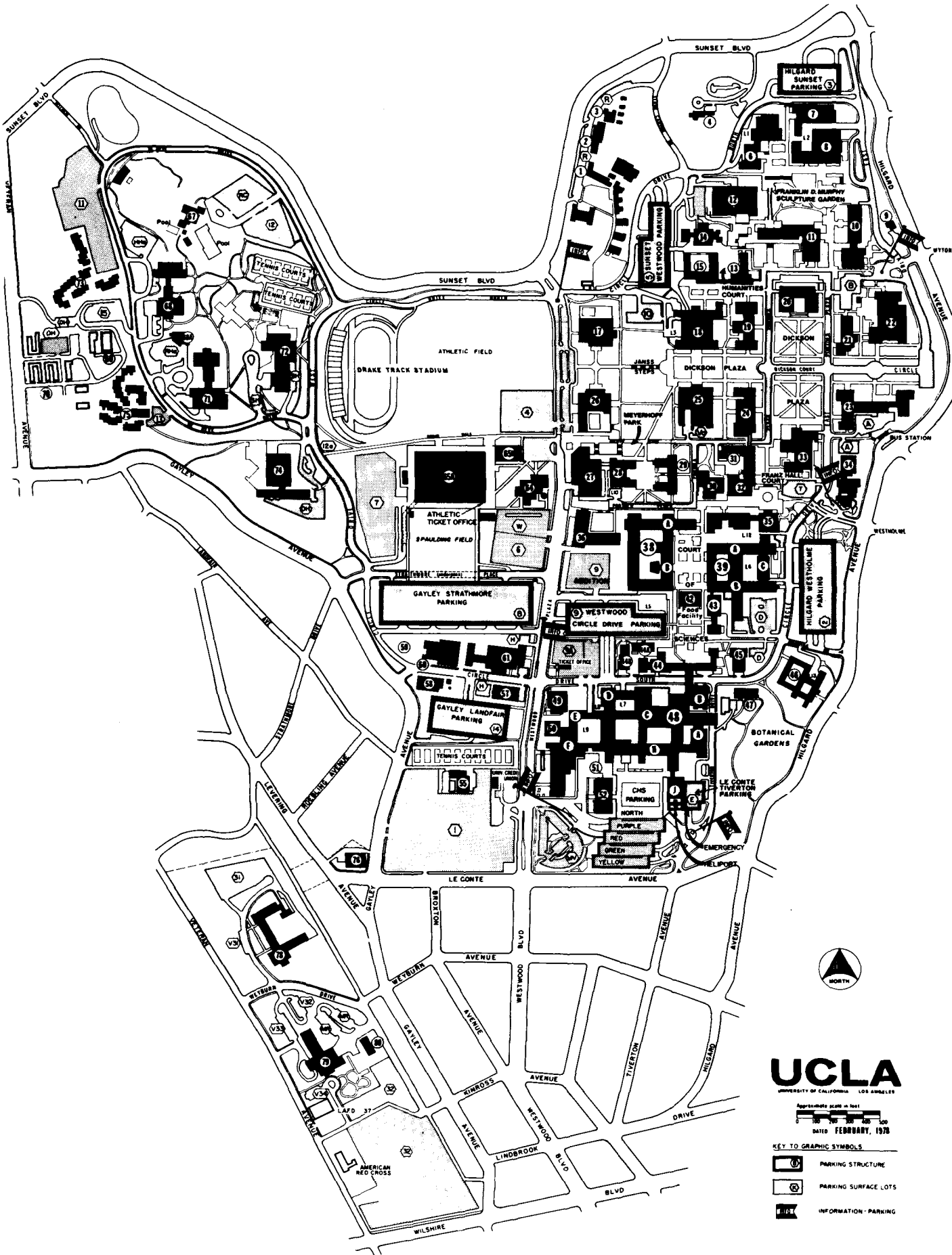
	Fall '78	Winter '79	Spring '79
First day to file undergraduate application with admissions officer, 1147 Murphy Hall, (last day will depend on number of applications received).	November 1, 1978 for Fall '79	July 1, 1978 (open to intercampus transfers only)	October 3, 1978 ↘
Last day to file application for graduate admission or renewal of application (previously applied but did not register for a regular quarter) with complete credentials and the application fee, with Graduate Admissions, 1247 Murphy Hall.	February 15	October 1	December 30
Last day to file graduate petitions for change of major with Graduate Division, 1225 Murphy Hall.	February 15 '78	October 1 '78	December 30 '78
First day to obtain petition for campus parking permit at Campus Parking Service.	May 8	not appl	not appl
Schedule of Classes goes on sale at Main Cashier, 1125 Murphy Hall and Students' Store, Ackerman Union.	June 9	November 16	February 9
*Distribution of registration materials for continuing students.	June 9	November 16	February 15
Eligibility date for New and Re-entrant student registration/ enrollment by mail— Statement of Legal Residence and Statement of Intention to Register returned.	July 3	November 1	January 15
Academic counseling for new students is available by appointment.	July 5	November 6	January 15
*First mailing date for continuing student registration/enrollment by mail.	July 21	November 17	February 16
Last day to file undergraduate application for readmission with Registrar, Window "A", Murphy Hall.	August 1	November 15	February 15
New and Re-entrant students eligible to register/enroll by mail should receive registration packet at permanent address.	August 14	November 29	February 27
*First mailing date for New and Re-entrant student registration/enrollment by mail.	August 16	December 1	March 1
*Last mailing date for ALL students to register/enroll by mail.	August 25	December 7	March 7
First day for UCLA Student Insurance enrollment	September 5	December 4	March 5
*Registrar mails:	September 8	December 21	March 16
1. Validated Registration cards of Students who paid fees by mail.			
2. Tentative Study List datamailer with results of pre-enrollment processing and enrollment in person appointment for undergraduates.			
Entrance Examination in English as a Second Language.	September 12	January 3	March 28
Subject A English Placement Test.	September 13	January 3	March 28
Chemistry/Mathematics Preliminary Examination.	September 18	January 3	March 28
Mathematics Department Advanced Placement Examinations for Freshmen who have completed high school calculus (Transfer students should consult a Departmental Adviser).	September 19		
QUARTER BEGINS	September 19	January 3	March 28
Registration in person, 8:00 am to 3:30 pm.	September 19-22	January 3-5	March 28-30
Financial Aid check distribution to registered students begins.	September 19	January 3	March 28
Undergraduate enrollment in person by appointment.	September 19-22	January 3-5	March 28-30
Spanish and Portuguese Placement Examination.	**March 31, '78 or September 22, '78	**September 22, '78 or January 5, '79	**January 5, '79 or March 30, '79

	Fall '78	Winter '79	Spring '79
French Placement Examination.	September 20	January 5	March 30
Proficiency Examinations for English 1A.	September 22	January 5	March 30
Instruction begins.			April 2
Late registration in person with \$25 late fee, 10:00 am to 2:00 pm.	September 25- October 6	January 8-19	April 2-13
Changes in study list without fee, 8:30 am to 4:30 pm.	September 25- October 6	January 8-19	April 2-13
Graduate Study List Card should be filed with major department by 4:00 pm; approved cards due to Enrollment Office by 5:15 pm.	September 27	January 10	April 4
Last day to file advancement to candidacy petitions for master's degree with Graduate Division, 1225 Murphy Hall.	October 6	January 19	April 13
Last day to:	October 6		
2. Change Study List (add, drop) without fee			
3. Register in person with \$25 late fee			
4. File Graduate Leave of Absence with Graduate Division (prorated refund)			
Register mails official Study List to all registered students; if not received in ten days, inquire at 1134 Murphy Hall.	October 9	January 22	April 16
Last day to (WITH APPROVAL OF ACADEMIC DEAN):	October 20	February 2	April 27
1. File Study List Card with \$10 fee			
2. Add courses to official study list, change grading basis and/or unit credit with \$3 petition fee			
3. Drop courses from undergraduate study list with \$3 petition fee			
Last day to file (without fee) bachelor's Degree Candidate Card with Registrar, Window "A", Murphy Hall.	October 20	February 2	April 27
Last day for UCLA Student Insurance enrollment	October 27	February 9	April 27
Last day to submit final drafts of dissertations to doctoral committees for degrees to be conferred in current quarter.	November 3	February 16	May 11
Last day to file removal of incomplete petition (\$5 fee) with Registrar, Window "A", Murphy Hall.	November 3	February 16	May 11
Last day for graduates (WITH APPROVAL OF ACADEMIC DEAN) to drop courses from study list with \$3 petition fee.	November 6	February 20	May 14
Last day to file (with \$3 fee) bachelor's Degree Candidate Card with Registrar, Window "A," Murphy Hall.	November 10	February 23	May 18
Last day to submit final drafts of theses to master's committees for degrees to be conferred in current quarter.	November 17	March 2	May 25
Last day to file completed copies of theses for the masters degree and dissertations for the doctor's degree to be conferred in current quarter with Graduate Division, 1225 Murphy Hall.	November 27	March 9	June 1
Instruction ends.	December 2	March 17	June 9
Final examinations.	December 4-8	March 19-23	June 11-15
Quarter ends.	December 8	March 23	June 15
Last day to file applications for graduate campus-wide restricted fellowships tenable at Los Angeles for the 1979-1980 academic year.			

A

B

C



# UCLA

UNIVERSITY OF CALIFORNIA LOS ANGELES

Approximate scale in feet  
 0 100 200 300 400  
 DATE: FEBRUARY, 1978

- KEY TO GRAPHIC SYMBOLS
- PARKING STRUCTURE
  - PARKING SURFACE LOTS
  - INFORMATION - PARKING

## LEGEND

NUMERICAL LISTING			ALPHABETICAL LISTING		
BLDG. NO.		GRID NO.	BUILDING	BLDG. NO.	GRID NO.
1	UNIVERSITY ELEMENTARY SCHOOL	C1	ACKERMAN	27	C2
2	UNIVERSITY NURSERY SCHOOL	C1	ARCHITECTURE	20	C1
3	FERNALD SCHOOL	C1	AUX. ENTERPRISES ADMIN. BLDG.	68A	A1
4	CHANCELLOR'S RESIDENCE	C1	BOELTER HALL	38B	C3
6	DICKSON ART CENTER	C1	BOTANY	47	C4
7	MELNITZ HALL	C1	BUNCHE HALL	11	C1
8	MACGOWAN HALL	C1	CAMPBELL HALL	13	C1
9	UNIVERSITY GUEST HOUSE	C1	CAMPUS SERVICES BUILDING I	60	B3
10	GRADUATE SCHOOL OF MANAGEMENT	C1	CAMPUS SERVICES BUILDING II	58	B4
11	BUNCHE HALL	C1	CANYON RECREATION CENTER	67	A1
12	UNIVERSITY RESEARCH LIBRARY	C1	CENTER FOR HEALTH SCIENCES	48	C4
13	CAMPBELL HALL	C1	BIOMED. CYCLOTRON	51	C4
14	NORTH CAMPUS STUDENT FACILITY	C1	BRAIN RESEARCH INSTITUTE	48E	C4
15	ROLFE HALL	C1	DENTISTRY	48A	C4
17	WOMEN'S GYMNASIUM	C1	DEPT. OF MEDICINE RESEARCH LABS	44A	C3
18	ROYCE HALL	C1	HOSPITAL	48H	C4
19	HAINES HALL	C1	HOSPITAL ADMINISTRATION ANNEX	44B	C3
20	ARCHITECTURE	C1	JULES STEIN EYE INSTITUTE	52	C4
21	DODD HALL	C1	LEWIS NEUROMUSCULAR RESEARCH CTR	49	C4
22	LAW	C1	LOUIS FACTOR HEALTH SCIENCES BLDG.	48B	C4
23	MURPHY HALL	C2	MARION DAVIES CHILD CLINIC	48J	C4
24	KINSEY HALL	C2	MEDICINE SCHOOL OF	48C	C4
25	POWELL LIBRARY	C2	NEUROPSYCHIATRIC INSTITUTE	48F	C4
26	MEN'S GYMNASIUM	C2	PUBLIC HEALTH	48D	C4
27	ACKERMAN	C2	REED NEUROLOGICAL INSTITUTE	50	C4
28	KERCKHOFF HALL	C2	CHANCELLOR'S RESIDENCE	4	C1
29	MOORE HALL	C2	CHILD CARE CENTER	55	B4
30	PLACEMENT & CAREER PLANNING CTR	C2	COURT OF SCIENCES FOOD FACILITY	42	C3
31	PLASMA PHYSICS	C2	DICKSON ART CENTER	6	C1
32	KNUDSEN HALL	C2	DODD HALL	21	C1
33	SCHOENBERG HALL	C2	DYKSTRA HALL	74	A2
34	FACULTY CENTER	C2	ENGINEERING I	36	C3
35	FRANZ HALL	C3	F. D. M. STORAGE	69	A1
36	ENGINEERING I	C3	FACULTY CENTER	34	C2
38A	MATHEMATICAL SCIENCES	C3	FERNALD SCHOOL	3	C1
38B	BOELTER HALL	C3	FRANZ HALL	35	C3
39A	GEOLOGY	C3	GARAGE	59	B3
39B	YOUNG HALL	C3	GEOLOGY	39A	C3
39C	SLICHTER HALL	C3	GRADUATE SCHOOL OF MANAGEMENT	10	C1
42	COURT OF SCIENCES FOOD FACILITY	C2	HAINES HALL	19	C1
43	MOLECULAR BIOLOGY	C3	HEDRICK HALL	68	A1
44	LIFE SCIENCES	C3	KERCKHOFF HALL	28	C2
44A	DEPT. OF MEDICINE RESEARCH LABS	C3	KINSEY HALL	24	C2
44B	HOSPITAL ADMINISTRATION ANNEX	C3	KNUDSEN HALL	32	C2
45	PLANT PHYSIOLOGY	C3	LAW	22	C1
46	MIRA HERSHEY HALL	C3	LIFE SCIENCES	44	C3
47	BOTANY	C4	MACGOWAN HALL	9	C1
48	CENTER FOR HEALTH SCIENCES	C4	MATHEMATICAL SCIENCES	38A	C3
48A	DENTISTRY	C4	MELNITZ HALL	7	C1
48B	LOUIS FACTOR HEALTH SCIENCES BLDG.	C4	MEMORIAL ACTIVITIES CTR. BLDG. B	65B	B2
48C	SCHOOL OF MEDICINE	C4	MEN'S GYMNASIUM	26	C2
48D	PUBLIC HEALTH	C4	MIRA HERSHEY HALL	46	C3
48E	BRAIN RESEARCH INSTITUTE	C4	MOLECULAR BIOLOGY	43	C3
48F	NEUROPSYCHIATRIC INSTITUTE	C4	MOORE HALL	29	C2
48H	HOSPITAL	C4	MURPHY HALL	23	C2
48J	MARION DAVIES CHILD CLINIC	C4	NORTH CAMPUS STUDENT FACILITY	14	C1
49	LEWIS NEUROMUSCULAR RESEARCH CTR	C4	NORTH RESIDENTIAL SUITES	73	A1
50	REED NEUROLOGICAL INSTITUTE	C4	ORNAMENTAL HORTICULTURE	70	A1
51	BIOMEDICAL CYCLOTRON FACILITY	C4	PAULEY PAVILION	65A	B1
52	JULES STEIN EYE INSTITUTE	C4	PHYSICAL PLANT	61	B3
55	CHILD CARE CENTER	B4	PLACEMENT & CAREER PLANNING CTR	30	C2
57	STEAM PLANT	B4	PLANT PHYSIOLOGY	45	C3
58	CAMPUS SERVICES BUILDING II	B4	PLASMA PHYSICS	31	C2
59	GARAGE	B3	POWELL LIBRARY	25	C2
60	CAMPUS SERVICES BUILDING I	B3	REHABILITATION	79	A5
61	PHYSICAL PLANT	B3	RIEBER HALL	71	A2
64	WEST ALUMNI & DEVELOPMENT CENTER	B2	ROLFE HALL	15	C1
65A	PAULEY PAVILION	B2	ROYCE HALL	18	C1
65B	MEMORIAL ACTIVITIES CTR. BLDG. B	B2	SCHOENBERG HALL	33	C2
67	CANYON RECREATION CENTER	A1	SLICHTER HALL	39C	C3
68	HEDRICK HALL	A1	SOUTH RESIDENTIAL SUITES	75	A2
68A	AUX. ENTERPRISES ADMIN. BLDG.	A1	SPROUL HALL	72	A1
69	F. D. M. STORAGE	A1	STEAM PLANT	57	B4
70	ORNAMENTAL HORTICULTURE	A1	TICKET OFFICE	7	C3
71	RIEBER HALL	A2	UNIVERSITY ELEMENTARY SCHOOL	1	C1
72	SPROUL HALL	A1	UNIVERSITY EXTENSION OFFICE	76	B4
73	NORTH RESIDENTIAL SUITES	A1	UNIVERSITY GUEST HOUSE	9	C1
74	DYKSTRA HALL	A2	UNIVERSITY NURSERY SCHOOL	2	C1
75	SOUTH RESIDENTIAL SUITES	A2	UNIVERSITY RESEARCH LIBRARY	12	C1
76	UNIVERSITY EXTENSION OFFICE	B4	WARREN HALL	78	A5
78	WARREN HALL	A5	WEST ALUMNI & DEVELOPMENT CENTER	64	B2
79	REHABILITATION	A5	WEST MEDICAL STEAM PLANT	80	B5
80	WEST MEDICAL STEAM PLANT	B5	WOMEN'S GYMNASIUM	17	C1
			YOUNG HALL	39B	C3



Norm Schindler, ASUCLA Photographer





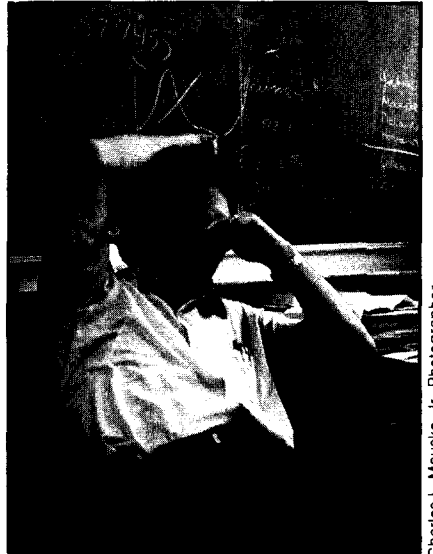
Don Hale, Photographer



Virginia M. Eubanks, Photographer



Don Hale, Photographer



Charles L. Mauske, Jr., Photographer



Don Hale, Photographer





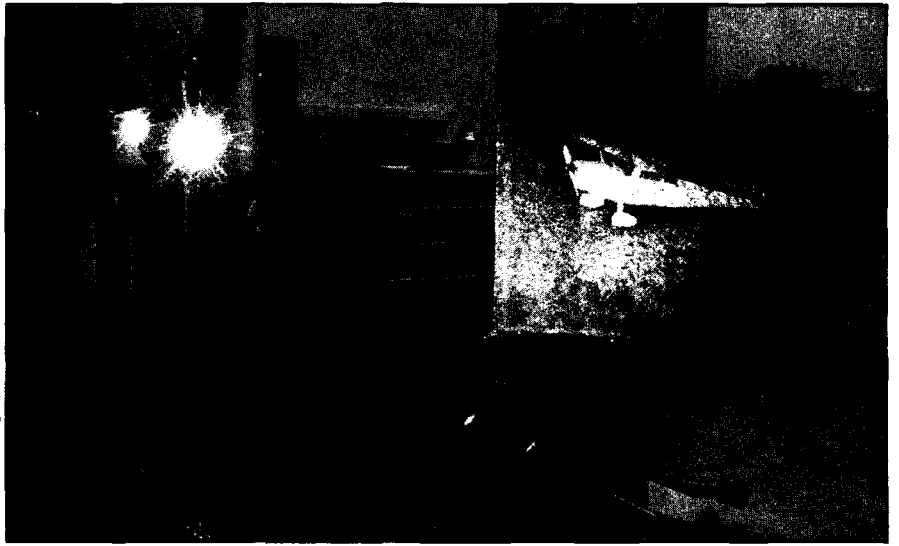
Day or night, the UCLA Residence Halls are places of both contemplation and activity.



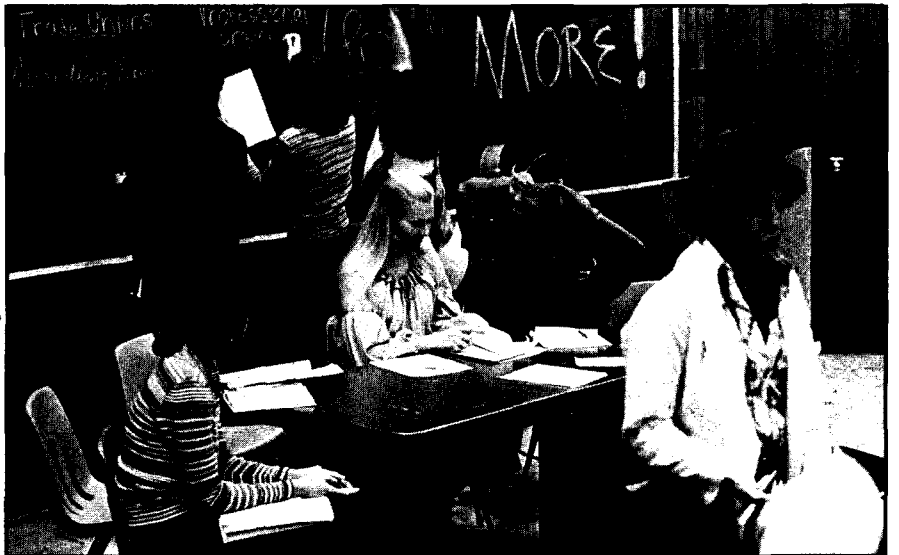
Don Hale, Photographer

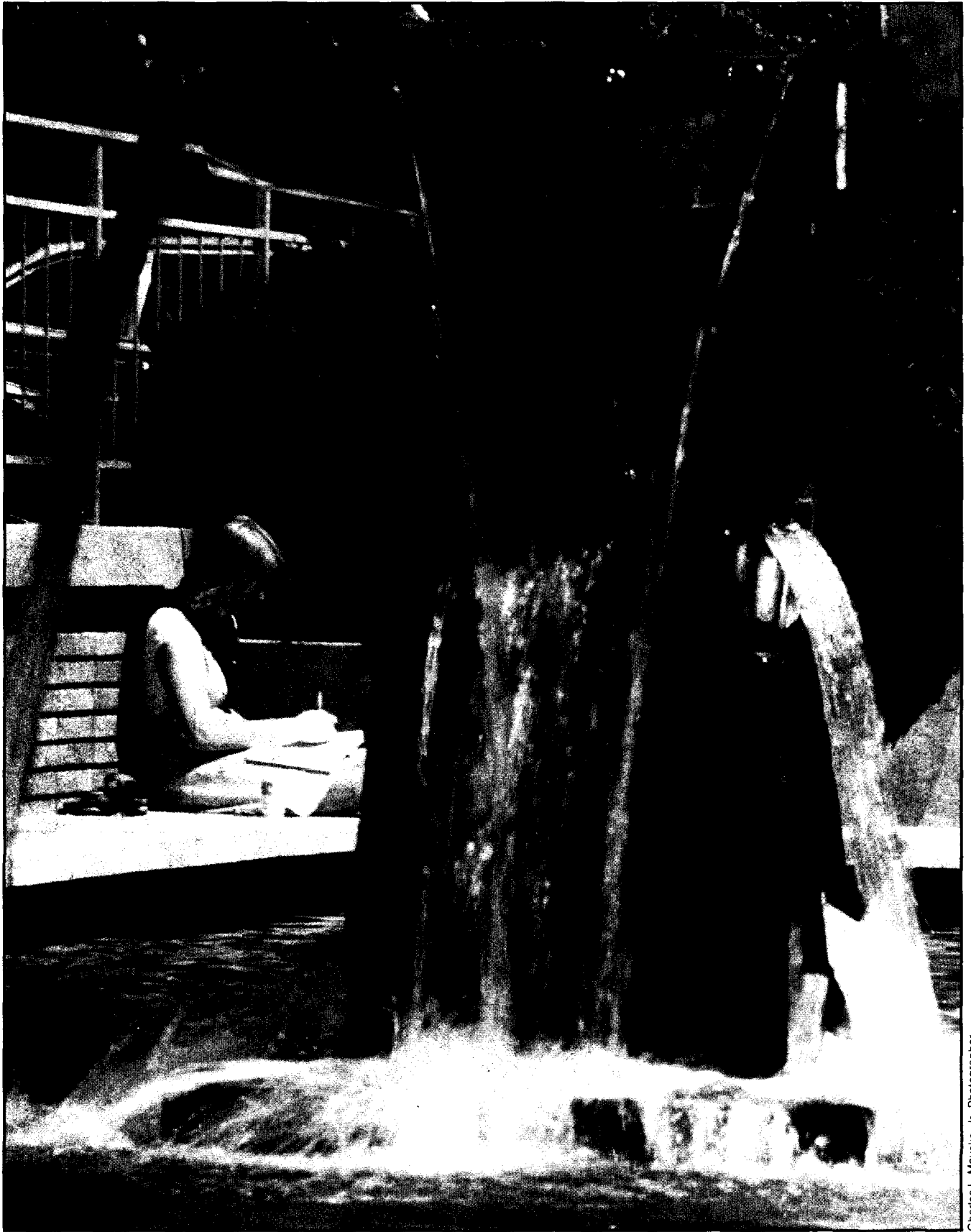


Don Hale, Photographer



Norm Schindler, ASUCLA, Photographer





Charles L. Mauske, Jr., Photographer

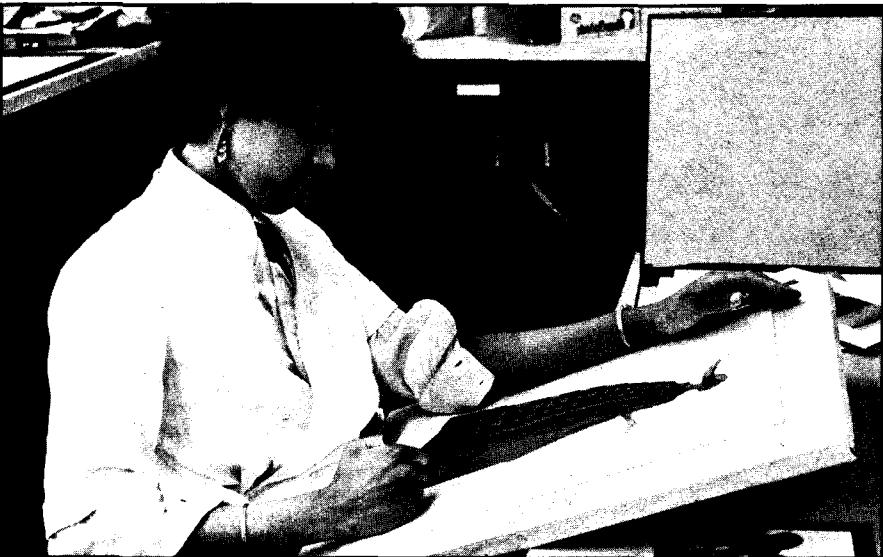




Virginia M. Eubanks, Photographer

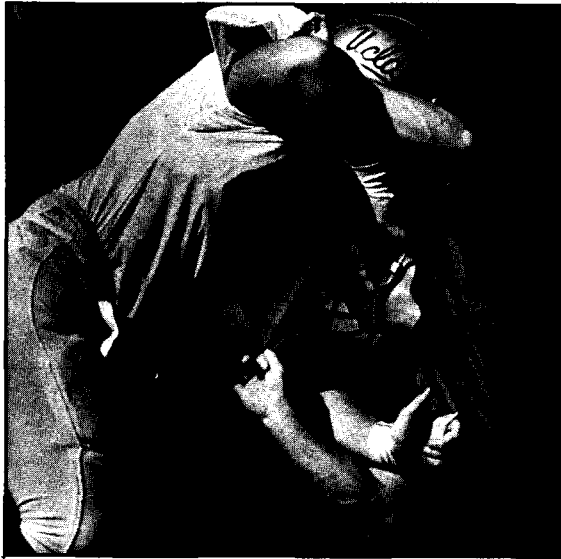


Dick Dunbar, Photographer



Virginia M. Eubanks, Photographer





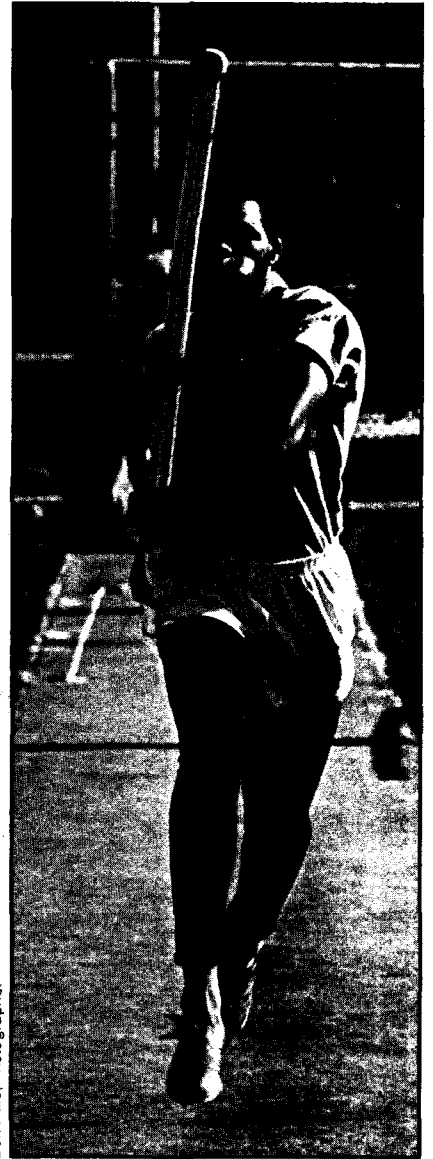
Judy Graeme, Photographer



Judy Graeme, Photographer



Don Hale, Photographer



Don Hale, Photographer

# The University

## AN INTRODUCTION

The University of California was established in 1868. Initially located in Oakland, it moved to its first campus, Berkeley, in 1873. Today, along with the Berkeley campus, the University has campuses at Los Angeles, Davis, San Francisco, Santa Barbara, Riverside, San Diego, Irvine (in Orange County) and Santa Cruz.

Instruction on these campuses covers all of the broad and essential areas of human knowledge, including the arts, sciences and literature. Each of the campuses has its own organization, objectives, and style of academic life. Each offers a unique set of programs and facilities; yet each cooperates to insure a maximum of opportunity for the student and a maximum of flexibility in fulfilling his plans.

The University is keeping pace with the growth of the State. Statewide enrollment in the Fall Quarter of 1975 was more than 128,000. Adult education programs are conducted by University of California Extension through classes in approximately 230 communities in the State, and through films, television courses and correspondence. The University maintains an Agricultural Extension Service. And its Education Abroad Program offers opportunities to its undergraduate students to study in universities in other countries.

The University is governed by a Board of Regents. The Regents appoint the President of the University, who is the executive head of the University, and with his advice appoint the Chancellors, directors and deans of the individual campuses and divisions of the University. The Academic Senate, subject to the approval of the Regents, determines conditions for admission of students, and for the granting of certificates and degrees. It also authorizes and supervises all courses of instruction in the academic and professional colleges and schools, except in professional schools offering work at the graduate level.

## UCLA — History and Development

UCLA — The University of California, Los Angeles — is located in the Westwood Hills in western Los Angeles. Academically ranked among the leading universities in the United States, it has attracted distinguished scholars and researchers from all over the world.

UCLA was created on May 23, 1919, when Governor William D. Stephens signed legislation transferring buildings, grounds and records of the State Normal School on North Vermont Avenue to the University of California.

The newly created institution opened its doors to 250 students in September, 1919, as the "Southern Branch" of the University of California. The curriculum included courses in the freshman and sophomore years in letters and science and in teacher-training. In 1922 the teacher-training courses were organized as a Teachers College, and in 1923 and 1924, respectively, the third and fourth years of Letters and Science were added.

It soon became evident that a new home would be needed. On March 21, 1925, the present Westwood site — then consisting of 383 acres — was chosen by the Regents. In the spring of 1929, UCLA was moved to its permanent home.

In the 1930's UCLA expanded its educational facilities to include a College of Agriculture (no longer operational), a College of Business Administration (which, renamed in 1950, operated as the School of Business Administration until 1966), a College of Applied Arts (later replaced by a College of Fine Arts), a School of Education (later renamed the Graduate School of Education), and a Graduate Division. Graduate work was authorized in 1933 and the first Ph.D. awarded in 1938. Since 1940 the schools of Architecture and Urban Planning, Dentistry, Engineering and Applied Science, Law, Library and Information Service, Medicine, Nursing, Public Health, Social Welfare, and a Graduate School of Management have been added.

Recognizing the value of an interdisciplinary approach to the search for knowledge, the University of California has also developed research programs and curricula outside the usual departmental structure. Today, along with li-

braries, UCLA's interdisciplinary research facilities include institutes, centers, projects, bureaus, nondepartmental laboratories, stations, and museums and a wide range of interdisciplinary programs of study are available.

## SURVEY OF CURRICULA

The scope of the undergraduate and graduate programs of instruction offered in the colleges and schools of the University on the Los Angeles campus is briefly indicated below. For more details see College of Letters and Science through Graduate Division Programs.

The College of Letters and Science offers curricula leading to the degrees of Bachelor of Arts and Bachelor of Science, and the following preprofessional curricula: pre dental, pre dental hygiene, pre nursing, pre optometry, pre pharmacy, and pre physical therapy.

The College of Fine Arts offers curricula leading to the degree of Bachelor of Arts.

The schools of Engineering and Applied Science, Nursing and Public Health offer curricula leading to the degree of Bachelor of Science.

The School of Dentistry offers a curriculum leading to the degree of Doctor of Dental Surgery.

The School of Law offers a curriculum leading to the degree of Juris Doctor.

The School of Medicine offers a curriculum leading to the degree of Doctor of Medicine.

The Graduate School of Education supervises curricula leading to the Certificate of Completion of the various elementary and secondary credentials, and for the administrative credential.

The Graduate Division, in cooperation with the colleges and schools of the University, supervises advanced study leading to the academic degrees of Master of Arts, Master of Arts in Teaching, Master of Science, Candidate in Philosophy, and Doctor of Philosophy; and the professional degrees of Master of Architecture, Master of Business Administration, Master of Education, Master of Engineering, Master of Fine Arts, Master of Library Science, Master of Nursing, Master of Public Health, Master of Social Welfare, Engineer, Doctor of Education, Doctor of Environmental Science and Engineering, Doctor of Public Health and Doctor of Social Welfare.

## STUDY AND RESEARCH FACILITIES

### THE UNIVERSITY LIBRARY

The University Library on the Los Angeles campus consists of the University Research Library, the College Library, and a number of specialized libraries. Its collections contain nearly four million volumes, and extensive holdings of government publications, pamphlets, manuscripts, maps, microtext editions, music scores, recordings, and slides. The Library regularly receives about 55,000 serial publications. A listing of *Serials Currently Received at UCLA*, published by the University Library, may be consulted at principal service points in campus libraries.

The principal collections in the social sciences and the humanities are in the University Research Library. The card catalog here lists all cataloged books in the Research Library, the College Library, and other campus libraries and in the William Andrews Clark Memorial Library. Biweekly issues of the *Catalog Supplement* on microfiche list recent publications which have not yet been fully cataloged.

The University Research Library provides special study and research facilities, including facilities for reading microtext materials and for the use of typewriters. All students have access to the main book stacks in the Library.

An open-shelf collection of books of interest primarily to undergraduate students is maintained in the College Library, in the Lawrence Clark Powell Library Building.

The Department of Special Collections, in the Research Library, contains rare books and pamphlets, manuscripts, the University Archives, certain subject collections of books, early maps, and files of early California newspapers.

Other collections of rare materials are the Belt Library of Vinciana, in the Art Library, the Benjamin Collection of Medical History, in the Biomedical Library, and the Gross

Collection of business and economic history, in the Management Library.

The Public Affairs Service, in the Research Library, provides a coordinated service embracing collections of official publications of governments and international organizations and of other books and pamphlets in the social sciences. It is a depository for the official publications of the United States government, the State of California, California counties and cities, the United Nations and some of its specialized agencies, and a number of other international organizations. Also available are selected publications of the other states and possessions of the United States, publications of foreign governments, books and pamphlets on local government, and reference and pamphlet materials on industrial relations and social welfare. The John Randolph Haynes and Dora Haynes Foundation Collection is administered by the Public Affairs Service. This service provides access to research data which are available on computer tapes.

Computer Reference Services are offered on a partial cost-recovery basis by reference librarians in the Research Library Reference Department, the Public Affairs Service, the Education and Psychology Library, the Biomedical Library, the Engineering and Mathematical Sciences Library, the Physics Library, the Chemistry Library, and the Geology-Geophysics Library. Descriptions and price lists are available at reference desks throughout the Library system.

The Biomedical Library, in the Center for the Health Sciences, has collections in all of the health and life sciences. Materials for engineering, astronomy, meteorology, and mathematics are kept in the Engineering and Mathematical Sciences Library. Education, kinesiology, and psychology are the principal subjects served by the Education and Psychology Library. Other libraries serve the fields of Architecture and Urban Planning, Art, Chemistry, English, Geology-Geophysics, Law, Management, Maps, Music, Oriental Languages, Physics, Theater Arts, and the University Elementary School.

The resources of these libraries are available to all students and members of the faculty and staff of the University. A Library handbook, describing the organization and services of the University libraries and listing their schedules of hours, may be obtained in any of the campus libraries.

The Library Photographic Service, in the Powell Library Building, offers complete documentary photographic service, where photostats, microfilms, slides, ozalid prints, and other photographic work are done. Self-service photocopying machines for copying periodical articles and portions of books are available in most library units on campus.

Supplementing the University Library is the William Andrews Clark Memorial Library of about 75,000 books, pamphlets, and manuscripts, featuring English culture of the seventeenth, eighteenth, and nineteenth centuries, and the history of Montana. Materials in the Library do not circulate. The Clark Library sponsors an annual program of summer postdoctoral fellowships. The areas of study are based on the particular strengths of the Library's holdings. Each year a Clark Library Fellowship is granted to a UCLA graduate student working toward a doctorate within one of the Library's fields of interest, and each year also an eminent scholar is brought to the Library as its Senior Research Fellow. A distinguished scholar is appointed each year to the Clark Library Professorship. This Library is not on the University campus, but is situated at 2520 Cimarron Street, at West Adams Boulevard.

The Clark Library is open Monday through Saturday from 8 a.m. to 5 p.m. Leaflets describing the Clark Library are available at the Reference Desk in the Research Library, and information on University transportation to the Clark Library may also be obtained here.

### THE LOWER DIVISION PROGRAM

The Lower Division Program is a two-year undergraduate program organized in a sequence of five study units of one quarter each. Each unit is the equivalent of three university classes or 12 units. Students have the option of entering or leaving the program at the end of each study unit. Those remaining with the program have the advantage of satisfying College of Letters and Science requirements (see Credits). Each LDP unit approaches a general subject area through the integration of several academic disciplines into one comprehensive "unit" of study. Basic areas of concern

are: "Freedom and Control", "The City in Historical Perspective", "The Mythic Imagination", "The Origins of Life", and "Contemporary America: The Dilemmas of the Present in the Perspective of the Past".

Each unit is under the direction of one faculty member with several other distinguished faculty members also contributing their particular field of expertise. Within each unit, students will participate with faculty in lectures, small discussion groups and seminars where they will be encouraged to express themselves in writings and presentations of individual and/or group papers and projects related to the topics being studied. There will also be tutorial groups, films and some field trips.

Additional information may be obtained in 374 Kinsey Hall or by calling 825-7104. Director: Stanley A. Wolpert

## RESEARCH FACILITIES AT UCLA

Recognizing the value of an interdisciplinary approach to the search for knowledge, the University maintains Regentally designated organized research units and other research programs outside the usual departmental structure. An organized research unit consists of an interdepartmental group of faculty and students engaged in research with them. Such units aid research and may enhance the teaching of participating members of the faculty, but they do not offer regular academic curricula or confer degrees. They may provide research training to graduate students employed in research programs with faculty supervision. These units, along with more specialized activities in focal fields, provide significant support to the educational program and enhance the overall academic quality of the institution.

## ORGANIZED RESEARCH UNITS

### Universitywide

The **Institute of Geophysics and Planetary Physics** is engaged in interdisciplinary programs related to studies of the interior of the earth, moon, and other planets, the fluid and gaseous parts of the planets, and interplanetary space. Major research programs being actively explored in the laboratories of the Institute include investigations into the origin of the magnetic field; the configuration of the earth's magnetic field in space; the earth-sun interaction; structure and properties of the lunar surface and interior; meteorites; origin of the earth's magnetic field; the history of the solar system; astrophysical plasmas; high energy astrophysics; ocean-atmosphere interactions; seismology; earthquake control and prediction; internal structure of the earth; earth tides; continental drift and plate tectonics; properties of materials under high pressures and temperatures; mineral synthesis; radiocarbon archaeology; geochronology; glaciology; petrology and metamorphism; isotope geochemistry; origins of life; man's interaction with the environment.

The laboratory facilities of the Institute and its faculty are available to guide the dissertation research of students in the physical sciences, including the Departments of Earth and Space Sciences, Physics, Chemistry, Mathematics, Atmospheric Sciences, Astronomy, Engineering and Anthropology. Leon Knopoff, Associate Director

### Campuswide

The **Institute of American Cultures** is charged with promoting and coordinating the activities of the four ethnic centers — the Center for Afro-American Studies, the American Indian Studies Center, the Asian American Studies Center, and the Chicano Studies Center. The Institute conducts no research itself, but fulfills its purpose by making research funds available to the ethnic centers and by encouraging and coordinating the efforts of the centers to recruit faculty and develop new instructional programs dealing with America's minorities. The Institute is guided by an Executive Committee consisting of the four center directors, three faculty members (one of whom serves as the chair), and the Vice Chancellor for Institutional Relations (ex officio). The Director of the Institute is the Executive Vice Chancellor.

The **Center for Afro-American Studies** is an organized research unit established on the UCLA campus in 1969. Its basic mission is to encourage and support research that enhances the interpretation of the Afro-American experience. Pursuant to this objective, it provides faculty

and graduate student research grants, sponsors in-house research projects, supports interdisciplinary symposia, encourages related curriculum development, and most important, relates these findings to the community at large via lectures, publications, and to a limited extent, cultural programs. Claudia Mitchell—Kernan, Director

The **American Indian Studies Center** acts as an educational catalyst in a variety of ways. It encourages new programs of study, promotes faculty development and systematic research, and develops library materials and curricula related to American Indian studies. In addition, the Program is involved with cultural activities of the Indian community and sponsors lectures, symposia, conferences, and workshops relevant to the American Indian development. Special emphasis is upon coordinating the educational needs of the American Indian students with the University and the Community. Charlotte Heth, Acting Director

The **Asian American Studies Center** seeks to provide a deeper understanding of a particular area of study by the development of related human and material resources. It promotes the systematic development of material resources related to Asian American studies through an aggressive library acquisitions program, coordinated interdisciplinary research, and a broad publications program. Human resources are nurtured by vigorous curriculum development efforts, and courses have been designed with degree-granting programs at both the undergraduate and graduate levels. The Center supports and encourages promising graduate students and postdoctoral scholars to pursue their interests in this vital field of study, as well as sponsoring a variety of conferences, lectures, symposia, and cultural events. In addition, the Center supports a wide variety of projects designed to channel the resources of the University and the fruits of the Center's other areas of activity to Asian American communities. Lucie Cheng Hirata, Director

The **Chicano Studies Center** is an organized research unit (ORU), established at UCLA in 1969. Its main purpose is to facilitate interdisciplinary academic research related to the Chicano experience. Pursuant to this primary purpose, the Chicano Studies Center seeks the development of Chicano Studies as a unique and scholarly area of activity recognizing that the University and national development of Chicano Studies are interrelated. The objectives of the Chicano Studies Center are: (1) to initiate and support faculty and student development in Chicano Studies; (2) to identify, explore, and document original research on critical issues facing the Chicano community; (3) to support the creation and development of Chicano Studies at other institutions, and the organization of professional associations, conferences, and meetings devoted to Chicano Studies; and (4) to facilitate public service by focusing the unique resources of the University on programs in the Chicano community and engaging the further involvement of the University with the Chicano community. Juan Gómez—Quinones, Director

The **Institute of Industrial Relations**, authorized by the Legislature of the State of California in 1945, is concerned with two principal types of activity. The first is an interdisciplinary research and publishing program directed primarily toward the study of labor-management relations, wages and related problems, economic security programs, the labor market, the impact of technological change, the quality of working life, the problems of poverty and minority groups, human relations, labor law, labor history, comparative studies, and manpower problems. Research staff members of the Institute are usually drawn from the regular faculties of the Graduate School of Management, the Departments of Economics, Political Science, and Sociology; and the School of Law. This program affords opportunities to graduate students specializing in personnel management and industrial relations to engage in investigative work under expert guidance. The second main activity consists of community and labor relations programs serving management, unions, the public, and other groups interested in industrial relations activities. The programs consist of public lectures, conferences, symposia and institutes of varying duration, and include a series of courses through University Extension leading to a Certificate in Industrial Relations. Frederic Meyers, Director

The **Institute for Medical Engineering**, approved by the Regents in 1976, will when it is activated, provide a physical and intellectual multi-disciplinary environment for faculty and students to conduct research on important

medical problems which lie at the interface of health science and engineering. It will seek to encourage the application of the most creative engineering and medical techniques to problems of direct medical significance. As an interdisciplinary organization, it will include faculty participants from the Schools of Engineering, Medicine, Dentistry and Public Health, and will anticipate a growing involvement with other departments and schools. The Institute will receive support from a number of sources, including the University, a large private endowment, Federal and State agencies, foundations and gifts. Coordinator for the Institute until the Director is announced: Frederick G. Allen, 7714 Boelter Hall, School of Engineering and Applied Science.

The **Molecular Biology Institute** was established to serve various interested departments of the biological, medical, and physical sciences in the coordination, support, and enhancement of research and training in molecular biology. Interests and activities of the Institute encompass all approaches which aim to explain biology at a molecular level, with particular emphasis on correlation of structure and function. These include study of structure and function of macromolecules, molecular genetics and virology; bioenergetics, catalysis and control; molecular basis of cellular architecture, development, evolution, neurobiology and oncology. Staff members from departments in biological, physical, and medical sciences participate in Institute programs, and the Institute aids departments in graduate training and postdoctoral programs in the general area of molecular biology.

Most of the Institute staff are housed in the Molecular Biology Institute building completed in 1976. Approximately one-half of the building space is devoted to the Parvin Cancer Research Laboratories. The Institute building is located adjacent to the Chemistry, Biology and Bacteriology Departments and close to the School of Medicine. Paul D. Boyer, Director

The **Laboratory of Nuclear Medicine and Radiation Biology** conducts research in the fields of biomolecular biology, environmental biology, and nuclear medicine. It is funded through a contract with the Energy Research and Development Administration (formerly AEC). Most of the program is conducted in Warren Hall, located on the West Medical Campus.

Warren Hall is well-equipped with modern research tools including a cobalt radiation source with an activity of 10,000 curies at the time of installation. The Laboratory also operates a biomedical cyclotron at the Center for the Health Sciences which produces isotopes and is capable of activating procedures in support of its research programs. The Laboratory staff consists of about 180 scientists, technicians and supporting personnel representing many disciplines. Graduate student and postgraduate research programs are supervised by the staff in several fields. Owen R. Lunt, Director

## Dentistry

The **Dental Research Institute**, located mainly on the 7th floor of the School of Dentistry, involves faculty, graduate and professional students doing original research in six program areas as follows: (1) Immunology/Immunogenetics; (2) Oral Ulcerations/Periodontal Disease; (3) Chemistry and Structure of Oral Tissues; (4) Oral Neurology; (5) Craniofacial Anomalies; and (6) Restorative Biomaterials. Ph.D. students are sponsored by individual Institute faculty members. An informational brochure outlining current studies of Institute members is available from the Office of the Director (CHS 43-180, Ext. 55478). William H. Hildemann, Director

## Letters and Science

The **African Studies Center** provides a framework for furthering teaching and research on Africa involving social sciences, education, linguistics, humanities, fine arts, law, the health sciences and the natural sciences. The Center participates in an interdisciplinary master's degree program in African Area Studies and in an undergraduate program in conjunction with degrees in the social sciences or African languages. The Center has also become increasingly involved in special programs which entail the dissemination of knowledge about Africa to the larger community. Through its Research Committee the Center makes grants to assist UCLA faculty members and students with research on Africa. It participates in administering the

NDEA Title VI fellowship awards for the study of African languages, and offers a limited number of supplementary grants-in-aid to students both in master's and in doctoral programs whose focal point is Africa. The Center provides information to faculty and students on extramural sources of research support and employment opportunities which require knowledge of Africa. It also brings Africanists to the University for lectures or as Visiting Professors or Research Associates, and sponsors interdisciplinary colloquia focused on integrative and innovative themes. Other Center activities include the publication of quarterly journals, *African Arts*, UFAHAMU, a student journal, *Studies in African Linguistics*, and *The Journal of African Studies*, *African Law Studies*, *The African Studies Center Newsletter*, *Research in Progress*, as well as occasional papers and books based on the interdisciplinary colloquia. The Center also provides facilities for a student organization, the African Activist Association, which is active in sponsoring events that focus public attention on important aspects of African culture or politics. *Boniface I. Obichere, Director*

The **Institute of Archaeology** was established in the summer of 1973 for the purpose of developing and coordinating all aspects of activities relating to archaeology. Its goal is to contribute to the ideal of a comprehensive interdisciplinary reconstruction of the human past, as evidenced especially from artifactual remains.

The Institute includes faculty members from eleven academic units at UCLA, as well as faculty from various other UC campuses. It provides an intellectual focus for all University of California archaeologists, facilitating the exchange of views on theoretical models and technical developments. It does so by sponsoring lectures, seminars, symposia and arranging for visiting faculty; it also helps support excavation programs of the individual archaeologists active on campus. Through the Archaeological Survey, the Institute serves the needs of California archaeology, especially in the Southern part of the state. Besides occasional publications, the Institute issues a yearly journal, a series of technical monographs and a series devoted to major archaeological reports and investigations. Given the considerable amount of public interest in archaeology, the Institute promotes a variety of activities which serve a broadly based need in the off-campus community, such as an Extension curriculum in archaeology, field trips, public lectures and publications for the interested lay public. *Giorgio Buccellati, Director*

The **Center for the Study of Comparative Folklore and Mythology** is the research arm of the University's folklore program and is an interdisciplinary unit designed to coordinate the work of scholars from various fields of study and to stimulate interest in folklore and mythology. Members of the Center, representing various cultural areas of the world and many academic disciplines, keep track of folklore research on an international and multidisciplinary basis and formulate and evaluate specific research projects. The Center has its own reference library of folklore books, a sound laboratory with sophisticated recording equipment, a collection of folklore on records, and it houses the Western Folklore Archive containing approximately one million items—cards of individual popular beliefs and superstitions, legends, customs, folk speech, and folklore indexes and bibliographies. The Center supports field collecting projects on an international basis. Current research projects include compilations of a dictionary of American popular belief and superstition, a work on folk medicine, an international ballad index, a compilation of Irish ballads, an index of legendary, and an annotated bibliography of studies in Indo-European mythology. *D. J. Ward, Acting Director*

The **Center for Latin American Studies** is an organized research unit which provides research support for individual and cooperative research of the faculty and graduate students in the social sciences, education, humanities, the arts, comparative law, engineering, management, urban planning, library science, and public health. In addition to cooperating with seven colleges and professional schools of the University, the Center conducts systematic multi-disciplinary research, implemented by the faculty and graduate students.

The **NDEA Latin American Language and Area Studies Center** is a "center of excellence" chosen by the U.S. Department of Health, Education and Welfare under the National Defense Education Act (NDEA). The Center supports the B.A. and M.A. degree programs in Latin American Studies. NDEA Title VI fellowships, research assistantships, and

grants-in-aid to students in the graduate degree program are available.

Through the Dean's Advisory Committees for Latin American Studies which function in colleges and schools throughout the campus, the Center provides coordination for University Programs on Latin America. The Center publishes a series of documentary and scholarly publications, among which are the *Statistical Abstract of Latin America*, the *Latin American Studies Series*, the *Reference Series*, and the *Journal of Latin American Lore*. *Johannes Wilbert, Director*

The **Center for Medieval and Renaissance Studies** is concerned with understanding the nature, causes, and processes by which, between about A.D. 300 and 1600, European culture in all its aspects built up such a store of energy and competence that it overran the rest of the world. Since during that time the West was an "emerging" society, far less distinct from the Near East and more open to external influences than it has since become, the Center includes within its concept of the Middle Ages and Renaissance not only the Occident but also Byzantium, the Slavic world, Islam, the scattered Jewish communities, and the minor Eastern Christian groups. It fosters research on the interplay between these related societies as well as on problems internal to each.

The Center assists individual and group investigation by conferences, symposia, lectures; issues an annual journal, *Viator*, a graduate student annual journal, *Comitatus*; and its two series of volumes, the *Contributions* and the *Publications*. It annually awards several research assistantships to doctoral candidates; three of these are assigned to Byzantine studies. *Fredi Chiappelli, Director*

The **Gustave E. von Grunbaum Center for Near Eastern Studies** was established to promote individual and collaborative research and training in this area. The Center encourages the research of individual faculty members and collaborates in the solution of basic research problems which require institutional backing. The Center also sponsors lectures, seminars and conferences on various topics falling within the scope of Near Eastern studies, and actively promotes an extensive publication program. *Afaf Lutfi al-Sayyid Marsot, Associate Director*

The **Center for Russian and East European Studies** was established to promote, assist and coordinate research and training on Russia and the countries of Eastern Europe. It furthers the research of individual faculty members and graduate students, sponsors colloquia, seminars and lectures, organizes conferences, and participates, with other universities, in academic exchange programs with Russia and Eastern Europe. *Henrik Birnbaum, Director*

The **Institute for Social Science Research (ISSR)** undertakes basic and policy studies on a broad spectrum of contemporary sociological, psychological, political and economic problems and other social-related community issues. The Institute encourages collaborative research between faculty in the various social science departments as well as cooperative projects that involve members of the professional schools. The core staff of the Institute provides research consultation and supportive services to University faculty members engaged in research investigations as well as advice on the designing and funding of projects. From time to time, the Institute offers special opportunities for graduate students to gain research experience. As funds permit, the Institute provides seed-funding for project development and pilot studies.

An integral part of the Institute is the **Survey Research Center (SRC)** which not only serves the UCLA faculty but investigators from other universities and research groups in the local and national social research community. Several times a year, SRC undertakes studies of Los Angeles County residents that provide research information to a number of different investigators. These multi-purpose surveys allow researchers to economically obtain data-sets on large representative samples of Los Angeles County citizens. Also affiliated with the Institute is the **Center for Computer-based Behavioral Studies (CCBS)**. This Center, with its own computer resources, provides an opportunity for faculty and graduate students to undertake investigations requiring sophisticated laboratory facilities and computerized information systems access.

The current research program includes studies in medical care, mental health, human development, law, demography, economic resources, gerontology, energy and economic behavior. *Howard E. Freeman, Director*

## Management

The **Western Management Science Institute** fosters research and advanced study in management science and operations research, with special emphasis on developments needed for more effective practical applications. The Institute conducts mathematical and computer-oriented studies on a variety of subjects. These include the construction of optimization models for production and distribution systems, finance and marketing policies, conservation of natural resources, and resource allocation in organizations. Appropriate tools of decision analysis, mathematical programming, and simulation are being developed and applied. The basic economics of decision and information systems are also being studied.

In addition to its research programs, the Institute is engaged in developing faculty resources and graduate curricula in the management sciences, and in sponsoring workshops and seminars such as the Jacob Marschak Interdisciplinary Colloquium on Mathematics in the Behavioral Sciences.

Although composed largely of faculty members of the Department of Management, the Institute staff is interdisciplinary. Fruitful collaborative relationships have occurred with the departments of Economics, Engineering, Mathematics, Political Science, and Psychology.

*John W. Buckley, Acting Director*

## Medicine

The **Brain Research Institute** provides an environment for research in the neurological and behavioral sciences for investigators particularly from the behavioral, health and life sciences fields but also from the physical sciences and engineering. Three principal goals of the Institute are: (1) to support and conduct research which contributes to an understanding of brain mechanisms and behavior; (2) to contribute to the training of predoctoral and postdoctoral students for professional careers in brain science; (3) to develop and disseminate information about brain function in the interest of the social and scientific communities. Located in the Center for the Health Sciences, the Institute conducts programs which are largely interdisciplinary. General activities include attention to such broad fields of interest as neurobiology, neurophysiology, neurochemistry, neuroanatomy, neuropharmacology, neuroendocrinology, neuropsychiatry, biophysics and communications, neuroimmunology, behavior and neuropathology. *Carmine D. Clemente, Director*

The **Jules Stein Eye Institute** is a comprehensive facility located within the Center for the Health Sciences, devoted to research in the sciences related to vision, the care of patients with eye disease and the dissemination of knowledge in the broad field of ophthalmology. Incorporated in this structure are outpatient, inpatient and operating room facilities for the care of patients with ophthalmic disorders; areas for research in the sciences related to vision; and facilities for scientific reading, lectures and seminars. The Institute affords a unique opportunity for the training of students in the School of Medicine, residents and graduate physicians. A close relationship with graduate and undergraduate research and teaching facilities at UCLA is maintained. *B. R. Straatsma, Director*

The **Institute of Rehabilitation and Chronic Diseases**, located on the West Medical Campus, was established to develop basic theory and clinical techniques relevant to chronic disabling disease. Investigative areas include collagen vascular diseases, bone and hard tissue metabolism, myology, cerebral palsy, kidney function and disease, tissue transplantation, neurology, physical and occupational therapy, and prosthetics. Fellowships are available through the participating divisions. Much of the work involves participation by basic as well as medical scientists. *Eugene V. Barnett, Director*

The **Mental Retardation Research Center** provides laboratories and clinical facilities for basic and applied research and research training in mental retardation and related aspects of human development. Its interdisciplinary activities range from molecular biology to epidemiology. The Center is closely allied with a Professional Education and Clinical Services Facility, which promulgates interdisciplinary training in the evaluation and treatment of mentally retarded and otherwise disturbed children and their families. Together, these two units comprise a total program directed toward a major public health program. *Nathaniel A. Buchwald, Director*

## MUSEUMS AND SPECIAL FACILITIES

The **Frederick S. Wight Art Gallery**, formerly the UCLA Art Galleries, was established with the support of Edward A. Dickson for whom the Dickson Art Center was named. The permanent holdings include the Franklin D. Murphy Sculpture Garden, 66 sculptures from the 20th century including Arp, Calder, Lachaise, Lipchitz, Moore, Noguchi, Rodin and Smith; The Willitts J. Hole Collection of approximately 50 paintings of the Italian, Spanish, Dutch, Flemish and English schools, from the 15th to 19th centuries; 20th century painting, sculpture and photographic collection.

Twelve exhibitions of painting and sculpture, prints and drawings, architecture and design are presented annually in close conjunction with the (UCLA) Museum of Cultural History and the Grunwald Center for the Graphic Arts. One of these exhibitions is regularly sponsored by the UCLA Art Council, the supporting organization of the Galleries.

Jack B. Carter, Acting Director

The **Grunwald Center for the Graphic Arts** which houses a distinguished collection of prints and drawings, is maintained as a study and research center for the benefit of students, scholars and collectors, as well as, the general public. The permanent holdings of the Center include significant examples from the 15th century to the present which were originally selected to complement courses given in the history and connoisseurship of the graphic arts. It is particularly noted for its collection of German Expressionist prints formed by Fred Grunwald, as well as, for specialized collections in 19th and 20th century lithography (including the Tamarin archive), the history of ornament, Japanese prints (including the Frank Lloyd Wright collection), and comprehensive holdings of Matisse, Picasso and Rouault. Several major exhibitions are organized each year accompanied by the publication of a scholarly catalogue.

E. Maurice Bloch, Director

The **Museum of Cultural History** (formerly The Museum and Laboratories of Ethnic Arts and Technology) comprises growing collections of objects which represent a wide range of the material culture, and specifically of the arts, of peoples who lived until recently at, or beyond, the margins of the major Oriental and Occidental civilizations. These collections represent the arts and archaeology of Africa, Melanesia, the Americas, the Ancient Near East, the circum-Mediterranean cultures, the European, Neolithic and Bronze ages, and the folk arts of Latin America, Europe, and the Orient.

The Museum promotes the study of arts and artifacts as one of the most important avenues toward an understanding of man's cultures. As a resource for UCLA faculty, students, visiting scholars of international repute, and the general public, the Museum offers assistance with instruction, research field work, exhibitions, and seminars, and sponsors exhibitions, lecture programs, symposia, and publications.

In the community the Museum directs a satellite museum program which organizes and mounts exhibitions that are located throughout greater Los Angeles, particularly in culturally disadvantaged areas, and a peripatetic program which is designed to make children familiar with museum objects in a classroom setting. Trained volunteers teach classes in prehistoric archaeology in the Los Angeles City School System.

Christopher B. Donnan, Director

The 8-acre **Botanical Gardens** contain a useful teaching and research collection of about 4,000 species of plants of the world. Included are a native section, desert garden, lath-house, and experimental field. Adjoining is the Plant Physiology Building, with glass houses and growth chambers. The Herbarium contains a teaching and research collection of about 250,000 specimens representative of the flora of the world, with special collections of the native flora and of ornamental species cultivated in Southern California.

Jonathan Sauer, Director

**Computing and Information Systems (C&IS)** is responsible for all general-purpose computing activities on the UCLA campus. In support of instructional and research activities, C&IS provides a broad range of computing services to the UCLA academic community and, through a nationwide computer network, to institutions throughout the United States. The principle computing resource is an IBM System/360 Model 91KK computer. The 360/91 is available to all departments and schools within UCLA, and timesharing terminals and remote-job-entry stations are located throughout the campus.

Both interactive and batch methods are available for performing work on the 360/91. Interactive terminal-oriented systems available are APL\*PLUS (STSC's version of A Programming Language), TSO (IBM's Time Sharing Option), and URSA (C&IS developed). The 360/91 supports standard OS/360 batch services as well as a fast, student-oriented batch service (QUICKRUN). Turnaround for jobs run on the 360/91 typically ranges from under a minute for student jobs to under an hour for jobs requiring extensive setup operations.

C&IS also maintains a DEC (Digital Equipment Corporation) PDP-10KA computer, principally for student use. Any member of the UCLA student body or faculty can individually establish an account for using the PDP-10. Other noteworthy equipment provided to C&IS users is special equipment for graphics work: two plotters (a CalComp 936 Drum Plotter and a Versatec 1200A Electrostatic Plotter) and several Tektronix graphics display devices (models 4081, 4051, and 4013).

Computing activities are supported by an extensive library of application programs, consulting services, and reference documentation. The applications program library for the 360/91 includes a wide range of statistical, engineering, and mathematical software. Several FORTRAN and PL/1 compilers, as well as other esoteric computer languages, are also supported on the 360/91. W.B. Kehl, Director

The **Division of Laboratory Animal Medicine** is the centralized animal resource facility responsible for the procurement, husbandry and general welfare of animals required for teaching and investigative services. The Division's veterinary and support staff administers the veterinary medical and husbandry programs throughout the campus. The Division's veterinary programs and physical facilities have been approved for full accreditation by the American Association for Accreditation of Laboratory Animal Care.

Jessie O. Washington, D.V.M., Director

The University of California **Natural Land and Water Reserves System** offers 22 reserves statewide to be used for field studies in unspoiled natural sites and for protected scientific experiments. Graduate students at UCLA regularly use several of these for thesis and dissertation research, including the 14,000 acre Boyd Deep Canyon Desert Research Center and the 56,000 acre Santa Cruz Island Reserve, both of which have field stations. A complex of three Santa Monica Mountain Reserves administered by UCLA has no housing facilities but is close enough to the campus for easy daily access.

Jonathan Sauer, Campus Representative

**Zoological collections** of the Department of Biology include a research collection of marine fishes, primarily from the eastern Pacific and the Gulf of California, and the Dickey Collection of birds and mammals, primarily from the western United States, western Mexico and Central America. The Department also maintains a more limited collection of amphibians, reptiles and fossil vertebrates. Through a cooperative arrangement, the large zoological collections of the Los Angeles County Museum, containing both fossil and recent specimens, are available for research by qualified students.

The department also maintains an extensive collection of algae, and a smaller collection of fungi and bacteria (including photosynthetic bacteria). These collections, which are part of the culture facility, are available for both teaching and research.

UCLA is a member of the Organization for Tropical Studies, a consortium created to promote research and educational programs in the New World tropics. Fellowships are available for subsistence in field-oriented programs in Central America.

## Public Lectures, Concerts, Dance, Theater, Films and Art Exhibits

The University presents public lectures of general and scholarly interest by qualified persons. These lectures are intended to supplement and stimulate the work of departments, centers and institutes of the University, and to offer students and the community at large an opportunity to hear renowned authorities on a variety of topics.

The music program of the University includes many special events. The Committee on Fine Arts Production presents a broad variety of performances by nationally and internationally known artists representing virtually every facet of the performing arts.

During each quarter the Department of Music sponsors evening concerts by the A Cappella Choir, UCLA Men's Glee Club, Symphony Orchestra, Opera Workshop, Chamber Music Ensemble, Collegium Musicum, University Chorus, Symphonic Wind Ensemble, Madrigal Singers, Women's Choir, and the various ethnic study groups of the University. Individual artists, both students and faculty, present weekly Tuesday noon recitals that are free to the public.

The Department of Dance provides a rich variety of performances at all levels, including student workshops, master's thesis concerts, the annual Spring Concert of the UCLA Dance Company, and a student generated undergraduate presentation called UC Movement Theater. Authentic performances by several ethnic dance groups occur throughout the year. In addition, several series are offered through the Committee on Fine Arts Productions, featuring notable professional artists and dance companies. The fields of ethnic and contemporary dance, as well as ballet, are thus generously represented through the various campus programs in dance.

In addition to its intramural, experimental production program, the Department of Theater Arts produces a varied selection of significant new and old plays, ranging from the classical repertory to the contemporary, as well as plays never produced before. These are presented in an annual season of six or more plays for the campus and community.

A number of art, documentary, educational and foreign films, including film series, are presented each quarter. During the Spring Quarter, the Motion Picture faculty of the Department of Theater Arts presents several evenings of films written, directed and produced by students. All the events listed are open to the public.

The **Frederick S. Wight Art Gallery**, adjacent to Dickson Art Center, presents a program of changing exhibitions of regional, national, and international significance, including a range of historical, ethnic, and contemporary forms of art. Included in this program are exhibitions assembled by the Museum of Cultural History focusing on non-Western, ancient, and folk art from the extensive collections of the museum. The Grunwald Center for the Graphic Arts maintains a print study collection and gallery, and presents a series of exhibitions related to the Art Department's program of advanced studies in the graphic arts and art history. The Franklin D. Murphy Sculpture Garden collection is also a resource of the Wight Art Gallery. Sixty-three works of 20th century sculpture are included in its permanent display.

## University Extension

University Extension, UCLA, offers approximately 4500 classes and special programs each year, many of them innovative and experimental in content, format and teaching methods, with extensive use of media technology. Extension programs are designed to bring to adults in the community, on a part-time basis, the benefits of the talent, research and resources of the University of California. Credit and non-credit courses in nearly every academic discipline and in interdisciplinary areas provide opportunities for professional/career advancement; for expansion of cultural horizons; for development of scientific literacy; for growth in personal awareness and human interrelationships; for enhancement of capability to assess and deal with the great issues of politics and society in this era of fundamental reappraisal of established ideas and values. In the broad social view, Extension has a primary responsibility for the public service functions of the University, including community development programs and the application of University resources toward the solution of crucial statewide and urban problems.

Types of programs include regular campus-equivalent classes; lecture series; discussion groups; conferences, institutes, short courses; community development and other public service programs; film and television series; correspondence study; residential programs; sequential certificate programs; studio/workshop courses in the creative and performing arts; an extensive creative writing program series; family field study trips and foreign travel-study programs; special programs for the blind and other handicapped; counseling and testing.

Many Extension non-credit programs offer the opportunity to earn CEU (non-credit Continuing Education Units). One CEU is awarded for each 10 contact hours of instruction.

CEU are recorded on the student's transcript. They are widely accepted for relicensure and other professional/career-related purposes.

Veterans may use the educational benefits available to them under Federal and State laws to enroll in University Extension classes, provided the classes are part of their prescribed and recognized objectives approved by the Veterans Administration.

An Information and Advisory Service is available to all interested persons, for assistance in planning long or short-term study, for credit or not for credit. There is no charge for this service.

For detailed information, or to obtain the current UCLA Extension catalog, write, telephone, or visit the UCLA Extension offices at the southwest corner of the campus, 10995 Le Conte Avenue, Los Angeles, California 90024. Telephone (213) 825-2401.

## Admission to the University

### IN UNDERGRADUATE STATUS

The admission requirements of the University of California are founded on two basic assumptions: first, that the best assurance of success in the University is shown by high quality of scholarship in previous work; and second, that the study of certain specified subjects will provide the student not only sound preparation for the range of University courses but also reasonable freedom in choosing his field of specialization.

Fulfilling the requirements stated below, however, may not necessarily assure admission to the campus of first choice. On some University of California campuses, limits have had to be set for the *enrollment of new students*; thus, not everyone who meets the minimum requirements can be admitted. At UCLA, for example, students who are, or who would be, college seniors are discouraged from applying. Fine Arts students may apply for the Fall Quarter only. The Winter Quarter is restricted to intercampus transfers and re-entrants. If additional enrollment restrictions are necessary, sophomores may be restricted.

### Application for Admission

An application form may be obtained at the Office of Undergraduate Admissions, 1147 Murphy Hall, University of California, Los Angeles 90024.

The opening dates for filing applications for the year 1978-1979 are as follows: Fall Quarter 1978, November 1, 1977; Winter Quarter 1979, July 1, 1978; Spring Quarter 1979, October 1, 1978. Applications for the Fall 1979 quarter should be filed during the month of November 1978.

A fee of \$20 must accompany each application.

Each applicant is responsible for requesting the graduating high school, and each college attended if he applies in advanced standing, to send official transcripts of his record directly to the Office of Undergraduate Admissions.

If admitted, the prospective student must return a Statement of Intention to Register, a Statement of Legal Residence, together with a nonrefundable fee of \$50 which will be applied to the University Registration Fee if the student registers in the quarter for which he applied. Registration materials will be prepared only after these forms are submitted by the prospective student.

### Education Abroad Program

The Education Abroad Program offers opportunities for students of the University of California to study in universities in other countries. It is administered for the entire University by the Santa Barbara campus.

In 1978-1979 the University will continue the operation of its study centers in Austria, Brazil, Egypt, France, Germany, Hong Kong, Ireland, Israel, Italy, Japan, Kenya, Mexico, Norway, Russia, Sweden and the United Kingdom. A new center will open in Peru. The program's primary purpose is to provide a sound academic experience in a different educational system. It enables the University of California students to become deeply involved in the language and culture of the host country.

Eligibility requirements are: upper division standing in the University at the time of participation, an overall B average, seriousness of purpose, and an indication of ability to adapt to a new environment. For the centers in Austria, France, Germany, Mexico, Peru and Spain, two years of university-level work in the language of the country with a B average (or equivalent thereof) are required. For all other centers, the language requirements are variable.

The participants spend from nine to eleven months abroad, including a special orientation program, six or seven weeks of intensive language preparation (no language preparation for Egypt, Kenya or the United Kingdom/Ireland; all-summer preparation for Norway and Sweden), and a full academic year in the host university.

Each student will be registered on his home campus and in the host university and will receive full academic credit and grades for courses satisfactorily completed.

Applications for 1979-1980 will be available beginning in September, 1978. Applications for the United Kingdom/Ireland must be completed in early November, 1978. Applications for all other centers must be completed by late January, 1979.

Graduate students may, with the approval of their graduate advisor, their department chairman and the Dean of the Graduate Division, participate in the Education Abroad Program. Such students remain under the academic direction of their home campus graduate advisor but are able to avail themselves of resources in other countries.

NOTE: For further information, specific deadline dates and applications, contact the Education Abroad Program, Bunche Hall 2221B, UCLA; telephone 825-4889 or 825-4995.

### Summer Sessions

In 1978 the University will conduct two summer sessions. The first session will begin on June 26; the second session will begin on August 7. For further information phone 825-8355 or write to the Office of the Summer Sessions, Room 1254, Murphy Hall, University of California, Los Angeles, California 90024.

Admission to a Summer Session does not constitute admission to a regular session. Students planning to attend the University in regular session are referred to Admission to the University section of this bulletin.

### Foreign Language Training

Research and field work overseas may be facilitated by oral proficiency training in any of thirty-four languages taught at the Defense Language Institute at the Presidio of Monterey. This unique program is available on a space available basis, to University graduate students and faculty. Regulations and procedures for applicants, and application forms, may be obtained from the Student and Academic Affairs Section, Graduate Division. For further information, write to the Secretary, University of California Language Training Advisory Committee, College Eight, University of California, Santa Cruz, California 95064, or call UC Santa Cruz extension 2054 (message center: 2900).

University of California graduate students (who are currently enrolled and have completed one quarter of graduate work) and faculty have a unique opportunity to acquire fluency in foreign languages through the cooperation of the U.S. Defense Language Institute, Presidio of Monterey.

Each year thirty persons certified by the University of California Language Training Advisory Committee may be admitted.

### Subject A: English Composition

Every undergraduate entrant must demonstrate an acceptable ability in English composition. There are several ways in which this requirement may be met before the first quarter in residence (see Subject A: English Composition). But students who have not already fulfilled the requirement must, during their first quarter, enroll in the course in Subject A.

### Requirements for Admission to Freshman Standing — Resident Applicants

An applicant for admission to freshman standing is one who has not enrolled in any college-level institution since graduation from high school.

The requirements listed below apply to California residents; for special requirements for nonresident applicants, see (Nonresident Requirements).

### Graduation from High School Subject Requirements

Courses offered in satisfaction of the following subject requirements must be included on a list submitted to the Director of Admissions of the University by the high school principal, if the school is located in California. This list must have been certified by the principal and then, in turn, have been approved by the Director of Admissions. If the high school is not located in California but is regionally accredited, appropriate courses will be considered acceptable.

#### A. HISTORY — 1 YEAR

This must consist of a year course in United States history, or one-half year of United States history and one-half year of civics or American government.

#### B. ENGLISH — 3 YEARS\*

\*Effective Fall Quarter, 1981, four years of English will be required.

These must be university preparatory courses in English composition and literature.

#### C. MATHEMATICS — 2 YEARS

These must consist of university preparatory courses in such subjects as algebra, geometry, trigonometry, calculus, elementary functions, matrix algebra, probability, statistics, or courses combining these topics.

#### D. LABORATORY SCIENCE — 1 YEAR

This must be a year course in one laboratory science.

#### E. FOREIGN LANGUAGE — 2 YEARS

These must be in one language. Any foreign language with a literature is acceptable.

#### F. ADVANCED COURSE — 1 OR 2 YEARS

This must be chosen from one of the following:

*Mathematics.* A total of 1 year of mathematics beyond the 2 years offered toward the mathematics requirement.

*Foreign language.* Either an additional year in the same language offered toward the foreign language requirement or 2 units of another foreign language.

*Science.* A year course in laboratory science taken after the one year science requirement is completed.

The subject requirements listed above may be satisfied only by courses completed with a grade of C or higher.

### Scholarship Requirements

Effective with applicants for admission to Fall Quarter, 1979, eligibility for admission will be based on a combination of the applicant's grade point average in the A-F subject requirements and the scores on either the SAT examination given by the College Entrance Examination Board or the ACT test given by the American College Testing Program. In addition, applicants will be required to submit scores for three achievement tests of the College Entrance Examination Board, which must be taken in the following areas:

1. English composition
2. Mathematics
3. Social studies or a foreign language.

### 1979-80 Eligibility Index Table for California High School Graduates and Residents

The following Eligibility Index Table may be used by California high school graduates and residents to determine their eligibility for freshmen admission to the University.

A-F GPA	ACT* Composite	SAT** Total
2.78	35	1600
2.79	35	1580
2.80	34	1550
2.81	34	1530
2.82	33	1510
2.83	33	1480
2.84	33	1460
2.85	32	1440
2.86	32	1410
2.87	32	1390
2.88	31	1370
2.89	31	1340
2.90	30	1320
2.91	30	1300
2.92	29	1270
2.93	29	1250
2.94	28	1230
2.95	28	1200
2.96	27	1180
2.97	27	1160
2.98	26	1130
2.99	26	1110
3.00	25	1090
3.01	25	1060
3.02	24	1040
3.03	24	1020
3.04	23	990
3.05	22	970
3.06	21	950
3.07	21	920
3.08	20	900
3.09	19	880
3.10	18	850
3.11	18	830
3.12	17	810
3.13	16	780
3.14	15	760
3.15	14	740
3.16	14	710
3.17	13	690
3.18	12	670
3.19	11	640
3.20	10	620
3.21	9	600
3.22	9	570
3.23	8	550
3.24	8	530
3.25	7	500
3.26	7	480
3.27	6	460
3.28	6	430
3.29	5	410
3.30	5	400

\*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.

For detailed information about these requirements, prospective applicants should consult the Undergraduate Admissions Circular or the Undergraduate Admissions and Financial Aid Packet.

The test results of all applicants will be used for purposes of counseling, placement and, when possible, satisfaction of the Subject A requirement, as well as determining eligibility for admission.

The verbal and mathematics scores on the Scholastic Aptitude Test must be from the same sitting.

For arrangements to take the tests, see below.

### ADMISSION BY EXAMINATION ALONE

An applicant who does not meet the scholarship and subject requirements for admission and who has not

registered in any college-level institution (except for a summer session immediately following high school graduation) may qualify for admission by examination alone. For admission of nonresident applicants by this method, see Special Requirements for Nonresident Applicants.

To qualify, the applicant must achieve high scores in the examinations required of all eligible applicants. The total score on the Scholastic Aptitude Test must be at least 1100; the scores on the three Achievement Tests must total at least 1650, and the score on each must be at least 500.

To obtain information about the tests or to make arrangements for taking them, apply to Educational Testing Service, P.O. Box 1025, Berkeley, California 94701, or P.O. Box 592, Princeton, New Jersey 08540, or the American College Testing Program, 555 Capitol Mall Suite 766, Sacramento, California 95814. Scores will be regarded as official only if they are received by the Admissions Office directly from these Testing Services.

### 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 will be the date of the certificate. Entrance by CEEB scores will remain an option for the student ineligible on the basis of high school record.

### Admission to Advanced Standing—Resident Applicants

The University defines an "advanced standing applicant" as a high school graduate who has been a registered student in another college or university or in college-level extension classes other than a summer session immediately following high school graduation. An advanced standing applicant may not disregard his college record and apply for admission as a freshman.

**Advanced Standing Admission Requirements.** As you will see below, the requirements for admission in advanced standing vary according to your high school record. If you are a nonresident applicant, you must also meet the additional requirements described at the end of this section. If you have completed less than twelve quarter or semester units of transferable college credit since high school graduation, you must also satisfy the examination requirement for freshman applicants.

The transcript you submit from the last college you attended must show, as a minimum, that you were in good standing and that you had earned a grade-point average\* of 2.0 or better. If your grade-point average fell below 2.0 at any one college you attended, you may have to meet additional requirements in order to qualify for admission.

\*Your grade-point average is determined by dividing the total number of acceptable units you have attempted into the number of grade points you earned on those units. You may repeat courses that you completed with a grade lower than C up to a maximum of 16 quarter units without penalty. The scholarship standard is expressed by a system of grade points and grade-point averages earned in courses accepted by the University for advanced standing credit. Grade points are assigned as follows: for each unit of A, 4 points; B, 3 points; C, 2 points; D, 1 point; I and F, no points.

As an advanced standing applicant you must also meet one of the following conditions:

1. If you were eligible for admission to the university as a freshman, you may be admitted in advanced standing at any time after you have established an overall grade-point average of 2.0 or better in another college or university.
2. If you were not eligible for admission as a freshman only because you had not studied one or more of the required high school subjects, you may be admitted after you have:
  - a. Established an overall grade-point average of 2.0 or better in another college or university.
  - b. Completed, with a grade of C or better, appropriate college courses in the high school subjects that you lacked, and
  - c. Completed twelve or more quarter or semester units of transferable college credit since high school graduation

or have successfully passed the CEEB tests required of freshman applicants.

3. If you were not eligible for admission as a freshman because of low scholarship or a combination of low scholarship and a lack of required subjects, you may be admitted after you have:

A. Established an overall grade-point average of 2.4 or better in another college or university.

B. Completed, with a grade of C or better, appropriate college courses in high school subjects that you lacked. Up to two units (a unit is equal to a year's course) of credit may be waived.

C. Completed 84 quarter units (56 semester units) of college credit in courses accepted by the University for transfer.

### Credit for Work Taken in Other Colleges And by Examination

The University grants unit credit for courses appropriate to its curriculum which have been completed in other regionally accredited colleges and universities. This credit is subject to the restrictions of the senior residence requirement of the University.

As an integral part of the system of public education in California, the University accepts, usually at full unit value, approved transfer courses completed with satisfactory grades in the public junior colleges of the State. Such transfer courses are limited, however, to a maximum of 70 semester units or 105 quarter units. Individual colleges and schools should be consulted concerning additional credit limitations.

Extension courses taken at an institution other than the University may not necessarily be acceptable. The decision regarding their acceptability rests with the Office of Undergraduate Admissions.

In addition, credit may be allowed for having completed with high scores certain tests of the College Board. These include Advanced Placement Examinations. Applicants should be sure to contact the Admissions Office before taking any examinations to determine whether they are acceptable.

### Special Requirements for Nonresident Applicants

The regulations below are designed to admit out-of-state applicants whose standing, as measured by scholastic records, is in the upper half of those who would be eligible under the rules for California residents.

### ADMISSION TO FRESHMAN STANDING

(See also Requirements for Admission to Freshman Standing—Resident Applicants)

### Graduation from High School

The acceptability of records from high schools outside California will be determined by the Office of Undergraduate Admissions.

### Subject Requirements

The same subject pattern as for California residents is required.

### Scholarship Requirements

The applicant must have maintained a grade-point average of 3.4 or higher in the required high school subjects (grade points are assigned as follows: for each unit of A, 4 points; B, 3 points; C, 2 points; D, 1 point; incomplete and failure, no points).

### Examination Requirement

A nonresident applicant must take the same SAT or ACT tests as those required of a resident applicant.

### ADMISSION BY EXAMINATION ALONE

A nonresident applicant who is not thus eligible for admission and who has not registered in any college-level institution (except for a summer session immediately following

high school graduation) may qualify for admission by examination alone. The requirements for a nonresident applicant are the same as those for a resident except that the scores on the three Achievement Tests must total at least 1725.

## ADMISSION TO ADVANCED STANDING

In addition to the regular admission requirements (see Admission to Advanced Standing — Resident Applicants), a non-resident applicant for admission to advanced standing must have earned a grade-point average of 2.8 or higher in college subjects attempted and acceptable for transfer credit.

If the applicant did not have at the time of high school graduation an average of 3.4 or higher in courses satisfying the required subject pattern, he must present a minimum of 84 acceptable quarter units or 56 acceptable semester units with a grade-point average of 2.8 or higher.

## Applicants From Other Countries

The credentials of an applicant for admission from another country are evaluated in accordance with the general regulations governing admissions. An application, official certificates, and detailed transcripts of record should be submitted to the Office of Undergraduate Admissions early in the appropriate filing period (see Application for Admission). Doing so will allow time for exchange of necessary correspondence and, if the applicant is admitted, will help him in obtaining the necessary passport visa.

## Compulsory Health Insurance

As a condition of registration, entering foreign students, except those in the United States on permanent immigration visas, must acquire at the Student Health Service health insurance, tuberculin test, and/or chest X-ray.

## Proficiency in English

An applicant from another country whose mother tongue is not English may be admitted only after demonstrating that his command of English is sufficient to permit him to profit by instruction in the University. His knowledge of English will be tested by an examination upon his arrival at the University. Admission of an applicant who fails to pass this examination will be deferred until he has acquired the necessary proficiency in the use of English. The student held for the English as a Second Language requirement who fails to take the test on the date specified will not be permitted to register for the quarter for which admission is approved. An applicant from a non-English speaking country is urged to take the Test of English as a Foreign Language as a preliminary means of testing his ability. Arrangements to take the test may be made by writing directly to TOEFL, Educational Testing Service, P.O. Box 899, Princeton, New Jersey 08540, U.S.A. Results of the test should be forwarded to the University.

## Language Credit

A student from a country where the mother tongue is not English will be given college credit in his own language and its literature only for courses satisfactorily completed. Such credit will be allowed only for courses taken in his country at institutions of college level, or for advanced level upper division or graduate courses taken in this University or in another English-speaking institution of approved standing.

## Engineering

A beginning or intermediate student seeking a bachelor's degree in engineering who is outside the United States must pass, with satisfactory scores, the College Entrance Examination Board Scholastic Aptitude Test (verbal and mathematics sections) and Achievement Examinations in English composition, physics, and advanced mathematics, before a letter of admission to preengineering can be issued. (Applicants from countries outside the U.S. who are applying for other than Engineering may select the Engineering pattern as an option to the regular pattern.) Arrangements to take the tests in another country should be made directly with the Educational Testing Service, P.O. Box 592, Princeton, New Jersey 08540, U.S.A. The applicant should request that his scores for the tests be forwarded to the University.

Each advanced undergraduate student applying for admission to the School of Engineering and Applied Science who is outside the United States must pass a special qualifying examination. Arrangements to take this test may be made by writing directly to the Office of Undergraduate Admissions, University of California, Los Angeles (UCLA), 405 Hilgard Avenue, Los Angeles, California 90024, U.S.A.

## IN GRADUATE STATUS

An applicant for admission to the Graduate Division is expected to hold a bachelor's degree from a regionally accredited institution, comparable in standard and content to a bachelor's degree from the University of California. Graduates from institutions which have only candidacy status with the regional associations will be considered only on an individual basis. In addition, the applicant is expected, at *minimum*, to have achieved a "B" average, or its equivalent if the letter grade system is not used, for the last two years of undergraduate and in any post-baccalaureate study.

## Application

The prospective student may obtain application forms in person or by mail from Graduate Admissions, Graduate Division, 1247 Murphy Hall, University of California, Los Angeles, California 90024, or from the department in which he wishes to study. With the application form the UCLA INFORMATION FOR GRADUATE APPLICANTS pamphlet is enclosed. The pamphlet lists the major fields offered, the individual departmental requirements and other pertinent information. The application form for University fellowships or other financial assistance will also be sent on request.

Application for admission to graduate status is limited to the Fall, Winter, and Spring Quarters of the regular academic year. For admission limited by departments to a particular quarter, please consult the information pamphlet. Enrollment in courses in the Summer Sessions does not constitute admission to graduate status (see Enrollment in Summer Session Courses).

Applications and supporting papers should be submitted to Graduate Admissions, Graduate Division, on or before the following dates:

February 15 for the Fall Quarter  
October 1st for the Winter Quarter  
December 30 for the Spring Quarter

Earlier application deadlines are required for certain departments, and these are stated in the information pamphlet.

The following materials should accompany the application:

1. Application fee of \$20.00 (nonrefundable), by check or money order payable to the Regents of the University of California.
2. Official transcripts of record, *in duplicate*, from each college or university at which the applicant has completed work. (Transcripts should accompany or immediately follow the application.) One set of transcripts will become a part of the permanent UCLA file, and the other set will be sent to the major department to assist in the evaluation of the applicant's past record and for advisory purposes regarding his graduate studies at UCLA. If the student has graduated from UCLA or from another University of California campus and has there completed the last two years of study for the bachelor's degree and any postbaccalaureate work, transcripts are requested from only that campus. (For detailed information see UCLA INFORMATION FOR GRADUATE APPLICANTS.)

If a student is requesting a fellowship or other financial assistance, the application for admission, with transcripts and examination scores, will need to be submitted to Graduate Admissions on or before the published deadlines for competition for these awards. (For information on Fellowships, Traineeships, and Assistantships, see Financial Aids for Students.)

## THE GRADUATE RECORD EXAMINATION

The "APTITUDE" Test of the Graduate Record Examination (GRE) is a specific requirement of the Graduate Division for all domestic and some foreign applicants. The requirement applies not only to undergraduates and to bachelor's degree holders but to applicants who have completed studies in graduate status and to those who received

master's degrees. The following tests may be substituted for the GRE at departmental request: the Miller Analogies and Doppelt Mathematical Reasoning Test in the School of Education; the Medical College Admission Test (MCAT) for programs in the Medical Sciences; Dental Admission Test (DAT) in Oral Biology and Law School Admission Test (LSAT) in Urban Planning, Political Science and Economics. The Graduate Management Admission Test (GMAT) is required for Graduate Management. Test results should be no more than five years old.

Foreign applicants who are subject to the UCLA Entrance Examination in English will not be required to take the GRE Aptitude Test unless the department requests it.

## FOREIGN APPLICATIONS

The requirements and application dates are the same for foreign applicants and U.S. applicants (see above). Because the evaluation of foreign credentials may take considerable time, however, applicants with credentials from institutions in other countries are advised to submit applications at least four to six months before the quarter in which they wish to be considered for admission.

Foreign applicants should submit official transcripts of record, *in duplicate*, for all college and university work. College and university transcripts must show subjects studied, examination grades achieved, and award of degrees. If photocopies are submitted rather than original documents, they must bear the seal of the issuing institution and the actual (not photographed) signature of the college or university registrar. Specific instructions are given in the information pamphlet for admission requirements and required credentials. (For detailed information see UCLA INFORMATION FOR GRADUATE APPLICANTS.)

Foreign applicants are advised not to come to UCLA until they receive formal notice of admission to the Graduate Division. They are notified by airmail as soon as a decision has been reached, and, if requested on the application, the I-20 form necessary to secure the student visa is enclosed with the notification of admission. Foreign applicants who have been accepted are encouraged to report to Graduate Admissions as well as to the Office of International Students and Scholars as soon as possible after they arrive at UCLA in order to receive assistance in completing admission and registration procedures.

## FOREIGN STUDENTS' ENGLISH EXAMINATION

Since English is the language of instruction at UCLA and success in graduate study depends largely on facility in its use, foreign students whose first language is not English are required to take a proficiency examination before the term in which they are to register. The achievement in this examination determines whether they will be required to include English courses in their program or will be permitted to carry a full or a moderate graduate program. If they should be required to take English courses, they should anticipate spending a longer period of time at the University than they normally would require to complete a degree program. Admission of an applicant who fails to pass this examination will be deferred until the applicant has acquired the necessary proficiency in the use of English.

Foreign students are encouraged to take the Test of English as a Foreign Language (TOEFL), if possible, in order to become aware of their level of proficiency in English before undertaking the expense of traveling to the United States. However, the TOEFL, or any other test of English proficiency, may not substitute for the required examination in English which must be taken at UCLA on arrival.

The TOEFL is administered in more than ninety testing centers throughout the world by the Educational Testing Service, Princeton, New Jersey 08540, U.S.A.

## APPLICATION REVIEW AND NOTICE OF ADMISSION

Graduate Admissions screens all applications to determine whether or not they meet University minimum requirements for graduate status. Ordinarily, only the applications of those students who have fulfilled at least the minimum requirements are then referred to the department. There they are subjected to a more specific and intensive review. Although, at this stage, departments may choose to make contact with applicants, Graduate Admissions alone is



empowered to make the formal offer of admission, taking the departmental recommendation into full consideration.

To applicants offered admission, Graduate Admissions sends with the formal notification instructions on required registration procedures.

Applicants who are offered admission with work in progress are reminded that their admission is contingent upon receipt of evidence of satisfactory completion of this work, plus statement of the bachelor's degree awarded.

## DUPLICATION OF DEGREES

The University of California in general discourages the duplication of advanced degrees. At the same time, it recognizes that a professional degree does not duplicate an academic one, and that the holders of an academic or professional degree may have the pressing need to earn another degree in an area quite different from that of their first endeavors.

All applicants for a *second academic graduate degree at the same level as, or at a level lower than*, the graduate degree they already hold, will be required to show compelling cause and to file the "Petition to Work for a Second Graduate Degree" for departmental review and recommendation, and action by the Dean of the Graduate Division. All applications for a second academic doctoral degree, following departmental review, will be referred to the Admissions Committee of the Graduate Council for recommendation to the Dean of the Graduate Division. Applicants for a professional graduate degree (M.Arch., M.A.T., M.B.A., M.Ed., M.Eng., Engr., M.F.A., M.L.S., M.N., M.P.H., D.Env., Ed.D., M.S.W., Dr. P.H., D.S.W.) are not required to complete the petition.

In all instances presented above, approval will be given only in exceptional cases. If admitted, such applicants will be held to all the usual degree requirements and University regulations pertaining to fees, registration, examinations, advancement to candidacy, etc.

## Enrollment in Summer Session Courses

Enrollment of prospective graduate students in Summer Session courses does not constitute admission to graduate status in the University, which is possible only through application for graduate admission during the regular academic year. Students who wish to apply Summer Session courses to their subsequent graduate programs should consult in advance with their departmental graduate advisers concerning this possibility. This is true also for students readmitted to graduate status who wish to resume their study in the Summer Sessions (see Readmission).

Information and applications may be obtained from the Office of Summer Sessions, 1254 Murphy Hall, University of California, Los Angeles, California 90024. The 1978 Summer Session bulletin will be available from that office by the middle of February.

## Renewal of Application

The offer of admission is valid for a specific quarter only. Applicants who failed to register in the quarter for which they were accepted in graduate status but who wish to reactivate their applications for a later quarter should file a Renewal of Application form. Such forms are obtained from Graduate Admissions, or from the departments, and should be submitted to Graduate Admissions, Graduate Division, 1247 Murphy Hall, UCLA, Los Angeles, California 90024. Filing dates are the same as those for original applications. The Renewal of Application should be accompanied by official transcripts, *in duplicate*, of any college or university work (including University Extension courses) completed since the former application. Acceptance for admission at any earlier date does not guarantee approval of the Renewal of Application. Only *one* renewal of application will be accepted without the \$20.00 (nonrefundable) application fee. The application fee is due with *each* renewal of application filed after the first one.

Applicants seeking admission more than two years after their original application file new applications rather than Renewal of Application forms, since records are not retained more than two years.

## The Graduate Cross-Enrollment Program

As an integral part of a Regentally-approved program in Academic Resource Sharing, which links UCLA with several local educational institutions, including USC and CIT, the Graduate Cross-Enrollment Program makes possible graduate student exchanges in many departments. The program is limited to specialized course offerings which would not otherwise be available to UCLA students.

With the approval of the instructor and department chairman on the host campus, the UCLA student signs up for a 501 course with his UCLA adviser and completes the interinstitutional form on Regional Student Exchange. The completed form must be filed with the Graduate Dean's Office on the host campus by the third week of the UCLA Quarter in which 501 credit is requested. Upon completion of the period of study at the host institution, the student will be evaluated by the instructor on that campus, who will forward the grade (S or U) to the UCLA graduate adviser, to be recorded against the 501 course and submitted to the UCLA Registrar. There is a credit limit of 8 units of such courses applicable toward the requirements for the master's degree. They may not satisfy any of the minimum graduate course requirement.

The UCLA student must have completed at least a year of graduate study here, must make petition for study at the host campus in the manner detailed above, and must have registered and paid his other fees *to UCLA* before permission to cross-enroll will be granted. Library privileges will be extended at the host institution, but other privileges or services cannot be proffered.

## Non-Discrimination Notice

The University of California, in compliance with Titles VI and VII of the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972 (45 CFR 86), and Sections 503 and 504 of the Rehabilitation Act of 1973, does not discriminate on the basis of race, color, national origin, religion, sex, or handicap in any of its policies, procedures, or practices; nor does the University, in compliance with the Age Discrimination in Employment Act of 1967 and Section 402 of the Vietnam Era Veterans Readjustment Act of 1974, discriminate against any employees or applicants for employment on the basis of their age or because they are disabled veterans or veterans of the Vietnam era. This non-discrimination policy covers admission, access, and treatment in University programs and activities, and application for and treatment in University employment.

In conformance with University policy and pursuant to Executive Orders 11246 and 11375, Section 503 of the Rehabilitation Act of 1973, and Section 402 of the Vietnam Era Veterans Readjustment Act of 1974, the University of California is an affirmative action/equal opportunity employer.

Inquiries regarding the University's equal opportunity policies may be directed to the Assistant Chancellor-Legal Coordinator, 2135 Murphy Hall, UCLA, or to the Director of the Office for Civil Rights, Department of Health, Education & Welfare.

# General Regulations

## READMISSION

A student who wishes to return to the University after an absence of more than one calendar quarter (three months)

must file an Application for Readmission. During the academic year 1978-1979 applications for readmission are required as follows:

For Fall Quarter, 1978. All students returning in the same status (graduate or undergraduate) who did not complete the Spring Quarter, 1978.

For Winter Quarter, 1979. All students returning in the same status (graduate or undergraduate) who were not registered in the Fall Quarter, 1978.

For Spring Quarter, 1979. All students returning in the same status (graduate or undergraduate) who neither completed the Fall Quarter, 1978, nor were registered for the Winter Quarter, 1979.

## In Undergraduate Status

Undergraduate students may obtain application forms from the Office of the Registrar, Window A, Murphy Hall. The completed application along with a \$20 application fee (nonrefundable) and transcripts of records from other institutions, including University Extension, attended during their absence must be filed with the Registrar on or before July 30 for the Fall Quarter; November 15 for the Winter Quarter; February 15 for the Spring Quarter.

## In Graduate Status

Students who have been registered at any time in graduate status at UCLA and wish to return after an absence should file a Graduate Application for Readmission. Forms for this purpose may be obtained by mail or in person from Graduate Admissions, 1247 Murphy Hall, and are submitted to that office. Filing dates are the same as those for original applications for admission to graduate status. Since some schools and departments permit readmission only in specified quarters or may stipulate earlier application deadlines, students should consult their chosen departments for additional information.

Applications for readmission should be accompanied by:

1. Application fee of \$20 (nonrefundable), by check or money order payable to The Regents of the University of California.
2. Official transcripts of record, *in duplicate*, for all college and university work (including University Extension courses) completed since last registration at UCLA.

Formal application for readmission is not required of a student returning from an official leave of absence.

## INTERCAMPUS TRANSFER

Undergraduate students currently registered on any campus of the University in a regular session (or those previously registered who have not since registered at any other school) may apply for transfer to another campus by filing an Intercampus Transfer Application on their present campus. This application must be obtained and filed at the Office of the Registrar, Information Window A, Murphy Hall. There is a \$20 nonrefundable fee. The deadlines are the same as the admission applications deadlines given under Admissions to the University section. Transcripts required for the processing of the application for transfer are provided without additional charge. For details regarding particular campus admission provisions, consult the Intercampus Transfer Clerk at the Registrar's Information Window A.

## REGISTRATION

Registration is the payment of fees, enrollment in classes, and the filing of various informational forms. A student's name is not entered on official rolls of the University unless the registration process is completed as published by the Registrar in the "Registration Circular" and the *Schedule of Classes*. Failure to complete and file all forms by established deadlines may delay or even prevent the student from receiving credit for work undertaken.

Registration is divided into two equal, but separate processes. Registration materials (the "registration packet") are issued by the Registrar and include cards for payment of the quarterly fees and a STUDY LIST CARD for requesting enrollment in classes. According to instructions issued

with the "registration packet" certain cards are filed with the Main Cashier when tendering payment of the quarterly fees. When both processes are completed, the student is considered a duly registered and enrolled student for the quarter.

In advance of the quarter, the registration processes may be completed entirely through the mail. All eligible students are encouraged to register by mail. Currently registered students may obtain their "registration packet" for registering by mail at the time (approximately the fifth week of the preceding quarter) and place announced in the campus newspaper, the *Daily Bruin*, and on official campus bulletin boards. New and re-entering students eligible to register by mail (see calendar) will receive the "registration packet" in the mail from the Registrar approximately six weeks before the quarter begins. Complete instructions and envelopes for return of the cards are included with the registration materials. Each student is responsible for purchasing the quarterly *Schedule of Classes* (see Enrollment in Classes).

The Registrar and the Main Cashier process enrollment and fee payment separately — date of payment does not affect enrollment provided such date is "on time" as published in the *Schedule of Classes*. At the completion of the by mail process, materials are returned to all students who participated. Students who requested enrollment will receive results of the enrollment processing (see Enrollment in Classes) while students who paid their quarterly fees will receive the valid Registration Card (proof of student status for University services). These separate mailings are made approximately ten days prior to the beginning of the quarter.

At the beginning of the quarter, in-person processing of fee payment and enrollment in classes is available for all students not processed by mail. Dates and location of registration in person processing are announced in the *Schedule of Classes*, the "Registration Circular," the *Daily Bruin*, and on official campus bulletin boards. Students eligible to register by mail are not issued specific times for registration in person, but are advised to observe the registration time recommended in the Registrar's publications. By observing this suggested time schedule for reporting to register, students will be processed with a minimal delay. New and re-entering students processed for registration in person will be issued an Appointment to Register in Person by the admitting (or re-admitting) officer upon receipt of the student's Statement of Intention to Register and accompanying forms. The Appointment is the student's notice of the date, time, and location that the Registrar will be prepared to issue the individualized materials for the registration process.

While a student may use a combination of both processes (by mail/in person) to pay fees and enroll in classes, the University requires that the full amount of fees be paid by the Friday before instruction begins. If fees are not paid by that date, all course enrollment is dropped.

Any student allowed to register on or after the first day of instruction is subject to a late fee and may request classes only after payment of fees is completed. Late registration with payment of a late fee is normally accepted during the first ten days of classes; enrollment in classes, however, may be difficult. No student may register after the tenth day of classes without prior written approval of his academic dean and payment of all regular and late fees.

## Continuous Registration

Unless granted a formal leave of absence, graduate students are expected to register every quarter, including the quarter in which their degree or certificate is to be awarded. If a student has completed all requirements for the degree except the filing of the thesis or dissertation and/or the formal final examination (master's comprehensive examination or doctoral final oral examination) he may pay the filing fee of \$62 instead of registering.

To be eligible to take final examinations, file theses or dissertations, or receive degrees during the summer, students must pay the filing fee unless they are registered in a Summer Session.

## Academic Counseling

Academic counseling is available to all students through the offices of the several colleges and schools, and coun-

selors/academic advisers in each department. It is recommended (required by certain colleges/divisions/schools) that every new student meet with an academic adviser prior to enrolling in classes. The adviser will help the student make a long-range plan for his/her degree objective and for preparation for graduate or professional study. Acquainting the student with requirements of the University, his/her college or school, and major department. Information about college/school/division requirements is issued by the admitting officer prior to scheduled registration processing.

## Orientation Program

The Orientation Program offers extensive academic counseling to all new undergraduates entering the University. Working in small groups with peer counselors, students plan their schedules for the upcoming quarter and learn of the educational opportunities open to them. In addition, undergraduates can learn about student services and the University's facilities and activities. Each student also receives individual time with a counselor, fulfilling the academic advising recommended for all students (required by some schools/colleges) for enrolling in classes. Orientation sessions provide opportunities for dealing with the common problems in adjusting to university life.

For further information about the program (including costs and dates), contact the Orientation Office, located in the Dean of Students Office, 2224 Murphy Hall or phone (213) 825-3626.

## Enrollment in Classes

A student's name is entered on official rolls of the University only after the registration process is completed as published in the *Schedule of Classes*. This quarterly publication is available in June for the Fall quarter, in November for the Winter quarter, and in February for the Spring quarter at the Students' Store, Ackerman Union. It is available by mail: write to ATTN: Mail Out, ASUCLA Students' Store, 308 Westwood Plaza, Los Angeles, California 90024 and include \$1. The *Schedule* lists courses, final examination groups, names of instructors, class times and meeting locations, a detailed calendar of deadlines, enrollment restrictions, and full instructions for registration (payment of fees and enrollment in classes). From the *Schedule* and with the aid of academic counseling, the student can assemble a program of courses. Two or three alternate programs should be planned in case the courses of first choice are not available. A student may not choose two courses in the same examination group and should not choose classes which conflict in the class meeting times. If time conflicts are unavoidable, the student should consult with the instructor of each course at the first meeting of the class.

Enrollment requests are processed by the Registrar's Office from the completed Study List Card contained in the "registration packet" issued to each prospective student.

All continuing students (who are eligible to register in the same status without filing applications for readmission) have the opportunity and are encouraged to request their classes by mail.

New and re-entering students who have completed the admission/readmission process by the eligibility date to register by mail (see calendar) will receive registration materials from the Registrar approximately six weeks prior to the beginning of the student's first quarter.

Results of enrollment by mail are printed on a Tentative Study List mailed by the Registrar approximately ten days prior to the beginning of the quarter.

For the convenience of undergraduates who wish to enroll in person at computer terminals, an appointment to enroll is printed on the tentative study list. This appointment should be kept only if the student wishes to make changes in enrollment. Students who did not participate in the by mail process and those eligible for in person processing will receive an enrollment appointment time as a part of the fee payment process.

All graduate students enroll by filing the Study List Card with their major department or school after it has been approved by their adviser. For filing dates refer to the Registrar's publications.

## THE STUDY LIST

A student's Official Study List is the list of courses in which he is officially enrolled at the end of the second week of classes, at which time a copy is mailed to him at his college address. This is the official record of work to be undertaken during the quarter indicated. The student is responsible for every course listed, and can receive no credit for courses not entered on it. Unapproved withdrawal from or neglect of a course entered on the study list will result in a failing grade.

Changes in the Official Study List require approval of the Dean of the student's college, school or Graduate Division. Forms for this purpose may be obtained at the office of the student's dean or department. The approved petition must be filed at the Office of the Registrar. There is a fee for such changes. See Calendar for last day to add or drop courses.

## Study-List Limits

The minimal program for an undergraduate student to be considered full-time is three courses (12 units). Exception to this regulation requires the approval of the dean of a student's college or school. Senate regulations limit the undergraduate student to two courses (8 units) of credit per quarter in special independent study courses. The total number of units allowed in such courses for a letter grade is 16. A separate petition is required for each enrollment in an independent study course.

The normal program for an undergraduate student is four courses. However, a student on scholastic probation, except in the School of Engineering and Applied Science, is limited to a program of three courses each quarter.

For students in good academic standing, undergraduate study lists may be presented as follows:

School of Engineering and Applied Science: within the limits prescribed in each individual case by the Dean or his representative.

College of Fine Arts: three or four courses per quarter without special permission. After his/her first quarter, a student may petition to carry a program of not more than five courses if in the preceding term he/she attained at least a B average in a program of at least three courses included in the grade-point average.

College of Letters and Science: three or four courses for students in the first quarter of the freshman year. All other students who have a C average or better and are not on probation may carry four courses without petition. After the first quarter, a student may petition to enroll in as many as five courses if in the preceding term he/she attained at least a B average in a program of at least three courses included in the grade-point average. First-quarter transfer students from any other campus of the University may carry excess study lists on the same basis as students who have completed one or more terms on the Los Angeles campus.

School of Nursing: three courses. A student must petition to enroll in more courses.

Any course, such as Mathematics M or Music 4, which does not give full credit toward a degree, nevertheless displaces one course from a student's allowable program. These courses are identified in the *Schedule of Classes*. All military science, and all repeated courses are to be counted in study-list limits.

Regulations concerning study-list limits for graduate students will be found under Graduate Division Requirements.

## Concurrent Enrollment

Concurrent enrollment in resident courses and in courses in University Extension or another institution is permitted only when the entire program of the student has received the approval of the proper dean or study-list officer and has been filed with the Registrar before the work is undertaken.

## Credit by Examination

A student who has completed a minimum of 12 units of work at this University and is in good standing may petition to receive credit by examination in a course regularly offered by the University. He must satisfy conditions stated on the petition and make arrangements in advance both with the instructor who will give the examination and with

the dean of his college or school, from whom the required petition form may be secured. There is a fee for such a petition.

The results of such examinations are entered upon the student's record in the same manner as are regular courses and corresponding grade points are assigned.

## GRADES AND SCHOLARSHIP REQUIREMENTS

Grades in courses (graduate or undergraduate) are defined as follows: A, excellent; B, good; C, fair; D, poor (may not be assigned to graduate students); F, failure; IP, in progress; and I, undetermined (work of passing quality but incomplete). The designations P, passed, and NP, not passed, are used in reporting grades for undergraduate students taking courses on a passed/not passed basis. Likewise S and U respectively are used in reporting satisfactory and unsatisfactory work by graduate students taking courses on this basis. For graduate students, the grades A, B and C may be modified by a plus (+) or minus (-) notation. For undergraduate students, the grades B C and D may be modified by a plus (+) notation; the grades A, B, C and D by a minus (-) notation.

Grades A, B, C, D (including plus or minus notations where authorized), F, P, NP, S, U are final when filed by an instructor in his end-of-quarter course report, except for the correction of a clerical or procedural error. No term grade except incomplete may be revised by reexamination.

Repetition of courses is subject to the policies of the departments offering the courses and the following conditions: (1) A student may repeat only those courses in which he/she received a grade D+, D-, F, NP, or U; however, the appropriate dean may authorize repetition of courses graded Incomplete. (2) Repetition of a course more than once requires approval by the appropriate dean in all instances. (3) Degree credit for a course will be given only once, but the grade assigned at each enrollment shall be permanently recorded. Courses in which a grade of D+, D-, or F has been earned may not be repeated on a passed/not passed basis.

The grade Incomplete may be assigned when a student's work is of passing quality but is incomplete and the student has filed with the instructor a Request for Granting of Incomplete Grade. The student must also petition to complete the work in a way authorized by the instructor (fee: \$5). Appropriate grade points and units will be assigned upon such completion. If the Incomplete grade was assigned Fall Quarter 1972 or thereafter and the work is not completed by the end of the next quarter the student is in residence, the grade I will automatically be lapsed to a grade of F, NP or U as appropriate.

## Courses Taken Passed/Not Passed

An undergraduate student may take courses on a passed/not passed basis subject to the following regulations:

(A) Except as provided in (C), (D), AND (E) below, a student in good standing may enroll in one course each quarter on a passed/not passed basis. Courses thus passed shall be counted in satisfaction of degree requirements.

(B) A grade of passed shall be awarded only for work which would otherwise receive a grade of "C" or better.

(C) A student who has received two "not passed" grades shall be excluded from enrolling in a course on a passed/not passed basis for the next term in residence.

(D) A department or school may designate any course or courses as ineligible for election by its majors on a passed/not passed basis, and may at its option require a student who has received a "passed" in such a course before changing his major to repeat the course for a letter grade.

(E) A student who has not elected the passed/not passed option in a preceding quarter may take two courses passed/not passed.

(F) With the permission of the dean of a student's college or school he/she may change his enrollment in a particular course from the passed/not passed basis to the regular letter grade basis at any time up to the final date for dropping the course.

## GRADE POINTS

For purposes of computing scholarship standing, a full course is counted as equivalent to 4 quarter units. Partial or multiple courses are counted proportionally.

Grade points per unit are assigned as follows: A - 4, B - 3, C - 2, D - 1, F - none and, prior to Fall Quarter 1972, I - none. The plus (+) notation adds 0.3 grade points per unit; the minus (-) notation subtracts 0.3 grade points per unit. Beginning Fall Quarter 1972, units attempted and grade points for work graded I (Incomplete) are excluded from grade-point computations for the quarter in which the I is assigned. Upon removal of grade I, units and grade points are included in subsequent accumulated grade-point summaries. An I assigned Fall Quarter 1972 or thereafter, but not removed by the end of the next quarter the student is in residence, will be lapsed to F, NP or U and so included in subsequent unit and grade-point summaries.

The grade-point average is determined by dividing the number of grade points earned by the number of units attempted. A 2.0 (C) grade-point average on all work undertaken in the University - all campuses - is required for satisfactory standing as an undergraduate; a 3.0 (B) average for a graduate.

Courses taken on a passed/not passed or satisfactory/unsatisfactory basis are disregarded in determining a student's grade point average. In computing the grade-point average of an undergraduate who repeats courses in which grades of D+, D-, or F were assigned, only the most recently earned grade and grade points shall be used for the first 16 units repeated. In the case of further repetitions, the grade-point average shall be based on all grades assigned and total units attempted. Courses in which a grade of D+, D-, or F has been earned may not be repeated on a passed/not passed basis.

## MINIMUM SCHOLARSHIP REQUIREMENTS

Students in all undergraduate colleges and schools are expected to maintain a grade-point average of 2.0 (C average) on all work undertaken in the University - all campuses. Failure to maintain this level normally results in probation. The following provisions apply to all undergraduate students at Los Angeles.

### Probation

A student shall be placed on probation if, while in good standing, he/she fails to maintain at least a grade "C" average for all courses included in the grade-point average in a quarter.

The probationary status of the student can be ended only at the close of a regular quarter and then only if a C average has been attained both on the term's work and on all work taken in the University of California - all campuses.

### Dismissal

A student shall be subject to dismissal from the University (a) if his/her grade-point average falls below 1.5 for any quarter, or (b) if after two quarters on probation he/she has not achieved a grade-point average of 2.0 (C average) for all courses undertaken in the University, or (c) if while on probation his/her grade-point average for work undertaken during any quarter falls below 2.0 (a C average).

Grade-point averages shall be computed on the basis of all courses undertaken in the University (all campuses), including courses graded I (Incomplete), prior to Fall Quarter, 1972, but not including noncredit courses, courses taken in University Extension, or courses taken on a passed/not passed basis.

A student who fails to meet minimum scholarship requirements is subject to such supervision as the faculty of his/her college or school may determine. The faculty or its designated representative may dismiss a student subject to dismissal; may suspend his/her dismissal, continuing him/her on probation; or may readmit on probation a dismissed student.

### Minimum Progress

Undergraduate students in the College of Fine Arts and the College of Letters and Science are expected to complete satisfactorily at least 36 units during three consecutive quarters in residence. A student shall be placed on proba-

tion if he/she fails to pass at least 36 units over three consecutive regular quarters in residence. A student shall be subject to dismissal if he/she fails to pass at least 32 units in three consecutive regular quarters in residence.

## In Graduate Status

Scholarship regulations for graduate students will be found in the STANDARDS AND PROCEDURES FOR GRADUATE STUDY AT UCLA.

## Final Examinations

If a final examination is one of the regular requirements in a course, there can be no individual exemptions. Final written examinations shall not exceed three hours duration and shall be given only at the times and places established by departmental chairmen and the Registrar.

Re-examinations are permitted only for the purpose of removing the grade I.

## Degree Requirements

In working toward a degree, the student should keep in mind the various levels on which he/she is to satisfy requirements. College or school and department requirements are discussed fully later in the sections *Colleges and Schools* and *Courses of Instruction*. The following are general University requirements for the bachelor's degree.

## COURSE CREDIT

The grades A, A-, B+, B, B-, C+, C and P in acceptable courses denote satisfactory progress toward a bachelor's degree. The grades C-, D+, D and D- give unit credit toward the degree, but must be offset by grades of C+ or better in other courses. The grades A+, A, A-, B+, B, and S in acceptable courses denote satisfactory progress toward a higher degree. The grades B-, C+, C, C- give unit credit toward the degree but must be offset by grades of B+ or better in other courses.

## SCHOLARSHIP

In order to qualify for a bachelor's degree\* the student must earn at least a C (2.0) average on all courses undertaken in the University of California - all campuses.

\*Candidates for teaching credentials must also maintain a C average in supervised teaching.

## SUBJECT A: ENGLISH COMPOSITION

Every undergraduate entrant must demonstrate an acceptable ability in English composition. This requirement may be met by

1. Achieving a grade of 5, 4, or 3 in the College Entrance Examination Board (CEEB) Advanced Placement Examination in English, or
2. Achieving a satisfactory score (600 or better) in the CEEB Achievement Test in English Composition, or
3. Being exempted from the requirement by the Office of Admissions because of completion at another institution of an acceptable college-level course in English composition, or
4. Passing a Subject A Placement Test offered only to freshmen who have scored between 450 and 599 in the CEEB Achievement Test in English Composition and to transfer students entering the University with 12 or more quarter units of college credit.

Any student not meeting the requirement in one of the ways described above must, during his first quarter of residence in the University, enroll in a course of instruction known as the *Course in Subject A*. Should any student fail in the course in Subject A he will be required to repeat the course in the next succeeding quarter of his residence in the University.

No student will be granted a bachelor's degree until he has satisfied the requirement of Subject A.

In respect to grading, conditions, and failure, the course in Subject A is governed by the same rules as other University courses.

Students from other countries whose native language is not English will be instructed by the Office of Admissions to take the Entrance Examination in English as a Second Language. Those who have been authorized to take this

special examination may meet the English as a Second Language requirement by passing the examination or by satisfactorily completing the advanced course (English 33C) in English as a Second Language. Students who are directed by the Office of Admissions into the English as a Second Language program are not required to meet the regular Subject A requirement.

## AMERICAN HISTORY AND INSTITUTIONS

Candidates for a bachelor's degree must satisfy the "Requirement in American History and Institutions" by demonstrating a knowledge of American History and of the principles of American institutions under the federal and state constitutions. This requirement may be met by one of the following methods:

1. By the completion of any of the following courses with a grade of C or better or a grade of pass: Economics 10, 183; English 80, 85, 104, 115, 170, 171, 172, 173, 174; Geography 136; History 6A, 6B, 6C, 7A, 7B, 170, 171A, 171B, 171C, 171D, 171E, 172A, 172B, 173A, 173B, 174A, 174B, 174C, 175A, 175B, 176A, 176B, 177A, 177B, 177C, 178A, 178B, 179A, 179B, 180A, 180B, 180D, 180E, 180F, 180G, 180H, 180J, 180K, 181, 182, 183, 184, 185A, 185B, 186A, 186B, 187, 188, 189A, 189B; Political Science 1, 114A, 114B, 143, 144, 145, 171, 172A, 172B, 180, 186.

Equivalent courses completed in the University Extension may be used to fulfill the requirement. Equivalent courses taken at other collegiate institutions and accepted by the Board of Admissions may also be used to fulfill the requirement.

2. By presentation of a certificate of satisfaction of the present California requirement as administered in another collegiate institution within the State.

3. Satisfactory completion with an average grade of "B" or better, of a year's course in high school of American history or American government or a one-year combination of the two effective with students entering UCLA Spring 1972 or later.

Candidates for a teaching credential, but not for a degree, must take one of the following courses: History 179A or 179B, or Political Science 172A or 172B.

An alien attending the University on an "F-1 or J-1" student visa may, by showing proof of his temporary residence in the United States, petition for exemption from this State requirement.

Further information regarding the requirement may be obtained from Room 6248, Ralph Bunche Hall.

## SENIOR RESIDENCE

Of the last 45 units completed by a student for a bachelor's degree 35 must be earned in residence in the college or school of the University of California in which the degree is to be taken. When translated to the course structure at UCLA this normally implies that nine of the last 11 courses a student offers for a bachelor's degree must be earned in the college or school in which the degree is to be taken. Not more than 18 of the 35 units may be completed in Summer Session on the campus of residence.

## CANDIDACY FOR A DEGREE

A student should notify the Registrar at least three quarters before he/she expects to receive the bachelor's degree by completing and filing the Degree Candidate (DC) Card and the Student Data Card in the quarterly "registration packet". The completed DC and Student Data cards must be filed (even though one or more DC cards were filed at earlier registrations) no later than the tenth day of classes of the quarter in which the student expects to complete work for the degree.

DC cards accepted after the twentieth day of classes are subject to a late fee.

## Change of College or Major

A change of college (or major) by an undergraduate student requires the approval of the college (or department) to which admission is sought. Applications are made by petition, which may be obtained from the college or school office. No student is permitted to change his/her major after the opening of the last quarter of his/her senior year.

A graduate also makes applications for a change in major by petition, which may be obtained at the Graduate Division, 1225 Murphy Hall.

## WITHDRAWAL FROM THE UNIVERSITY

Prior to the first day of classes, a student may cancel registration by submitting a written notice, together with the current Registration Card and Student Identification Card, to the Registrar's Office, 1134 Murphy Hall.

A student withdrawing from the University within the course of a quarter must file with the Registrar's Office an acceptable Notice of Withdrawal. Failure to do so will result in nonpassing grades in all courses, thus jeopardizing his/her eligibility to re-enter the University of California or his/her admission by transfer to another institution. Forms containing complete instructions are issued at the office of the dean of the student's college, school or Graduate Division. The completed form must be filed at the Registrar's Office Information Window A after necessary clearances are obtained. Current Registration Card, UCLA Student Identification Card, and tuition and registration fee receipts must be turned in with the completed Notice of Withdrawal. Failure to attend classes, neglect of courses, or stopping payment on checks tendered for registration do not constitute notice of withdrawal.

A student who withdraws within the course of a quarter must file an Application for Readmission (see General Regulations) for the quarter in which he/she proposes to return to the University provided a quarter — three months, including the period between the Spring and Fall quarters — has intervened since the withdrawal. Such application is necessary in order that the Registrar may be prepared to register the student. The deadlines for filing applications for readmission will be found in the Calendar of this catalog.

## REFUND PROCEDURES†

†The Schedule of Refunds refers to Calendar days, beginning with the first day of instruction (Day 1). 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 is the date the student files his official notice of withdrawal with the University, and it is presumed that no University services will be provided to the student after that date.

### New Undergraduate Students

*Prior to Day 1.* Registration Fee paid is refunded except for the \$50 Acceptance of Admission Fee, and other fees paid are refunded in full.

*Day 1 and after.* The \$50 Acceptance of Admission Fee is withheld from the Registration Fee, and the Schedule of Refunds is applied to the balance of fees assessed.

### All Continuing and Readmitted Students and New Graduate Students (Except Medical and Dentistry)

There is a service charge of \$10.00 for cancellation of registration or withdrawal before the first day of instruction. Beginning with the first day of instruction the Schedule of Refunds is applied to the total of fees assessed.

### Medical and Dentistry Students\*

Prior to first day of instruction, fees paid are refunded in full, except for the Deposit.

Day 1 and after the Deposit is withheld from fees assessed and the Schedule of Refunds is applied to the balance of fees assessed.

Continuing students, the Schedule of Refunds is applied to the total of fees assessed.

## SCHEDULE OF REFUNDS\*

1-14 days	15-21 days	22-28 days	29-35 days	36 days and over
80%	60%	40%	20%	0%

\*If no credit for courses is received, a full refund of the Registration Fee of the regular session will be granted to all students entering the armed forces prior to the sixth week of the quarter. No refund thereafter.

## Transcript of Record

Upon formal application to the Registrar a student may have issued on his/her behalf transcripts of his record of work taken at UCLA in either regular or summer sessions. A fee\* of \$2 is charged for the first copy (and \$1 for each additional copy ordered at the same time) of each transcript, undergraduate, graduate, or Summer Session. Transcripts required for the intercampus transfer of undergraduate students within the University are provided without charge.

\*Fees are subject to change without notice.

## STUDENT CONDUCT AND DISCIPLINE

A student enrolled in the University assumes an obligation to conduct himself 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 Dean of Students, 2224 Murphy Hall and the Campus Programs and Activities Office, 161 Kerckhoff Hall.

Particular attention is called to the booklets *UNIVERSITY OF CALIFORNIA POLICIES RELATING TO STUDENTS AND STUDENT ORGANIZATIONS, USE OF UNIVERSITY FACILITIES, AND NON-DISCRIMINATION AND UCLA ACTIVITY GUIDELINES*, and to the standards of conduct set forth therein.

The **Dean of Students Office** coordinates student discipline and provides broad counseling of student educational needs and problems. It is responsible for Panhellenic and Interfraternity matters. The Dean of Students also supervises Special Services/Veteran Affairs, Student Legal Services, and the Center for Health Sciences outpost for Student and Campus Affairs.

## COMMENCEMENT

Commencement exercises honoring candidates for undergraduate and graduate degrees are held in mid-June — either one or two days following the end of final examinations. During the early part of Commencement Day, individual departments, schools, and colleges hold small, informal gatherings at which prizes and honors are awarded and students and their families meet faculty members. In mid-afternoon, all students, faculty, parents, and friends gather in Drake Track and Field Stadium for formal exercises and the conferring of degrees. This academic pageant is a colorful affair — planned by the Committee on Public Ceremonies — featuring music, degree banners, student speakers, and the wearing of gold fourrageres by undergraduate candidates who have achieved high academic distinction (upper 15 percent of the seniors graduating each quarter).

# Expenses, Financial Aids, Housing

## GENERAL EXPENSES AND FEES\*

\*All fees are subject to change without notice. Payment of registration fees is part of registration. Other fees are payable at Cashier's Office Murphy Hall, which is open from 8:30 a.m. to 4 p.m. daily.

The question of expense while attending the University is of importance to every student. It is difficult, however, to

give specific information about yearly expenditures. In a student body of some thirty thousand members there are so many different tastes, as well as such a wide range of financial resources, that each student must determine his budget in keeping with his own needs and financial condition. It is possible to live simply, and to participate moderately in the life of the student community, on a modest budget. The best help the University authorities can offer the student in planning his budget is to inform him of certain definite expense items, and acquaint him with others for which he will in all probability have to provide.

An estimated budget for the academic year is given under Principal Items of Expense.

Fees and deposits are payable preferably in cash. If a check is presented the face amount should not exceed all the fees to be paid and must be made payable to The Regents of the University of California.

## Fees Assessed All Regular Students\*

\*Extended University participants may be eligible for reduced fees.

A Registration Fee of \$124 and the Student Union Fee of \$4 must be paid by all undergraduate and graduate students when registering each quarter. In addition to the above fees all undergraduate students must pay each quarter an Education Fee of \$100 and an Associated Students Fee of \$6, while all graduate students must pay each quarter an Education Fee of \$120 and a Graduate Students Association Fee of \$2. The Registration Fee covers certain expenses of students for counseling service, for athletic and gymnasium facilities and equipment, for lockers\*\* and washroom, for registration and graduation, for such consultation, medical advice, and hospital care or dispensary treatment as can be furnished on the campus by the Student Health Service, and for all laboratory and course fees. Membership in the Associated Students or Graduate Students Association (the Associated Students section) is covered by the Associated Student and Graduate Students Association fees respectively. No part of these fees is remitted to those students who may not desire to make use of any or all of these privileges. If a student withdraws from the University within the first five weeks of the quarter, a part of these fees will be refunded. Any refund for a withdrawal will be based on the date the completed notice for withdrawal is actually submitted. No claim for refund will be considered unless presented within the fiscal year to which the claim is applicable.

\*\*Lockers are issued, as long as they are available, to registered students who have purchased standard locks. Locks are sold at \$1.25 each, and may be used as long as desired or may be transferred by the purchaser to another student.

## Nonresident Tuition Fee

Students who have not been residents of California for more than one year immediately prior to the residence determination date for each term in which they propose to attend the University are charged, along with other fees, a nonresident tuition fee of \$635 for the quarter or \$952.50 for the semester. The residence determination date is the day instruction begins at the last of the University of California campuses to open for the quarter, and for schools on the semester system, the day instruction begins for the semester.

## GENERAL

California residence is established by an adult who has relinquished his or her prior residence and is physically present within the state with the intent to make California the permanent home. California residence must be established more than one year prior to the term for which residence classification is requested. Indicia of California residence include, but are not limited to: registering and voting in California elections; designating California as the permanent address on all school and employment records, including military records if one is in the military service; obtaining a California I.D. card or drivers license; obtaining California vehicle registration; paying California income taxes as a resident; establishing an abode where one's permanent belongings are kept; licensing for professional practice in California, etc. Conduct inconsistent with the claim of California residence includes, but is not necessarily limited to: maintaining voter registration and voting in person or by absentee in another state; obtaining

a divorce in another state; attending an out-of-state institution as a resident; obtaining a loan requiring residence in another state; maintaining out-of-state drivers license and vehicle registration, etc.

As a general rule, students seeking resident classification must perform all acts of intent which are applicable to their particular circumstance within the one year durational period. In addition, a substantial number of these acts must be performed when the student first comes to California or very shortly thereafter. If they are not, the durational period for reclassification is extended until both presence and intent have been demonstrated for one year.

A student who is within California for educational purposes only does not gain the status of resident regardless of the length of his or her stay in California.

The residence of the parent with whom an unmarried minor (under age 18) child maintains his or her place of abode is the residence of the unmarried minor child. When the minor lives with neither parent his or her residence is that of the parent with whom he or she maintained his or her last place of abode. The minor may establish his or her residence when both parents are deceased and a legal guardian has not been appointed. The residence of an unmarried minor who has a parent living cannot be changed by his or her own act, by the appointment of a legal guardian, or by relinquishment of a parent's right of control.

A man or woman establishes his or her residence. A woman's residence shall not be derivative from that of her husband, or vice versa.

## EXCEPTIONS

1. A student who remains in this state after his or her parent, who was theretofore domiciled in California for at least one year prior to leaving and has, during the student's minority and within one year immediately prior to the residence determination date, established residence elsewhere, shall be entitled to resident classification until the student has attained the age of majority and has resided in the state the minimum time necessary to become a resident so long as, once enrolled, he or she maintains continuous attendance at an institution.

2. Nonresident students who are minors or 18 years of age and can evidence that they have been totally self-supporting through employment and actually present within California for the entire year immediately prior to the residence determination date and have evidenced the intent to make California their permanent home may be eligible for resident status.

3. A student shall be entitled to resident classification if immediately prior to the residence determination date he or she has lived with and been under the continuous direct care and control of any adult or adults other than a parent for not less than two years, provided that the adult or adults having such control have been California residents during the year immediately prior to the residence determination date. This exception continues until the student has attained the age of majority and has resided in the state the minimum time necessary to become a resident student, so long as continuous attendance is maintained at an institution.

4. Exemption from payment of the nonresident tuition fee is available to the natural or adopted child, stepchild or spouse who is a dependent of a member of the United States military stationed in California on active duty. Such resident classification may be maintained until the student has resided in California the minimum time necessary to become a resident. If a student is enrolled in an institution and the member of the military is transferred on military orders to a place outside the United States immediately after having been on active duty in California, the student is entitled to retain resident classification under conditions set forth above.

5. A student who is a member of the United States military stationed in California on active duty, except a member of the military assigned for educational purposes to a state-supported institution of higher education, shall be entitled to resident classification until he or she has resided in the state the minimum time necessary to become a student.

6. A student who is an adult alien is entitled to resident classification if the student has been lawfully admitted to the United States for permanent residence in accordance with all applicable provisions of the laws of the United

States and has thereafter established and maintained residence in California for more than one year immediately prior to the residence determination date.

A student who is an adult alien shall be entitled to resident classification if he is a refugee who has been granted parolee, conditional entrant or indefinite voluntary departure status in accordance with all applicable laws of the United States; provided that he has lived in the state for one year immediately prior to the residence determination date. (Effective until June 30, 1980.)

7. A student who is a minor alien shall be entitled to resident classification if the student and the parent from whom residence is derived have been lawfully admitted to the United States for permanent residence, provided that the parent has had residence in California for more than one year after acquiring a permanent resident visa prior to the residence determination date for the term.

A student who is a minor alien shall be entitled to resident classification if he is a refugee who has been granted parolee, conditional entrant or indefinite voluntary departure status in accordance with all applicable laws of the United States; provided that he has lived in this state for one year immediately prior to the residence determination date. (Effective until June 30, 1980.)

8. Children of deceased public law enforcement or fire suppression employees, who were California residents and who were killed in the course of law enforcement or fire suppression duties, may be entitled to resident status.

New and returning students are required to complete a Statement of Legal Residence. The student's status is determined by the Attorney in Residence Matters' Deputy who is located in the Registrar's Office.

The student is cautioned that this summation is not a complete explanation of the law regarding residence. The student should also note that changes may have been made in the rate of nonresident tuition and the residence requirements between the time this catalog statement is published and the relevant residence determination date. Regulations have been adopted by The Regents, a copy of which is available for inspection in the Registrar's Office of the campus.

All students classified incorrectly as residents are subject to reclassification and to payment of all nonresident fees not paid. If incorrect classification results from false or concealed facts by the student, the student also is subject to University discipline. Resident students who become nonresidents must immediately notify the Attorney in Residence Matters' Deputy.

Inquiries from prospective students regarding residence requirements for tuition purposes should be directed to the Attorney in Residence Matters, 590 University Hall, 2200 University Avenue, Berkeley, California 94720. No other University personnel are authorized to supply information relative to residence requirements for tuition purposes. Any student, following a final decision on residence classification by the Residence Deputy, may make written appeal to the Attorney in Residence Matters at the above address within 120 days after notification of the final decision by the Residence Deputy.

## PAYMENT OF FEES ON BEHALF OF STUDENT

The University assumes no contractual or other obligation to any third party who pays any University fees on behalf of a student, unless the University has expressly agreed thereto in writing. In this regard, no request for a refund of fees by such third party will be honored, and if the student withdraws from the University with a fee refund due, such refund will be paid to the student.

## FOR REDUCED PROGRAMS

Fee assessment is based on total units enrolled as of the 15th day of classes.

For graduate students the non-resident tuition is \$635 per quarter regardless of the number of courses undertaken. There is no reduction in Registration, Educational, Student Union, or Graduate Students Association fees for less than full-time programs.

For undergraduate student with college/school approval for enrollment in less than 12 units, the non-resident tuition fee is \$212 per course (\$53 per unit). File a "Request for

Fee Reduction" with academic dean's office by tenth day of classes for the applicable quarter. Refunds for courses dropped from the Official Study List are made according to the Schedule of Refunds.

Certain qualified undergraduate students, when properly approved by the dean of their college/school for enrollment in less than 9 units, may be eligible for a \$50 reduction in their Educational Fee. The dean's verification and approval of the "Request for Fee Reduction" must be secured by the tenth day of instruction. Except for those qualified and approved part-time students, there is no reduction in the Registration, Educational, Student Union or ASUCLA fees.

**Other Fees**

Application fee, \$20. This nonrefundable fee is charged every undergraduate applicant for admission, readmission, or intercampus transfer to the University and every graduate applicant for admission, leave of absence, and readmission to the University.

Acceptance of admission fee, \$50. For undergraduates only. The fee is non-refundable, but is applied toward the University Registration Fee.

Returned check collection, \$5.

Late registration, \$25. When permitted.

Duplicate registration and/or other cards in registration packet, \$3 each order.

Change in Official Study list after the tenth day of instruction, \$3 each petition, when dropping, substituting, or adding a course within published period.

Late filing of study list (Study List card), \$10.

Removal of grade E or I, \$5 each petition.

Reinstatement fee, \$10. Reinstatement after a status lapsed.

Late filing of Degree Candidate card for the bachelor's degree, \$3.

Late payment of fees, \$10.

Candidacy for Ph.D., Ed.D., or Dr.Ph.H., \$25.

Credit by Examination, \$5 per petition.

Duplicate diploma, \$23.50. Replacement cost upon presentation of evidence original is lost or destroyed.

Late application for teaching assignment, \$1.

Late return of athletic supplies,\*\* \$1 for each 24 hours until full purchase price of article is reached.

\*\*Supplies or equipment not returned before the close of the fiscal year must be paid for in full; return after that date is not permitted.

Failure to empty locker within specified time, \$5.

Transcript of Record, \$2 for the first copy and \$1 for each additional copy ordered at the same time.

Master's thesis and doctoral dissertation filing fee, \$62. For the graduate student who is not registered and who has completed all formal requirements for the degree except the filing of a thesis or dissertation and/or the completion of a formal final examination.

**Principal Items of Expense**

Those students or parents who wish to estimate the typical costs for a student per quarter, or per year, are referred to the section "Determination of Financial Aid Eligibility" on the following page. These figures are precise for such costs as fees and memberships, and are estimates for items such as books, transportation, clothing, etc.

Room and board costs are calculated on the basis of the University's residence hall charges and may vary substantially with other modes of living.

**FINANCIAL AID FOR STUDENTS**

**GENERAL INFORMATION**

The Financial Aid Office is in Room A129 Murphy Hall, University of California, 405 Hilgard Avenue, Los Angeles, California 90024, phone (213) 825-9097. The department's purpose is to insure that no student is denied a university education for lack of funds. The assistance available for students comes from many sources; Federal and State

governments, the University, the Alumni Association, community organizations, private individuals, and corporations. It is disbursed in many forms; scholarships, grants (gift money), low interest loans, and salaries (work-study employment).

**APPLICATION PROCEDURES AND DEADLINES**

Prospective undergraduate students will find descriptive material and instructions for filing for financial aid in the 1978-79 Undergraduate Admissions and Financial Aid Packet. Continuing students may obtain the UCLA Undergraduate Scholarship and Financial Aid Packet at the Financial Aid Office after December 1, 1977.

The University of California requires all eligible undergraduates to also apply for a California Student Aid Commission Cal Grant Award and a Federal Basic Educational Opportunity Grant.

Graduate students applying for UCLA need based financial aid are required to file a 1978-79 University of California Application for Graduate Financial Aid and a Financial Aid Form.

Continuing students from foreign countries may obtain a 1978-79 Financial Aid Application for International Students at the Office of International Students and Scholars, 297 Dodd Hall, Los Angeles, CA 90024. No financial aid is awarded to foreign students in their first year of attendance at UCLA.

The 1978-79 deadline date for all financial aid applications for undergraduates, graduates and foreign students is FEBRUARY 1, 1978. The Financial Aid Office will accept applications after the deadline date, but these applications will be classified as LATE. Late applications for financial aid will be considered ONLY after all complete on-time applications have been processed and ONLY if funds are still available.

Graduate students are encouraged to apply for fellowships, traineeships, and assistantships. Those interested should contact either their department or Graduate Division, Fellowship and Assistantship Section, 1228 Murphy Hall, University of California, 405 Hilgard Avenue, Los Angeles, California 90024.

**DETERMINATION OF FINANCIAL AID ELIGIBILITY**

Financial aid awards are based on 'need', which is defined as the difference between allowable school-related expenses (budget) and the contribution expected from the family. Budgets vary depending on circumstances. The following single-student residence hall budget that is being used in 1977-78 is provided as a guide to applicants. Budgets are revised yearly to reflect changes in the cost of living.

UCLA RESIDENCE HALL BUDGET*	Undergraduates	Graduates
Registration Fee	\$ 372.00	\$ 372.00
Educational Fee	300.00	360.00
Student Union Fee	12.00	12.00
ASUCLA Membership Fee	18.00	-
Graduate Student's Association Membership Fee	-	6.00
Books and Supplies	225.00	277.00
Residence Hall Room and Board (19 meal plan)	1,533.00	1,533.00
Additional expense of holiday in residence hall, social fee and extra meals	307.00	307.00
Personal (Clothing, cleaning, recess expense, recreation, etc.)	512.00	512.00
Health Insurance (UCLA)	100.00	100.00
Medical	75.00	75.00
Local Bus Transportation	<u>\$ 126.00</u>	<u>\$ 126.00</u>
Total Budget for California Resident	\$3,580.00	\$3,680.00
Non-resident Tuition	<u>1,905.00</u>	<u>1,905.00</u>
Total Budget for Non-resident of California	\$5,485.00	\$5,585.00

\*We estimate in 1977-1978 that living off campus will increase this budget by \$390.00.

An underlying principle in the determination of financial need is that parents have an obligation to finance the education of their children to the extent that they are able. The expected parental contribution is determined from the information supplied in the Financial Aid Form (FAF). The amount parents are expected to pay is derived from the interaction of income, asset holdings, family size, standard required expenditures, and unusual expenses.

A standard amount of 'self-help' is expected from students, as a result of earnings, in addition to the parents' contribution and any other resources students may have, such as savings, spouse's earnings, benefits from other Federal or State agencies (social security, veterans', welfare, etc.), graduate division assistance, and outside agency scholarships or grants. Self-help varies with the student's year in school, family financial strength, and dependency status. The family contribution that is subtracted from school-related expenses to arrive at 'need' is the sum of the parents' contribution, and the student's resources and self-help expectation.

The desire of students or parents to claim financial independence for the student does not necessarily release the parents from the responsibility of providing financial assistance to meet the student's college expenses. Any student who claims financial independence must fulfill the following California and or Federal requirements.

To qualify as an independent student under *State of California* guidelines for the awarding of California Student Aid Commission Cal Grants A and B, University of California need-based grant funds, and University of California need based scholarships, an applicant must meet one of the following criteria:

1. Have been determined to be independent by an educational institution prior to June 30, 1977.
2. Have not lived with either parent or received financial assistance exceeding \$600 annually from either parent for three consecutive years prior to the academic period for which aid is requested, and have not been claimed as an income tax exemption, for the same period of time by anyone other than self or spouse.
3. Have been a ward of the court.
4. Be an orphan and not claimed as a tax exemption during the current year by anyone other than self or spouse.
5. Have been part of an extremely adverse home situation, documented by responsible community personnel, and without family assistance for the preceding 12 months.

To qualify as an independent student under *Federal* standards for the award of other aid, an applicant:

1. May not be claimed as an exemption on the income tax return of his or her parents in the calendar years 1977, 1978, or 1979, and
2. May not live with his or her parents for more than two consecutive weeks in calendar years 1977, 1978, or 1979; and
3. May not receive assistance of \$600 per year or more from his or her parents in 1977, 1978, or 1979.

The independent student must also demonstrate that he or she has been self-supporting during the calendar year prior to the academic year in which aid is accepted.

**TYPES OF AID**

Described below are various financial aid programs administered or coordinated by the Financial Aid Office. Students may be eligible for several types of financial aid and a financial aid "package" is usually offered honoring the student's preference whenever possible. The forms of aid coordinated by UCLA but awarded by other agencies are: Basic Educational Opportunity Grant (BEOG), California Student Aid Commission Cal Grants A and B, Federal Insured Student Loan (FISL).

**Basic Educational Opportunity Grant**

Undergraduate students who are U.S. citizens, permanent residents, or Vietnamese or Cambodian refugees are eligible to apply for the Federal Basic Educational Opportunity Grant. The award amounts for 1977-78 ranged from \$200 to \$1,400. Pending Congressional legislation may increase the maximum BEOG award for 1978-79 to \$1,600. Stu-

den's applying for UCLA need based financial aid are requested to use the Financial Aid Form as the BEOG application.

### California Student Aid Commission Cal Grant A and B

Undergraduate California residents who have not completed more than six semesters or nine quarters of college work prior to September, 1978, are eligible to apply for a Cal Grant award. The Student Aid Application for California and Cal Grant Supplements are the official applications for these programs, and may be obtained from our Financial Aid Office, high school counselors, or the California Student Aid Commission, 1410 5th Street, Sacramento, CA 95814. The Student Aid Application for California and Supplements must be filed no later than February 1, 1978.

Cal Grant A awards range from \$300 to \$700 to be applied towards education and registration fees, and are based on need and academic achievement. They are renewable each year.

Cal Grant B awards range from \$300 to \$1,800 and are renewable annually. The state sends renewal applications to continuing Cal Grant recipients.

### Federal Insured Student Loan

Federal Insured Student Loans are long-term loans made by banks, savings and loan institutions, and credit unions.

A special application is required and may be obtained at the Financial Aid Office. These loans are available to graduate and undergraduate students who are citizens or permanent residents of the U.S. enrolled in at least a half-time program. Applications processed by the Financial Aid Office are then submitted to a lending institution by the student. Students should check with their lending institutions to determine individual policies.

Repayment of the Federal Insured Student Loan begins between 9 and 12 months after completion of, or withdrawal from school. Eligible students may receive a Federal interest subsidy so that the loan may be interest free during the time the borrower is a student and for 9 months thereafter. Students have up to 10 years to repay the loan at an interest rate of 7% per year.

Minimum repayment is \$360 a year. Repayment is waived up to three years while the borrower is serving in the armed forces, Peace Corps, or VISTA, or during any period of full-time study. Undergraduate students may borrow a total of \$7,500, and graduate students \$15,000 including the amount borrowed as an undergraduate. It takes approximately eight to ten weeks to process a Federal Insured Student Loan.

Federal regulations of the Federal Insured Student Loan Program require that student borrowers be notified of (1) their institution's fee refund policy and (2) the percentage of its students who find employment after obtaining a degree. The University of California's Refund Procedures and Schedule will be found under Refund of Fees of this Catalog. Salary and employment information for the University of California is set forth below.

Field of Study	Degree Level of Graduates			Probable or Definite Job Commitment <sup>1</sup>
	Bachelor's	Master's	Doctorate	
Engineering	\$960-1374	\$1065-1513	\$1437-1954	85.3
Humanities	532-1018	684-1242		73.9
Life Science	587-1033			77.9
Management		1067-1579		90.3
Physical Science	811-1289		1304-1974	77.1
Social	579-1061	694-1324		74.0

<sup>1</sup>Source: A 1976 national survey of a representative group of colleges conducted by the College Placement Council, representing the 80 percent range of offers throughout the country. It should be noted that a wide variation in starting salaries exists within each discipline based on job location, type of employer, personal qualifications of the individual, and employment conditions at the time of job entry.

<sup>2</sup>Source: *The Job Market for UCLA's 1976 Graduates*. Percentages are based only upon those students who planned to work immediately after graduation.

### UNIVERSITY SCHOLARSHIPS FOR UNDERGRADUATES

All UCLA scholarship awards are made on a competitive basis, consideration being given to academic excellence, achievement, scholastic promise, and financial need. Scholarships are awarded to entering and continuing students. The terms and amount of the award vary and students are expected to *maintain* academic excellence in their course work. Eligibility for a scholarship is determined by the University Committee on Undergraduate Student Support, Honors and Prizes. See Special Campus Instructions sent to all financial aid applicants for grade-point average requirements and special eligibilities.

### Regents' Scholarships

Unlike other University scholarships, Regents' Scholarships are awarded for four years to students entering from high school and for two years to continuing students and those transferring from another university or college who will have completed their sophomore year by the end of spring quarter. Students who have achieved an outstanding academic record and show a high degree of promise are eligible for Regents' Scholarships. Regents' Scholars receive an honorarium of \$100 regardless of need. If they are eligible for financial assistance they receive a stipend to cover the difference between resources and the cost of education at UCLA.

### University, Alumni, Endowed and Agency Scholarships

Although most scholarships are open to all undergraduate applicants on a competitive basis, some are restricted by the donors to students who meet prescribed criteria. Students will be considered for all scholarships for which they prove eligible. Awards are based on grade-point average and financial need. (See Campus Instructions included in the scholarship packet for details.) Alumni Scholarships are limited to California residents who will be *freshmen in the fall quarter*. It is also possible to apply for an Alumni Honorarium only. No financial need is involved and no Financial Aid Form (FAF) is required.

### Prizes

The generosity of alumni and friends of the University provides each year for competitive prizes and awards in several fields. Selections will be made by committees in the various academic departments concerned.

### UNIVERSITY GRANTS FOR UNDERGRADUATES

Grants are gifts which do not have to be repaid and are based solely on need. Whenever guidelines and funds permit, the student's 'package' includes a grant.

### Grant-in-Aid

Grant-in-Aid provides eligible graduate and undergraduate students with financial assistance from University funds.

### Supplemental Educational Opportunity Grants

SEOG awards are Federally funded and are granted only to undergraduate students with exceptional financial need. These grants range from \$200 to \$1,500 per academic year, but can be no more than one-half the total assistance awarded and must be matched dollar for dollar with other aid.

### Educational Fee Grants

To qualify for this grant students must demonstrate need, be California residents, and undergraduates in their first year of attendance at the University. The maximum grant is \$100 per quarter for the first three consecutive quarters of attendance.

### LOANS

Federal Insured Student Loan — refer to TYPES OF AID.

The following loans may be offered as part of the student's package. They are based on need and must be repaid as described below.

### Educational Fee Loan

Students who are *residents* of the State of California qualify for a deferral-loan of the Educational Fee. Educational Fee loans may be awarded up to \$300 per year for undergraduates and up to \$360 for graduates. Every continuing resident student who is eligible for financial aid will be offered an Educational Fee Loan. Repayment, including interest of 3% per year, begins nine months after the completion of the borrower's education or withdrawal from school. The repayment period may not exceed ten years. Minimum repayment is \$33 including interest per calendar quarter. Interest will not accrue and payments need not be made while the borrower attends an accredited graduate school at least half-time or for a maximum of four years while serving in the armed forces, Peace Corps, or VISTA.

### Regents' and University Loans

These funds are provided by the Regents of the University to full-time graduate and undergraduate students. Eligible students may receive Regents' loans up to \$1,200 per academic year. Regardless of age, borrowers are required to obtain co-signers. Regents' loans are repayable in five years in quarterly payments that may begin no later than six months after graduation or withdrawal from the University. Interest at the rate of 3% per annum accrues from the date of departure from the University.

University loans are repayable in minimum quarterly installments of \$90 plus interest beginning nine months after graduation or withdrawal from school. Interest and co-signer provisions are the same as for the Regents' loan.

### National Direct Student Loan

These loans are available to all students, undergraduate or graduate, who are *citizens, permanent residents, or refugees* and who are carrying at least one-half the full-time academic workload. Undergraduate students may borrow up to \$2,500 during their first two years. The aggregate sum for all undergraduate studies may not exceed \$5,000. Graduate or professional students may borrow up to \$10,000, including all amounts borrowed as an undergraduate. Students under 18 years of age are required to obtain a co-signer. There is a nine month grace period after graduation or withdrawal from school during which no interest accrues and no payment is due. Repayment begins twelve months after the student ceases at least half-time study. Minimum repayment is \$30 per month, including interest at 3 percent per annum. The maximum repayment period is ten years. Cancellation provisions in effect under the former legislation for National Defense Student Loans made prior to July 1, 1972 will apply to those loans. Loans made subsequent to June 30, 1972 include cancellation provisions up to 100% of the total debt only for those who serve as full-time teachers of disadvantaged or handicapped students in non-profit elementary or secondary schools, as defined by Federal guidelines. Staff members in pre-school programs (Headstart) may also qualify for this cancellation benefit, depending upon their salary scale. Members of the Armed Forces may qualify for up to 50% cancellation at the rate of 12½% per annum for service in an area of hostilities. Payments and interest are deferred during a period in which a borrower attends school at least half-time or for a maximum of three years while a borrower is a member of the armed forces, the Peace Corps, or VISTA.

### Emergency Loan

A student *need not be* a financial aid recipient to apply for this loan. Registered students qualify. Small amounts may be borrowed for immediate emergency needs. The loans are repayable within 30-45 days depending on which day of the month they are issued. Applications are available at window A107, Murphy Hall, Financial Aid Office.

### Work-Study

Work-study is a need based award that allows a student to work a maximum of 20 hours a week while attending school, or 40 hours a week during vacation periods. An academic year's award may be from \$600 to \$3200. Gross earnings may not exceed the amount awarded.

### COLLEGE WORK-STUDY (FEDERAL)

A portion of the student's hourly wage is provided by the Federal government, with the employer contributing the

balance. Whenever possible, work is in the field of the student's educational objectives. Hourly pay rates comply with minimum wage laws and vary with the nature of the work and the student's experience and capabilities. Employment may be on or off campus. To be eligible a student must be a citizen or permanent resident of the U.S.

### PRESIDENT'S WORK-STUDY

This program is administered in the same manner as the Federal program described above except that funding is provided by the Regents of the University and the employer. The student is limited to on-campus jobs. Citizens, permanent residents, and *foreign students* are eligible.

### OTHER EMPLOYMENT OPPORTUNITIES

The Placement and Career Planning Center offers part-time work to students.

### ROTC FINANCIAL ASSISTANCE

Funds for students in the Reserve Officer Training Corps are not administered by the Financial Aid Office; but the subsistence allowances and scholarships available are briefly described below:

#### Army ROTC Financial Assistance

Cadets receive \$100 per month subsistence allowance during the last two years of the ROTC program (Advanced Course). There are also four-year Army ROTC Scholarships which provide financial assistance to outstanding students. (Full tuition, books and fees plus \$100 per month for the four years.) During six-week summer training period at the end of the junior year cadets receive one-half the pay of a second lieutenant. Also available are 3-year, 2-year, and 1-year scholarships for students enrolled in Army ROTC. For full information call (213) 825-7381, or write the Department of Military Sciences, Men's Gym, Room 127, Los Angeles, California 90024.

#### Navy ROTC Financial Assistance

College Program students receive \$100 per month subsistence allowance during the last two years of NROTC. Excellent opportunities exist for qualified College Program students to receive full scholarships (tuition, books, and \$100 per month) after spending at least two quarters in the NROTC Program. For details call (213) 825-9075 or write the Commanding Officer, Department of Naval Science, UCLA, 405 Hilgard Avenue, Los Angeles, California 90024.

#### Air Force ROTC Financial Assistance

Four-year scholarships are available to high school students, and two-year and three-year scholarships to college students. Scholarships include full tuition, books, and fees plus \$100 a month. All cadets receive \$100 per month during the last two years of the program and one-half the pay of a second lieutenant during the four-week summer training period or the pay of an airman basic during the six-week training period. For full information call (213) 825-1742, or contact the Department of Aerospace Studies, 251 Dodd Hall, UCLA, 405 Hilgard Avenue, Los Angeles, California 90024.

## LIVING ACCOMMODATIONS\*

\*Rates and information subject to change.

The different types of living accommodations which are available to students are: University residence halls; cooperatives; privately-owned rooms and apartments; sororities or fraternities; or the Married Student Apartments.

### University Residence Halls — (Single Students)

Four coed residence halls accommodate undergraduate students. Graduate students (21-29 years of age) are accommodated in a coed graduate hall.

Rooms (shared by two students) are furnished with studio beds, desks, draperies, and pillows. Students must furnish blankets, bed linens, bedspreads, and towels.

The residence hall rate (exclusive of recesses) is approximately \$1530 for the academic year (Fall, Winter and Spring Quarters), plus deposit and membership fee in the residence hall student association. The rate is prorated for portions of the year. Three meals are served daily except Saturdays, Sundays and University holidays when two meals are served. (Special diets are not available.) A 15-meals-per-week plan is also available. Room and board may be paid in installments as authorized by the University.

### ASSIGNMENTS TO RESIDENCE HALLS

Residence hall assignments are mailed beginning about March 1 for the academic year beginning in the fall; about November 15 for the Winter Quarter and February 15 for the Spring Quarter.

### University Married Student Apartments

The University maintains the Park Vista and Sepulveda Park apartment complexes which consist of 643 unfurnished one-, two- and three-bedroom apartments, for married students and single student parents. These units are located on Sawtelle and Sepulveda Boulevards, approximately five miles from campus.

The basic monthly rates range from \$124 to \$178 per month. The utilities are not included in the rates.

Assignments are made only to the full-time student member of the family and are nontransferable to another member of the family. Verification of marriage or birth certificates are required for assignment. To remain eligible for housing, assigned students must be enrolled in all quarters of the academic year, e.g., Fall, Winter and Spring Quarters.

Only the student and his/her immediate family may live in the apartment. Extension students are not eligible.

Due to the limited number of facilities, applicants can anticipate an average wait of 12-18 months for University married student apartments.

### Privately Operated Residences

#### COOPERATIVES

There are several privately-owned, nonprofit, member-controlled, student living groups located adjacent to the UCLA campus. Each student is required to work 3-5 hours per week as part payment of room and board. Each cooperative has a manager, housemother, or head resident responsible for supervision and management. The Cooperative Housing Association is for men and women; YWCA, and Stevens House are for women only. Room and board rates vary from approximately \$300-\$380 per quarter.

#### FRATERNITIES AND SORORITIES

Most of the fraternities and sororities own or lease homes near the campus and provide lodging and meals for a number of their members and pledges. Expenses for residents range from about \$150 to \$180 per month depending upon the number of meals served and the social and recreational privileges included. Students interested in affiliating with a sorority or fraternity should contact either the Panhellenic Office (for sororities), or the UCLA Interfraternity Council (for fraternities), care of the Dean of Students, 2224 Murphy Hall, 405 Hilgard Avenue, Los Angeles, California 90024.

### PRIVATE LANDLORDS — (Single and Married Students)

Room and apartment rental listings are available to any student who desires to come *in person* to the Office of Residential Life. Since the listings change from day to day, listings cannot be mailed. Students planning to live in rooms or apartments are advised to arrive on campus at least 10-14 days prior to the opening of the term. The great demand for housing in the near-campus areas makes it advisable for you to make your arrangements as early as possible. Many continuing students arrange for fall housing before leaving for summer recess. Some even pay rent throughout the summer months and try to sublet their apartments to minimize their costs.

The University does not inspect accommodations or make rental or other arrangements on behalf of students. Such transactions must be made individually and directly with landlords. Students are advised to have a clear understand-

ing, preferably in writing, of the terms and conditions of occupancy. The Office of Residential Life offers a handbook on becoming a tenant, a model lease, other appropriate documents, and advice on landlord-tenant problems.

Only a very few places offer room and board at about \$160 per month. Rooms in private homes cost from \$80 to \$125 per month. Single and bachelor apartments usually furnished, rent for \$150 and up. Depending upon whether the apartment is furnished or unfurnished, as well as the location, rental prices for one-bedroom apartments are \$190 and up, \$260 and up for two-bedroom apartments. Rental prices for houses are appreciably higher.

Students who are not boarding by the month can obtain moderately-priced meals at a UCLA residence hall, at the cafeteria in the Ackerman Union, or at one of the many restaurants in Westwood Village adjoining the campus.

Non-resident meal plans can be contracted for on a quarterly basis. For further information, contact the Sproul Hall Cashiers Office, 350 De Neve Drive, Los Angeles, California 90024.

### MOTELS AND TRAILER COURTS

Motels are located from one to five miles from campus with varying rates and accommodations. It is sometimes advisable for students to accept these accommodations temporarily until more permanent accommodations can be located. Listings may be secured from the Office of Residential Life.

No trailer parking areas are provided on or adjacent to the campus, the nearest being approximately five miles from campus.

## TRANSPORTATION TO CAMPUS AND PARKING

Parking facilities on campus are not adequate to meet the student demand and are subject to parking fees. Students must petition for parking and assignments will be made on a point system based on the information on the petition. Only those persons who have parking permits are able to bring automobiles to campus. During the next few years there is a strong likelihood that large numbers of students will be unable to obtain parking permits; therefore please make alternate plans for getting to campus in the event you do not receive a parking assignment (e.g., public transit, car pools, bicycles, motorcycles, etc.). Contact the Southern California Rapid Transit District or the Santa Monica Municipality Bus Lines for information regarding bus schedules in this area. Those desiring to form car pools may obtain registration forms from Campus Parking Service.

### Automobile

A limited number of parking permits will be sold to students. Those students with physical disabilities which preclude walking long distances may apply for permits through the Student Health Service. All other students must file parking petitions with the Campus Parking Service, Room 280, Gayley-Strathmore Structure (Area 8). Parking petitions may be obtained from Campus Parking Service, telephone 825-1887. Permits approved and purchased for the fall quarter can be renewed for the winter and spring quarters and new petitions need not be filed. Students not assigned parking in any quarter must re-apply for subsequent quarters. New or re-entering students for each quarter must file parking petitions. Permits are not renewable from spring quarter for the following fall quarter. Deadlines for filing and for renewing permits will be established for each quarter. Inquire at Campus Parking Service for additional information. *Parking permits are not transferable and may be purchased only from the Campus Parking Service.*

### Bicycle, Motor Scooter and Motorcycle

Bicycle and motorcycle parking areas are provided at convenient locations on campus. Parking permits are not required. Parking regulations, guide maps indicating the location of these facilities and additional information may be obtained from Campus Parking Service.



# Student Services and Activities

## HEALTH SERVICES

### GENERAL DESCRIPTION

Under several conditions of eligibility and coverage, the program makes available to students at UCLA a virtually complete range of preventive, diagnostic, and therapeutic health services. In cooperation with other UCLA and community health resources, and with the further aid of health insurance, the Health Services make available both direct and referral access to the kinds of high quality medical, surgical, dental and mental health care resources most appropriate to students' needs and means.

The main resources and activities of the Health Services are directed, as an integral part of the educational program of the University, towards those health concerns and conditions most frequently arising in the course of student life, and most often threatening students' continuing pursuit of personal and academic goals in the University.

In selected cases, compatible with continuing progress as a student, some direct care may be offered and subsidized through the Health Services for predictably chronic or recurring needs. For long-term conditions, the student will be assisted in locating other resources for care when not eligible for care of such conditions in the Health Service.

However, beyond such limited care for longstanding conditions, the Health Services' available resources must currently be primarily organized to meet the majority's needs for health education, counseling, and care on campus, arising during active attendance at the University, and cannot offer total coverage of all conditions, or in all locations.

*NOTE: The policies and services discussed here are in effect as this material goes to press. However, certain changes are being considered which may affect the policies and services offered to some degree at Student Health Service. In the event of any changes, all efforts will be made to inform students in advance. Please check with Student Health Service for current information.*

### FINANCIAL SUPPORT OF HEALTH SERVICES

The Health Services are supported principally by allocations from the Registration Fee paid by all fully registered students, and by the separate health service fees paid by some other categories of students. Those paying the Registration Fee, or the Optional Health Service Fee receive all benefits as described below at no further cost, except for modest charges for medications and injections, for dental services, for required health evaluations, for missed appointments, and for a few other services.

In addition, students may in some circumstances be eligible to use the Health Services on a *Fee-for-Service* basis, as they would a private physician or clinic, paying for services actually received according to a fee schedule which is available for students' inspection upon request.

Summer Session Fees, Filing Fees, and any other monies advanced for special study categories short of full Registration do not in themselves provide any support to or eligibility for Health Services, but may make such persons eligible for benefits after paying the Special Health Service Fee, or on a *Fee-for-Service* basis, as explained below.

Benefits not directly provided through the University Health Services or exceeding stated limits, are the student's personal financial responsibility, with or without the aid of any health insurance he may hold. Such insurance, including the UCLA Supplemental Medical Insurance (see below), effectively extends the student's overall health-care coverage beyond the limits of direct Health Services benefits, and to situations when the student is unable to utilize the Health Services for necessary care.

### SUPPLEMENTAL HOSPITAL-MEDICAL INSURANCE

The costs of necessary hospitalization and in-patient care are *not* covered by the University's student health benefits

in any hospital, nor are the costs of any care obtained outside of the Health Service, without prior authorization by Student Health. Further, students treated within Student Health following withdrawal or during an unregistered Quarter may be liable to *Fee-for-Service* charges for such care.

These costs, not covered by the University, are the student's responsibility, and if he has no adequate insurance, he may be faced with serious financial loss and hardship.

Therefore it is of great importance that each student be sure to have adequate hospital-medical insurance. If he is not already covered by health insurance independently, through parents, spouses, or employers, he should purchase the Student Hospital-Medical Insurance sponsored by the University. In the case of Foreign Students attending UCLA on non-immigrant visas, the University requires, as a condition of Registration that they have or purchase adequate insurance, as judged by the Health Service.

This Student insurance is available at very low cost through the Health Service, and is available only at the beginning of each Quarter. The specific enrollment periods for the insurance appear in the Calendar at the front of this Catalog.

Students' dependents are not covered and cannot be treated at the Health Service at this time, regardless of whether they have insurance or not, due to lack of staff and space. Therefore, students will be responsible for most, if not all, costs of care of their dependents.

However, for an additional premium, students may insure their spouses and children through the Student Hospital-Medical insurance, to cover most, if not all such expenses, as specified in the policy.

The University reserves the right to require adequate hospital-medical insurance of all students as a condition of registration.

### Conditions of Eligibility

With a few exceptions, the Health Services are presently reserved for the use of students at the Los Angeles campus of the University of California, and in special situations, for students from other U.C. campuses.

*Students paying a full Registration Fee in any quarter of the regular academic year of any school, college or division of UCLA are entitled to full benefits as set forth below, with official verification of registration. This entitlement extends from the first day of the Quarter as officially published through the last day of same, except if the student withdraws. (See below for limitations following withdrawal.) If the student intends to register for the next immediately following quarter, his coverage extends through the break between quarters.*

*Prospective students arriving from significant distances, and students required for any University-connected reason to be on campus prior to the first day of the quarter will be entitled to full benefits during such periods with reasonable documentation of their status and intent to register; if later they fail to register, they will be charged for services actually received.*

*Students currently registered at other U.C. campuses may receive necessary emergency care on the same basis as those at UCLA. However, they are not eligible for other care or service at UCLA while registered elsewhere without the Director's approval of an official written request from their home campus Health Service, or without written evidence of acceptance for transfer to UCLA as fully registered students in the next regular quarter. In this case they will be entitled to full benefits, during the regular academic year, for the period between the last day of official registration at another U.C. campus and the first day of the UCLA quarter immediately following.*

*Some categories of students who pay anything less than the full Registration Fee, may receive Health Services benefits during any quarter (including Summer months), in which the category applies, in either of two ways, as they may elect.*

A. They may receive full benefits by *pre-payment* of the *Special Health Service Fee* prior to the close of the tenth (10th) calendar day of the quarter or initial Summer Session, or:

B. They may utilize the Health Services on a *Fee-for-Service* basis (defined above) between the last official day of the academic session just preceding, and the opening day of the next session following such periods.

The *specific categories* of students eligible for these options are as follows:

1. *Continuing Students*, (including those from other U.C. campuses transferring to UCLA) during Summer months, whether attending Summer Sessions or not.

2. *Accepted candidates for any UCLA degree*, during any one quarter of non-registration, for any reason except withdrawal, provided they have been fully registered or have paid the Special Health Fee in the previous quarter, and that they have satisfactory evidence of intent to re-register fully in the next applicable term.

3. Graduate students actively researching and/or writing doctoral dissertations, but who have no need to take classes or to register for this purpose, and who are not yet ready to submit their theses and pay Filing Fees, provided they have official written confirmation of current sponsorship and continuing *bona fide* degree candidacy for the Quarter from the responsible senior Faculty member or Department Head.

4. *Graduate Students paying a "Filing Fee"* for dissertations, but not otherwise registered, for that quarter or Summer period in which that fee is paid.

5. *Postdoctoral Fellows and Trainees*, properly identified as such by their sponsors, working full time towards additional credentials in any quarter or summer period.

6. *Foreign Students*, not yet registered, but living near campus and working under University sponsorship to meet language and/or other academic prerequisites to full registration, when approved by the Office of International Students and Scholars.

7. *Medical and Dental Students*, technically "registered" for purposes of medicolegal coverage during elective or "free" quarters, but paying no registration fee, with appropriate confirmation.

In all of the above situations, service charges incurred prior to the tenth (10th) day of the eligible period are *not* automatically cancelled by subsequent payment of the Special Health Service Fee.

*Some other categories of students, having only intermittent, partial, or qualified University status, may be eligible for Health Services use, but solely on a Fee-for-Service basis as follows:*

1. *Students enrolled in Summer Sessions only*, and who were not, and will not be, fully registered or enrolled, in the preceding or following quarters.

2. *Students whose re-registration in the next regular quarter is in any doubt following withdrawal, or receipt of a degree.* In such cases, the *Fee-for-Service* use privilege extends only to the opening day of the next regular quarter, or the initial Summer Session, whichever is sooner. Thereafter, eligibility on any basis terminates until official confirmation of re-registration or Summer enrollment is presented.

3. *Special Scholars, specially sponsored part-time, visiting, and exchange students and researchers primarily based elsewhere, when officially designated as such by the sponsoring Department, may use the Health Service, but only for emergency care of acute illness and injury apparently arising in connection with their scheduled study and activities on the UCLA Campus, on a Fee-for-Service basis. If under 18, Special Scholars must have signed parental permission on file for such emergency treatment.*

*In some unusual situations, if in the best interests of the student, and of no undue risk to the University, the Director may approve eligibility by exception to the foregoing conditions, on a case-by-case basis.*

### BENEFITS, LOCATIONS, AND HOURS

Direct Health Services benefits are available to students only through the services as provided at UCLA and in some officially connected facilities, except for emergency benefits through the Health Services of other U.C. campuses.

*Emergency Care* is available at the Student Clinic on "A" floor of the Center for the Health Sciences or at the Emergency Station of Pauley Pavilion during hours when they are open. Office hours are: Monday through Friday,

8:00 a.m. to 4:30 p.m.; emergencies to 5:00 p.m. *except Tuesday*, when office hours start at 9:00 a.m. Pauley Pavilion Station is open from 1:30 to 6 p.m. Monday through Friday, and is especially staffed and equipped to provide prompt expert care for athletic injuries.

When these facilities are closed, students in need of emergency care are treated in the UCLA Hospital Emergency Room, or in the Hospital's Primary Care Clinic. Charges for services rendered there are *not* the responsibility of the Health Service. They will usually be covered by whatever health insurance the student may have, or in some instances may be covered by various University insurance provisions, but where no insurance is applicable, will remain the student's responsibility.

The Student Health Service is not responsible for in-patient hospital costs at UCLA or elsewhere, and is not responsible for ambulance fees, except when authorized in connection with on-campus emergencies, although they are usually covered by health insurance, including the UCLA Student Supplemental Medical Insurance, for any legitimate use.

Benefits are subject to change at the discretion of the Chancellor, with appropriate official prior notice.

## GENERAL MEDICAL AND SURGICAL SERVICES

The Health Service Clinics include: (a) A General Clinic where students with all kinds of ailments may be seen either by appointment or on a walk-in basis when appointment schedules are filled, or the student prefers to wait. (b) A wide variety of Special Clinics where students are seen chiefly by appointment after referral from the General Clinic or another Special Clinic; (c) Clinical Laboratory, X-Ray, pharmacy, and other ancillary services; (d) An immunization station which operates during selected hours Monday through Friday; no appointment is required except in the case of yellow fever vaccination.

## THE DENTAL CLINIC

Available without need of referral, the primary function of the Student Health Dental Clinic is to treat dental emergencies. Emergency care has priority over non-urgent procedures. Dental examinations, x-rays, prophylaxis, hygiene instructions, advice and consultation on dental problems are provided. A limited amount of general dentistry and dental surgery is available.

*There is a fee for all services.* Students are required to pay the scheduled fee for dental care at the time of treatment. *Exception:* Initial examination for dental injury or conditions may be given at no cost, if referred by other Student Health professional staff, and no X-rays or operative procedures are required.

## MENTAL HEALTH SERVICE

By appointment, and upon appropriate referral, this service provides short-term individual and group therapy, and indicated prescriptions for students with emotional, psychological, and personal problems, at no charge. Its staff works closely with The Psychological and Counseling Services and with the Neuropsychiatric Institute of the Center for Health Services, and assists with referrals to other agencies for further treatment when this is appropriate.

## CONTRACEPTIVE SERVICES

These services are available to UCLA students through the Conception Counseling and Education Clinic (CCEC), now an integral part of the Student Health Service Division of Gynecology and Family Planning. Student's spouses are not presently eligible for service in this unit, and will be referred elsewhere. Educational sessions are held weekly and are free of charge to all students, male and female. Attendance at one class session is required of any female wanting membership in the clinic.

Services are at no cost to students except for the costs of contraceptive materials themselves. No direct service or coverage is provided at this time, except counseling and referral, for indicated abortions, although the Student Hospital-Medical Insurance, if held by the students, will cover most if not all the costs.

## HOSPITALIZATION

Since June 30, 1973, and until further notice, the University and its Student Health Service are *not responsible for the costs of students' hospitalization and in-patient care at UCLA or at any other hospital.* All such hospital and related costs are the student's responsibility.

To assure protection against unexpected and sometimes severe financial losses, each student must be certain that he is adequately covered through independent hospital/medical insurance, or through purchase of the *UCLA Student Hospital and Medical Expense Plan* at the beginning of his first registered quarter. Under special circumstances, students without any personal insurance, who require hospitalization for acute injuries and conditions arising in the course of University-sponsored activities, may be covered for the resulting costs through other special University insurance provisions.

## LIMITATIONS

The services provided are limited by the staff, space, and facilities available. These limitations are felt especially keenly in the Mental Health and Dental Clinics, where only a small proportion of students requesting routine services can be accommodated. The General Clinic is subject to recurring periods of overcrowding during which it is possible that only urgent cases may be seen.

## CARE OF STUDENTS' DEPENDENTS

Due to limitations of staff and space, no care for students' dependents may be provided within the Health Service, other than necessary first-aid, and referral to other sources of care. Health Insurance may be purchased at the Health Service for the dependents of any student who has purchased it for him/herself, as described above, and assistance may be obtained in processing necessary claims at the Student Health Insurance desk.

Furthermore, Health Service policy does not provide for the following: (1) Surgical correction of conditions existing at the time of entrance or re-entrance to the University; (2) Eyeglasses, or visual refraction for eyeglasses; (3) Routine dentistry, except under special conditions; (4) Care or termination of pregnancy, or the care of dependents; (5) Premarital examinations, other than the giving of general advice and performance of the required blood tests; (6) Care, other than first aid, for conditions compensable under the work injury laws (industrial accidents); (7) Care of conditions for which a surgical operation has been performed, a plaster cast applied, or other definitive treatment begun elsewhere, except when it would be impracticable for a student to return to his original doctor; (8) Care of chronic conditions for which a student has been under the care of an outside doctor, unless the latter recommends in writing, for the Director's approval, that the student be transferred to our care while attending the University; (9) Ambulance or other transportation unless ordered by University staff for on-campus emergencies; (10) Wheelchairs or special orthopedic apparatus; (11) Filling of prescriptions for drugs, or requisitions for x-rays or laboratory tests originating with the outside doctor; (12) Routine physical for other than University or other clear-cut requirements.

## CONFIDENTIALITY OF MEDICAL RECORDS

Any student, by Federal Law, has the right to examine and review the contents of his medical record in the presence of Health Service professional staff members. The record itself, however, is *per se* the property of the University, and may not be removed from the premises by any person, except under court order.

However, no information whatsoever will be given from the student's medical record, nor relative to his medical condition without his prior express consent, or a legal court order, except in cases of extreme emergency when not to do so would in the Director's opinion endanger the student's life, or the lives of those about him; and as otherwise required by law.

## CARE OFF CAMPUS

When visiting another University of California campus, a UCLA student is eligible for treatment of an acute illness or

injury at the Health Service under the same conditions that apply to students enrolled on that campus. He must show his registration card to identify himself. While a student is off-campus participating in an officially sponsored field trip, sport event, or recreational outing, necessary medical expenses incurred because of injury or sudden illness are covered by insurance carried by the Regents of the University. This policy does not cover any care which the student could reasonably have obtained through the Health Services.

## THIRD-PARTY LIABILITY AND SUBROGATION

When a student is treated under Health Service auspices and subsidy for illness or injury resulting from third party negligence or intent, the University reserves the right to recover the actual costs of such care, as the "prime insurer," by assignment or subrogation from any subsequent legal settlements and/or awards to the patient.

## FEDERAL INCOME TAX DEDUCTION

For federal income tax purposes, the amount allocated to Health Services from each quarterly Registration Fee paid during the taxable year may be taken as a deduction for medical care. This amount changes each year, and the exact figure for the most current taxable year may be obtained by contacting the insurance desk at Student Health Service.

## ADDITIONAL INFORMATION

Students, and any others concerned, may obtain additional information by calling the Health Services at 825-4073, by visiting, or by writing the Director.

## HEALTH REQUIREMENTS

Each student who enters UCLA for the first time or who is re-entering after one or more Quarters' absence is required to complete a Health Evaluation Form, which usually will be mailed to him. If not, it may be obtained by calling (213) 825-4694 or writing the Student Health Service. The information is not intended to exclude students from school, but instead to better serve them while they are here, to make sure they are no hazard to themselves or other students, and to permit their activities to be adjusted so that they can make the most of their opportunities here.

Before coming to the University, all students are urged to have their own physician and dentist examine them for fitness to carry on University work, and to have all defects capable of being remedied, such as dental cavities, defective hearing, or defective eyesight, corrected.

The Health Evaluation Form is to be mailed directly to the Student Health Service in the envelope provided.

Students newly admitted to the Schools of Medicine, Dentistry, Nursing, and Social Welfare are required by those schools to have their Health Evaluation Forms reviewed and to be given a thorough physical examination, and selected tests and immunizations, by appointment in the Student Health Service. (Telephone 825-2251) See Schools' catalogs for additional information. Necessary charges for such examinations are the responsibility of the individual student.

Foreign students must have the Health Service's clearance for freedom from tuberculosis, and for coverage by adequate health insurance, before registration can proceed.

## PSYCHOLOGICAL AND COUNSELING SERVICES

The Psychological & Counseling Services includes two separate divisions — The Behavioral Division and The Counseling Division. They provide professional services focusing upon student development, and are for the voluntary use of any regularly enrolled student.

## BEHAVIORAL DIVISION

The Behavioral Division (4222 Math Science Building, 825-4207) offers counseling for students who want to increase their effectiveness in handling specific problems encountered in the course of university life. Typical concerns

which can be resolved through a self-management learning process include overcoming test-taking anxiety, fear of oral exams or participating in classroom discussions, public speaking anxiety, tension or inexpressiveness in difficult interviews, and procrastination in studying. Other personal problems in which excessive anxiety or inappropriate learned behaviors interfere with performance can also be relieved, such as lessening difficulty in meeting people, learning to express oneself more directly and honestly in interpersonal relationships, and finding ways to increase self-confidence and self-control. Emphasis is placed upon the learning of techniques and abilities to help people implement decisions they have made and to more effectively realize their goals.

The staff is composed of professional psychologists. Both individual and group programs are offered. Students should call or come in to arrange an appointment or to receive further information.

## COUNSELING DIVISION

The Counseling Division (3334 Murphy Hall, 825-4071) offers individual and group counseling for students who are experiencing any of the number of general concerns, dilemmas, crises or indecisions which are often encountered by students. Difficulties related to the process of making decisions, the clarification of values or long-range personal and career goals, the resolution of conflict in expectations, the handling of intense emotional experiences, and other concerns affecting the personal growth of students are among those to which the Counseling Division frequently responds. Educational and career interest inventories can be taken upon request. Marital and pre-marital counseling, and counseling related to problems encountered in other forms of relationships is also available. Emphasis is placed on the exploration and clarification of one's feelings, choices, expectations, and alternatives, and the resolution of indecision or inability to act.

The staff is composed of counseling psychologists and other professionals familiar with the needs and interests of college students. Students should call or come in to arrange an appointment (immediate appointments are possible, if indicated) or to receive further information.

## LEARNING SKILLS CENTER

The Learning Skills Center offers individual and group programs designed to assist students in the development of reading, writing, listening, and study skills and habits appropriate to the demands of their university studies, including math and science. Assistance is also offered in how to prepare for and take midterms, finals and graduate school entrance exams (e.g. LSAT, GRE, GMAT). The Laboratory for Individualized Learning is a new service offered to students who wish to develop or strengthen a particular skill.

The staff is composed of professionals from a variety of academic disciplines familiar with the learning needs of college students. The service is free for regularly enrolled students. Students should phone or come to the office to arrange an appointment or to obtain further information. (Dodd Hall 271)

## COMPUTING SERVICES

Registered students can obtain an account free of charge on the DECsystem-10 interactive computer operated by Computing & Information Systems. Special funds from the Chancellor support this resource designed to give students the opportunity to familiarize themselves with the use of computing equipment as a tool to assist in their studies. Students may use the computer to do homework, edit term papers, conduct independent research, teach themselves programming, or in connection with specific courses that make use of the computer as a learning aid. Terminals to access the computer are available in the Graduate School of Management, the Mathematical Sciences Building, and in Boelter Hall. Apply in room 4302 MSA from 8 a.m. to noon on weekdays.

## PLACEMENT AND CAREER PLANNING CENTER

The Placement and Career Planning Center offers career counseling and placement services to students of all disciplines and all degree and class levels. It is comprised of three functional divisions: Career Planning and Placement, Student Employment, and Educational Career Services. Services are located in the Placement and Career Planning Center building and in two satellite locations. A satellite office in 1355 GSM specializes in Management, and another in 7420 Boelter Hall specializes in Engineering and the Physical Sciences.

### CAREER PLANNING AND PLACEMENT

A staff of career counselors is available to assist in the process of career exploration and choice and in the career job search process. An educational and career information library is provided as the basic information resource for planning further education and careers. The on-campus employment interview program provides convenient access to information exchange with certain graduate and professional schools as well as hundreds of potential employers. A larger number and more diverse array of job opportunities is posted for review by graduating students and alumni and referral directly to the employers' offices.

### EDUCATIONAL CAREER SERVICES

This is a specialized source of information and counsel to students and alumni seeking positions in universities, colleges, community colleges, secondary and elementary schools, both public and private. Current lists of educational job opportunities and a professional file service are part of this service. Internships in educational institutions, and various training and orientation activities are also provided.

### STUDENT EMPLOYMENT

A job listing and referral system is provided for currently enrolled students who are seeking part-time, temporary or vacation employment in order to obtain career-related experience and/or alleviate financial pressures. Work experience, which offers career exposure, is available in the fields of engineering and physical science, business, life science, education, fine arts and recreation. In addition, students may select from numerous opportunities in the clerical, sales, food service and unskilled labor areas. The Center also maintains room and board in exchange for work listings, as well as files of qualified students who are interested in tutoring, child care, and temporary work.

## OFFICE OF SPECIAL SERVICES/ VETERAN AFFAIRS

### VETERANS INFORMATION

Students who are veterans or veterans' dependents may be entitled to benefits of several Federal and State of California statutes. The Office of Special Services/Veterans Affairs maintains an active liaison with the appropriate federal and state agencies in order to assist students in obtaining such benefits.

Students wishing to enroll under any available federal educational acts should come to the Office of Special Services/Veteran Affairs, Room A-255 Murphy Hall, as soon as possible. These students must be prepared to pay all fees and educational costs at the time of registration, as education and training allowances are paid to the student by the Veterans Administration. The first monthly payments will normally be received at the beginning of each month after compliance with the above instructions. All students registered under a veteran's or dependent's subsidy program are required to personally file an official study list in the Office of Special Services/Veteran Affairs at the beginning of each academic year.

Information regarding educational benefits available for veterans' dependents from the State of California may be obtained from the State Department of Veterans Affairs, P.O. Box 1559, Sacramento, California 95807, or by writing

either to P.O. Box 24010, Los Angeles, California 90024 or 350 McAllister Street, San Francisco, California 94102. Veterans' dependents who are on the State Program are eligible for fee waivers for the registration fee upon presentation of authorizations from the Division of Educational Assistance.

## SOCIAL SECURITY BENEFITS FOR STUDENTS

The full-time status of Social Security dependents from the ages of 18 to 22 is certified to the Social Security Administration by the Office of Special Services/Veteran Affairs. Students who are dependents of retired, deceased, and disabled workers should check their eligibility with the Social Security office nearest their home which will send the certification form directly to the Office of Special Services/Veteran Affairs for completion so that payments can be made to the student.

## HANDICAPPED STUDENTS

Students who have a physical, emotional, or other disability which handicaps them vocationally may be eligible for the services of the State Department of Rehabilitation. These services include vocational counseling and guidance, training (with payment of costs such as books, fees, tuition, etc.) and job placement. Under certain circumstances students may also qualify for help with medical needs, living expenses and transportation.

Appointments may be made with a counselor in the Office of Special Services/Veteran Affairs, or by contacting the State Department of Rehabilitation Office at 1494 South Robertson Boulevard, Los Angeles, 90035; telephone 273-4302.

The Office of Special Services/Veteran Affairs provides assistance in cases of clearly indicated need to physically handicapped students on registration and enrollment procedures and other matters.

## CAMPUS PROGRAMS AND ACTIVITIES OFFICE

There are currently over 300 registered organizations at UCLA representing a wide range of student, faculty and staff interests in addition to a variety of student-government-sponsored programs and activities.

The Campus Programs and Activities Office (Kerckhoff 161, ext. 57041) under the Vice Chancellor for Student and Campus Affairs advises such groups in the development, implementation and evaluation of their programs and activities. It is also the responsibility of this office to administer University regulations related to non-class use of University facilities. An organization must first register with the CPAO; programs and activities sponsored by that organization also receive program approval here. The scheduling and facility use approval is then obtained from Campus Activities Service Office (Royce Hall 130). Ideas for new programs and activities are encouraged by the CPAO where a cooperative relationship between students, faculty, and staff prevails. Individuals and groups are encouraged to come in at any time to discuss concepts, plans, or problems.

## CAMPUS ACTIVITIES SERVICE OFFICE

The Campus Activities Service Office has the responsibility to administer and operate campus facilities when used by non-class activities for the UCLA community. Event, activity, and program producers in these areas are invited to avail themselves of CASO's equipment, facilities and trained personnel for room scheduling, staging, lighting, audio visual services, crowd management, literature posting, etc. Reservations of general assignment lockers and the sale of UCLA combination padlocks are also responsibilities of this department.

## DEAN OF STUDENTS OFFICE

The Dean of Students Office exists to help students with whatever needs they might have, either directly or by referral. The variety of problems, complaints and requests

cover the entire operation of the campus. Some of the more important functions for which the office is responsible are as follows: veterans affairs and special services, student legal aid services, sorority and fraternity affairs, orientation program for new students, advising various honorary and service groups, general counseling and advising, locating a student in case of emergency, and handling student discipline cases.

### STUDENT SERVICES IN THE CENTER FOR THE HEALTH SCIENCES

The functions available to students on the general campus are not duplicated in the Center for the Health Sciences (CHS), but as an outpost of the Office of the Dean of Students, the Student Services Office does attempt to facilitate the activities of health science student organizations. Located just inside the Dental Wing, in room 13-089, the Student Services Office provides information about programs, activities, and services available on the general campus, and acts as a liaison between the other offices of Student and Campus Affairs and the CHS students.

### STUDENT LEGAL SERVICES

Registered students with legal problems may obtain assistance free of charge in the resolution of their difficulties in such diverse areas as landlord/tenant relations, domestic relations, accident and injury problems, criminal matters and contract and debt problems. Each student will be seen on a walk-in basis in the Dodd Hall 58 office by a law student participating in a clinic program of the UCLA School of Law under the direct supervision of a qualified attorney or may be seen directly by an attorney. Matters requiring extended negotiations, court appearances, or litigation cannot be accepted but will be referred out to a community legal aid center or to an outside attorney.

### OFFICE OF INTERNATIONAL STUDENTS AND SCHOLARS

This Office, located in Dodd Hall 297, has responsibility for the general welfare of all foreign students associated with UCLA. Members of the staff provide advisory services on matters of both an educational and a personal nature. The Office also provides information and service relating to passports, visas, release of funds, work permits, insurance, loans and housing.

In cooperation with the International Student Center (located at 1023 Hilgard) the Office seeks to promote international programs which bring together foreign students and Americans. In addition to these specific services and programs, the Office strives to create a sense of international community within the campus and its environs.

### OFFICE OF EXPERIMENTAL EDUCATIONAL PROGRAMS

The Office of Experimental Educational Programs (OEEP) responds to the educational needs of UCLA students by generating new ideas and directing innovative programs. The Office develops community service learning, internships, and field-study projects to supplement and complement both academic departments and other Student and Campus Affairs units. The Office's Experiential Programs and Opportunities Center (EXPO) provides an information and brokering service for experiential activities and national and international travel and study, while the Women's Resource Center (WRC) addresses the specialized concerns of women.

Its Community Service-Learning Center (CSLC) facilitates learning opportunities through meaningful community service. To this end, the new center devotes much of its energy to consultation with students as they design and involve themselves in community service opportunities related to their learning goals.

Students are invited to visit the Office, CSLC, EXPO, or WRC.

### OFFICE OF CULTURAL AND RECREATIONAL AFFAIRS

The Office of Cultural and Recreational Affairs serves as the administrative center for the coordination of facilities, equipment, programming and supervision of campus recreational activities and services. All students who have paid the full registration fee are entitled to these services. Four professionally staffed divisions provide a variety of services and programs to accommodate the total campus community.

### RECREATION SERVICES AND FACILITIES

Opportunities for informal participation in swimming, body conditioning, basketball, handball, volleyball, badminton, tennis, and field sports are available seven days a week at the two gymnasiums, the Memorial Activities Center, the athletic fields, and tennis courts. In addition, recreation classes are offered in tennis, skiing, volleyball, exercise and figure control, swimming, water safety, senior lifesaving and gymnastics. Further information may be obtained at Pauley Pavilion 164.

### INTRAMURAL SPORTS

Organized participation at various skill levels in seventy-four activities is available on an individual, dual, and team basis. The total program includes coed activities as well as the wide range of sports for men and women. The Intramural Office is located in Men's Gymnasium 118.

### THE UNIVERSITY RECREATION ASSOCIATION

The University Recreation Association is a federation of over forty special interest clubs which features clinics, seminars, exhibitions, concerts, lectures, classes, tournaments, and field trips. The clubs serve students with interests ranging from chess to surfing, and karate to skiing. Inquiries should be directed to Kerckhoff Hall 600.

### SUNSET CANYON RECREATION CENTER

The Sunset Canyon Recreation Center is a recreational and cultural facility aesthetically designed to serve the University community. It is open all year, seven days a week, for formal and informal use on both an individual and a group basis. Located in the hills of the west campus adjacent to the residence halls, it features two swimming pools (one for children), picnic-barbecue areas, multipurpose play fields, and an outdoor amphitheater. Rooms are available for meetings, receptions, symposia, dances, catered luncheons and dinners. The Center sponsors programs of poetry readings, informal concerts, exhibitions and art and dance classes for adults and children. An extensive aquatic program includes swim classes for children and adults.

### ATHLETICS

#### MEN'S INTERCOLLEGIATE SPORTS

UCLA is a member of the Pacific 10 Conference which includes the Arizona State University, University of Arizona, University of California, Berkeley, Stanford University, University of Southern California, University of Oregon, Oregon State University, Washington State University, and the University of Washington. The Pacific 10 provides opportunities for participation (and "spectatorship") on the varsity level in football, basketball, track, baseball, tennis, crew, gymnastics, swimming, water polo, riflery, golf, wrestling, soccer, rugby, fencing, cricket, and cross-country.

#### WOMEN'S INTERCOLLEGIATE ATHLETICS

The Department of Women's Intercollegiate Athletics sponsors eleven different varsity programs for women athletes under the jurisdiction of the Association for Intercollegiate Athletics for Women (IAIW) and the Western Collegiate Athletics Association (WCAA). UCLA's women's teams have won several national, regional and conference titles and national classed teams in basketball, volleyball, swimming, tennis, track and field, cross-country, and gym-

nastics. One of the nation's leaders in intercollegiate athletics for women, UCLA has a regular program of athletic grants-in-aid, regular coaching, equitable facility use and other upgrading of athletic opportunities for women. Women are also eligible to participate on all traditionally all-male varsity teams in the Department of Intercollegiate Athletics.

### UNIVERSITY POLICIES COMMISSION

The University Policies Commission functions as a deliberative body to study, and when appropriate, to recommend policy changes or innovations which would enhance the quality of the campus environment. Representing all segments of the campus community, its membership includes three students, three faculty members, three non-academic staff members, and three administrators.

Members of the campus community are encouraged to contact the Office at 128 Royce Hall or call 825-7906 with policy items of concern to them and the campus community.

### OMBUDSMAN

The purpose of the Ombudsman office is to seek to resolve personal grievances of members of the university community emerging from policy, practices, and/or personalities. As an independent agent with investigatory powers, the Ombudsman accepts grievances only after the grievant has tried to resolve the problem through regular channels and when there is evidence that adverse decisions are questionable.

The office is located in Kinsey Hall, Room 280 (phone 825-7627) and is open to all University-related persons also at times and other places convenient to the aggrieved.

### THE ASSOCIATED STUDENTS

Almost all extracurricular programs or activities for students at UCLA are in some way connected with the Associated Students UCLA (ASUCLA), through the undergraduate and graduate student associations, sponsors dramatic, musical, and cultural programs, social events, community service projects, and students services. The Association operates the Ackerman Union and Kerckhoff Hall, providing students with facilities for meetings, relaxation, a complete student store, and food service areas.

Every UCLA student holds membership in ASUCLA. Undergraduate opinion in the formation of academic, cultural and social policies is represented by the elected members of the Student Legislative Council. The Graduate Students Association Assembly is composed of elected representatives of ten councils encompassing schools, groupings of related academic departments and individual departments enrolling ten graduate students or more. Both governing agencies sponsor special activities and programs designed to meet the needs and interests of their respective constituencies.

In addition to the Undergraduate Students' Association and the Graduate Students' Association, there is the ASUCLA Board of Control which administers policies regarding ASUCLA finances and facilities. The ASUCLA Board of Control is comprised of six students, two administration representatives, one faculty and one alumni representative.

The ASUCLA Board of Control directs the operation of a variety of low-cost services through a professional management staff. The services, in addition to the students' store and food services, include lecture notes, check cashing, charter flights, a print shop, a ticket agency, a complete photographic service, and a bowling alley. These services are available for the convenience of all members of the campus community.

### RELIGIOUS FACILITIES AND PROGRAMS

The University Religious Conference is located at 900 Hilgard Avenue at LeConte. URC membership is held by the Baptist, Catholic, United Church of Christ, Disciple, Episcopal, Jewish, Lutheran, United Methodist and United

Presbyterian organizations. The URC serves as the headquarters for various campus ministries and programs which are carried out on the campus and within the building. Other facilities of the URC members include the Catholic Center, 840 Hilgard Avenue; Campus Baptist Chapel, 668 Levering; University Lutheran Chapel (LCMS), 10915 Strathmore, and Episcopal Center, 580 Hilgard Avenue.

Other campus related religious facilities include the L.D.S. Institute of Religion, 856 Hilgard Avenue; Christian Science Organization, 500 Hilgard Avenue; the Y.W.C.A., at 574 Hilgard Avenue; Chabad House, 741 Gayley Avenue.

In these facilities are held worship services, religious discussion groups, lectures, Bible classes, social gatherings, luncheons, dinners, social action conferences and other meetings dealing with campus religious life. In addition there are student religious organizations which also hold regular meetings and occasional services on campus.

## RESERVE OFFICERS' TRAINING PROGRAMS

### ARMY RESERVE OFFICERS' TRAINING CORPS (MILITARY SCIENCE)

In accordance with National Defense Act of 1920, and with the concurrence of the Regents of the University, a unit of the Senior Division Reserve Officers' Training Corps (ROTC) was established on the Los Angeles campus of the University in July, 1920.

The purpose of the Army ROTC is to qualify selected male and female students as leaders in their chosen fields, as far as the requirements of the service permit. These fields include: engineering; communications; administration; logistics; personnel management; intelligence; and many others. The ROTC Program qualifies graduates for commissions as officers in the United States Army Reserve and selected graduates for commissions in the Regular Army.

Options now available in Army ROTC for qualified students include two-, three-, and four-year programs leading to an Army commission. Cross-enrollment is available through UCLA Extension from community colleges or other colleges that do not offer Army ROTC. See the Military Science Department listing for details of this program.

### NAVAL RESERVE OFFICERS' TRAINING CORPS

By action of the Secretary of the Navy and of the Regents of the University of California in June, 1938, provision was made for the establishment of a unit of the Naval Reserve Officers' Training Corps on the Los Angeles campus of the University.

The primary objective of the Naval Reserve Officers' Training Corps is to provide an education at civil institutions which will qualify selected students of such institutions for appointment as officers in the Regular Navy, Naval Reserve, Marine Corps, and Marine Corps Reserve. Upon successful completion of the four-year program, which includes the receipt of a baccalaureate degree from the University, the student may expect to be commissioned and to be ordered to active duty in ships, submarines or aircraft of the Navy, with field units of the Marine Corps, or with Marine Aviation. See Naval Science for details of the program.

### AIR FORCE RESERVE OFFICERS' TRAINING CORPS

Air Force ROTC, through its Aerospace Studies offerings, enables students to develop, demonstrate, and apply the knowledge and leadership qualities requisite for an officer's commission in the U.S. Air Force. Students who demonstrate dedication to their assignments, who willingly accept responsibility, who think critically and who have the ability to communicate with clarity and precision will, upon completing the curriculum and graduating from the University, receive an officer's commission. See Aerospace Studies for details of the program.

## Colleges, Schools and Graduate Division

### COLLEGE OF LETTERS AND SCIENCE

The curricula of the College of Letters and Science are designed to provide students with opportunities to broaden their culture and prepare them for specialized professional studies. These curricula lead to the degree of either Bachelor of Arts or Bachelor of Science, normally at the end of the twelfth quarter.

A liberal education presupposes a reasonably wide distribution of courses that contribute to a desirable balance of intellectual interests. To this end students are required to select courses in the lower division that deal with general fundamentals of human knowledge. In the more diverse offerings of the upper division students are relatively free to concentrate attention upon courses in a field of interest best suited to their aptitudes and purposes.

Each student, therefore, chooses a major which may be a program of related upper division courses within a single department (departmental major), or a group of coordinated courses involving a number of departments (inter-departmental major), or, under certain circumstances, an organized group of courses chosen to meet a student's special need (individual major). The pursuit of such definite courses of study necessarily requires a knowledge of antecedent courses known as "prerequisites." With the assistance of his departmental adviser, the student is expected to select those lower division courses which are related to his proposed advanced study. The Office of the Dean of the College of Letters and Science is located in Murphy Hall, Room 1312. Members of the Dean's staff are readily available to assist students with questions pertaining to academic regulations and procedures. Many questions can be answered at the College Information Window or by phoning the Information Desk, 825-1826 or 825-1965. Students in the College who would like to confer with a Counselor (regarding overall degree requirements, academic difficulty, program planning, or assistance in selecting a major) may arrange an appointment by phoning 825-3382.

### Admission to College Honors Status

A student in the College of Letters and Science who has demonstrated superior academic achievement is eligible to apply for College Honors Status. Admission, which is recorded on the student's transcript, may be granted by the Dean of Honors Programs after completion of either (a) 16 or more graded units at UCLA with a cumulative grade-point average of not less than 3.4; or (b) 36 or more graded units in consecutive quarters with a grade-point average for those quarters, both overall and in Letters and Science courses, of not less than 3.5. Continued superior academic achievement is requisite for remaining in Honors Status.

Application for admission may be made at the Honors Programs Office, 1331 Murphy Hall, Window 10.

Honors Status students are under the immediate jurisdiction of the Honors Programs Office, receiving their counseling and other student services there. Admission facilitates taking exceptionally heavy course loads (see Study-List Limits), and receiving credit for courses pursued by independent study (see "Credit by Examination").

Students with College Honors Status are usually eligible for admission to the honors programs offered by a number of the departments in the College. Such programs include honors sections of regular courses, honors courses of a seminar type, honors thesis programs, and supplementary and advanced directed study. The departments are responsible for admitting students to their separate honors programs. For details of these programs, the student may consult the Dean of Honors Programs or the department of his major. (For the possibility of concurrently working for both undergraduate and graduate degrees see Departmental Scholar Program.)

### HONORS WITH THE BACHELOR'S DEGREE

1. Departmental Honors and Departmental Highest Honors may be awarded at graduation upon the recommendation of the student's major department. The recommendation will be based on successful completion of a departmental honors program by the student. For the requirements of the various departments, consult the department concerned.

2. College Honors will be awarded with the bachelor's degree according to the student's over-all grade-point average at the beginning of the last quarter of academic work, or, if not then eligible, at graduation. To be eligible for College Honors, a student must have completed at least 20 graded courses (80 units) in the University of California. The College Committee on Honors is responsible for awarding College Honors. The degrees of honors and the requirements for each degree are: *Cum laude*, an over-all average of 3.4; *Magna cum laude*, 3.6; *Summa cum laude*, 3.8. Marginal cases will be decided by the Committee on Honors. Students should be aware that the Committee grants petitions for waiver of these requirements only in extraordinary cases.

3. A list of students who have graduated with College Honors, Departmental Honors, or both, shall be published yearly. Each honors student will be awarded a certificate of honors at graduation indicating both the Departmental Honors and the College Honors won.

### Requirements for the Bachelor's Degree

The degree of Bachelor of Arts or Bachelor of Science will be granted upon the following conditions:

1. The candidate shall have completed for credit 45 courses (180 units), of which at least thirteen courses (52 units) shall be upper division courses (numbered 100-199).

The following *Credit Limitations* apply for all students enrolled in the College.

a) After completing 26 and 1/4 courses (105 units) toward the degree (in all institutions attended) the student will be allowed no further unit credit for courses completed at a community college.

b) Not more than one course (4 units) in Kinesiology 1, 2, and S3, and not more than two courses (8 units) in 300 and 400 courses may be counted toward the bachelor's degree. (Transfer students with credit for more than 4 units of Kinesiology I should be aware of the 4-unit limit on this credit.)

c) Credit is not granted for X300 and X400 courses taken in University Extension unless the approval of the Dean has been obtained by petition prior to enrollment. Such petitions are rarely granted.

d) Not more than 6 units of Dance 70, 71, 170, and 171 and Music 80 and 81 taken at UCLA may be counted toward the bachelor's degree. *Letters and Science students electing to take these courses must enroll in these courses Pass/Not Pass.* These courses will not be counted in the limits on Pass/Not Pass enrollment. All units earned prior to the end of the Spring Quarter 1974 may be applied to the degree, and all grade points earned prior to the end of the Spring Quarter 1975 are included in the grade point average. (For further information on these limits, see Courses Taken Passed/Not Passed.)

e) Credit earned through the College Level Examination Program (CLEP) after June 30, 1974, will not be counted toward the bachelor's degree in the College.

f) Advanced Placement Test Credit (AP) earned after June 30, 1974, will not apply toward a degree in the College, except for students at the freshman level with not more than 36 units of credit already earned toward the bachelor's degree at the time of the examination.

g) Not more than 24 units of credit in Aerospace Studies, Military Science, or Naval Science may be applied to the 180 unit minimum required for the Bachelor's degree.

h) Senate Regulations limit the undergraduate student to two courses (8 units) of credit per quarter in special independent study courses. The total number of units allowed in such courses for a letter grade is 16. Also, see specific restrictions under each departmental listing.

i) No credit will be allowed for Chemistry 2 after one year of high school chemistry completed with grade C or better, effective for those students entering Fall Quarter 1978 or later.

j) For students entering Fall 1978 and thereafter and effective with foreign language courses taken Fall Quarter 1978 or thereafter, no credit will be granted toward the bachelor's degree for college foreign language courses equivalent to quarter level 1 and/or 2 if the equivalent of course level 2 of the same language was completed with satisfactory grades in high school. The maximum deduction will be eight units.

The candidate shall have attained at least a C (2.00) grade-point average in all courses undertaken in this University. A student is required to satisfactorily complete a minimum of 180 units for the bachelor's degree. A maximum of 208 units is allowed. After having credit for 208 units, he will not be permitted to continue, except in rare cases approved by the Dean.

2. The candidate shall have completed the general University and College requirements.

3. The candidate shall have met the University requirement in American History and Institutions.

4. The candidate shall have satisfied the requirements of a major (including preparation for the major) in the College of Letters and Science. Before the degree is granted, the department or committee in charge of the student's major must certify that the student has completed the requirements for the major.

5. Of the last 45 units completed for the bachelor's degree, 35 must be earned in residence in the College of Letters and Science on this campus. Not more than 18 of the 35 units may be completed in summer session on the Los Angeles campus. While registered in this College the student must complete at least six upper division courses (24 units), including four courses (16 units) in the major. In departmental majors, the department will specify how many of these four required courses shall be taken in the department. This residence regulation applies to all students, including those entering this University from other institutions or from University Extension and those transferring from other colleges of this University. Students transferring from a College of Letters and Science on another campus of the University may petition for an exception to this rule.

Concurrent enrollment in courses offered by University Extension (including correspondence courses) or at other institutions is not permitted except in extraordinary circumstances, and no credit will be given for such courses unless the approval of the Dean has been obtained by petition prior to enrollment.

The degree of Bachelor of Arts shall be granted to all candidates who qualify for the bachelor's degree, except that the degree of Bachelor of Science shall instead be granted to candidates who have completed such majors as the Executive Committee of the College may designate as leading to that degree.

**Minimum Progress.** Effective Fall 1974, an undergraduate student in the College of Letters and Science who does not pass at least 36 units during any three consecutive terms shall be placed on probation, and an undergraduate student who does not pass at least 32 units during any three consecutive terms shall be subject to disqualification from further registration at the University. Courses bearing solely a letter designation may be used to meet this requirement only during the first three quarters of residence. Petitions for exception to these requirements must be approved by the Dean and may be granted only on account of poor health or of regular outside occupation requiring half-time or more.

## L & S Course List Requirement

Beginning Fall 1978 at least 160 units, including 52 units in upper division courses offered for the Bachelor's degree, must be selected from the Letters and Science List of Courses. Any course not included on this list, but required or accepted as part of a major shall, for students offering that major at graduation, be treated as if it were on the list. This regulation applies to all students who have successfully completed less than 36 quarter units.

Courses are applicable only if taken during a year in which they appear on the list. Courses offered for "no credit" and those numbered above 199 are automatically excluded.

All undergraduate courses in the College of Letters & Science may be applied **EXCEPT**:

English 136A-B-C

English as a Second Language 33A-33B, 103K, 106K, 107K, 109K, 111K, 122K

Journalism 2, 101A-B, 180, 182A-B, 190, 193

Mathematics 1A, 38A-B, 104

The following courses in departments outside the College of Letters & Science are applicable:

Architecture and Urban Planning 190, 191, 192

Art 50 through 55, 101 through 122

C.E.D. (Council on Educational Development) courses and Professional Seminars—Consult the College of Letters & Science concerning the applicability of specific courses.

Dance 111A-B, 140A-B-C, 151A-B

Education 100, 102, 112, 125, 147

Engineering 11, 12, 102, 107A, 120A-B-C, 121C, 122A-B, 123A-123B, 124A, 125A-B, 127B, 128A, 128D, 129A, 130A, 137A, 155, 171A, 171C, 172A, 180A-180B, 191A, 192A-192B-192C, 193A

Management 100, 101, 108, 111, 115, 116A-B, 150

Music 2A-B-C, 130 through 143A-B, M144, 146A-B-C, 147A-B, 148, 149, 152, M154A-154B, 157, M180, M181, 182, 186, 187, 188A-Z, 189

Public Health—All courses except 102A-B, 119A-B, 130A-B, 131, 135

Theatre Arts—Theatre 5A-B-C, 101, 102A-102B-102D-102E, 103A-103B, 104A-104B, 105; M.P.T.V. 106A-106B-106C-106D-106E, 108, 112, 113, 114

## General University and College Requirements

It is advisable that each of the requirements be completed as early as possible in the student's progress toward the degree, normally all of them within the first 24 quarter courses (96 units) of college work. In majors requiring unusually heavy lower division preparation, some postponements may be advisable.

### A. SUBJECT A

All entrants are required to demonstrate proficiency in the fundamentals of English composition (Subject A). Students from other countries whose native language is not English will be instructed by the Office of Admissions to take the Entrance Examination in English as a Second Language and therefore are not required to meet the regular Subject A requirement. For further regulations concerning Subject A, consult Index.

### B. AMERICAN HISTORY AND INSTITUTIONS

Consult Index.

### C. FOREIGN LANGUAGE

For students entering Fall 1978 and thereafter and effective with foreign language courses taken Fall Quarter 1978 or thereafter, no credit will be granted toward the bachelor's degree for college foreign language courses equivalent to quarter level 1 and/or 2 if the equivalent of course level 2 of the same language was completed with satisfactory grades in high school. The maximum deduction will be eight units.

The College of Letters and Science does not have a college-wide requirement for foreign language. Students should consult this catalog and departments or committees administering curricula concerning the requirement of specific majors. Credit will not be allowed for completing a less advanced course after satisfactory completion of a more advanced course in grammar and/or composition.

College credit for the mother tongue of a foreign student and for its literature is allowed only for courses taken in native institutions of college grade, or for upper division and graduate courses actually taken at the University of

California or at another English-speaking institution of approved standing.

## D. ENGLISH COMPOSITION

This requirement may be satisfied with one course from English 3, 4, Humanities 2A or 2B. A grade of "C" or better is required; grade of C- is not acceptable. A course in English Composition taken for a Pass grade does not satisfy this requirement. Courses in the above group may be applied on the Humanities requirement if they are not used to satisfy the D requirement. Transfer students who have completed an English Composition course graded "Pass" may take the English Proficiency Examination upon presentation of a letter of authorization to the English Department. The letter may be obtained from the College of Letters and Science.

The composition requirement may also be satisfied with a score of 4 or 5 on the CEEB Advanced Placement Test in English, or by passing a proficiency examination in English Composition set and administered by the Department of English. To be eligible for this proficiency examination an entering student must have a score of 660 on the CEEB English Achievement Test. Each student should satisfy the composition requirement before having completed 90 quarter units. Students who fail to do so must have their study lists approved by the Dean.

Transfer students who have completed with grade C or better a college composition course that has not satisfied the College of Letters and Science requirement in English composition may be eligible for the proficiency examination after an interview by the English department. Eligible students must register for the examination in the English Department office prior to the first day of enrollment in each quarter.

Transfer students with 90 or more units who have not completed a course that satisfies the College of Letters and Science requirement in English composition, but who are exempt from the Subject A requirement, must include an acceptable composition course in the study-list of their first quarter of residence in the College. Those who are required to take the course in Subject A should, upon completion of that requirement, include an acceptable composition course in the study-list of their second quarter of residence in the College.

Units evaluated by the Office of Admissions as English Composition but not sufficiently advanced to satisfy the College of Letters and Science "D" requirement can be applied on the Letters and Science breadth requirements as Humanities only if specifically approved by the Dean. Advanced Placement English with Grade 3 has such approval and requires no petition by the student. ESL 33A-33B-33C and advanced standing English for Foreign Student courses may not be applied on the Humanities Division.

Students for whom English is a second language may take either English 3 or 106J to satisfy the composition requirement.

## Breadth Requirements

Effective Fall 1978 students with less than 36 quarter units completed must meet the following Breadth Requirements. Those who have completed 36 or more units may choose to meet either these new requirements or the old requirements which follow them.

## Requirements

The student will satisfactorily complete nine courses (36 quarter units) distributed among the three divisions outside the division of the student's major field, with at least two courses in each division. Acceptability of courses for these requirements are subject to the following general conditions:

(a) All language courses level 4 or above may be applied as Humanities courses. Level 1, 2, and 3 courses may be used, provided that the student has completed the level 4 course in the same language. Conversational courses may not be used to satisfy the Humanities requirement. Breadth Requirements credit for courses in languages which do not offer level 4 courses is contingent on completion of the highest level offered.

(b) The course used to satisfy the English Composition Requirement may not also apply on the Breadth Requirements.

(c) Courses required to satisfy the Major or other courses taken in the major department may not be used to satisfy Breadth Requirements. However, courses outside the division of the major which are required as preparation for a major may be used to satisfy these requirements.

(d) Courses in other colleges and schools at UCLA, and courses authorized by the Council on Educational Development may be used to satisfy the Breadth Requirements, if so designated by the Executive Committee of the College.

Transfer students should consult the College of Letters and Science concerning application of advanced standing courses on the breadth requirements.

Consult individual course descriptions to avoid possible duplication of courses.

Courses numbered in the 300 and 400 series may not be applied on the breadth requirements. Freshman-Sophomore seminars and courses numbered 199 and in the 200 series may be applied on breadth requirements only by petition approved by the Dean of the College of Letters and Science.

To determine how UCLA courses apply on breadth requirements, consult list of courses (E through H) below.

For the purposes of these requirements, departmental and interdepartmental majors are classified in the following divisions.

#### Humanities

African Languages  
Ancient Near Eastern Civilizations  
Arabic  
Chinese  
Classics  
English  
English-Greek  
English-Latin  
Ethnic Arts  
French  
French and Linguistics  
German  
Greek  
Hebrew  
Indo-European Studies  
Italian  
Italian and Special Fields  
Japanese  
Jewish Studies  
Latin  
Linguistics  
Linguistics and English  
Linguistics and French  
Linguistics and Italian  
Linguistics and Oriental Languages  
Linguistics and Philosophy  
Linguistics and Psychology  
Linguistics and Spanish  
Near Eastern Studies  
Philosophy  
Portuguese  
Scandinavian Languages  
Slavic Languages  
Spanish  
Spanish and Linguistics  
Study of Religion

#### Physical Sciences

Astronomy  
Atmospheric Sciences  
Biochemistry  
Chemistry  
Cybernetics  
Economics-System Science  
General Chemistry  
General Physics  
Geology  
Geology (Engineering Geology)  
Geology (Geochemistry)  
Geology (Paleobiology)  
Geology (Non-renewable Natural Resources)  
Geophysics (Applied Geophysics)  
Geophysics (Geophysics and Space Physics)  
Mathematics  
Mathematics-Applied Science  
Mathematics-Computer Science  
Mathematics-System Science  
Physics

#### Social Sciences

Afro-American Studies  
Anthropology

Business-Economics  
Chicano Studies  
Communication Studies  
East Asian Studies  
Economics  
Geography  
Geography-Ecosystems  
History  
Latin American Studies  
Political Science  
Sociology

#### Life Sciences

Bacteriology  
Biology  
Kinesiology  
Psychobiology  
Psychology  
Quantitative Psychology

**Note:** The following courses in the College of Letters and Science will *not* apply on breadth requirements: Anthropology 173A-173B; Biology 30; Chemistry A; Economics 40, 141, 144, 145; English 136A-136B-136C; English as a Second Language 33A-33B-33C; 103J, 103K, 106K, 107K, 109K, 111K, 122K; Journalism 2, 101A-101B, 180, 182A-182B, 190, 193; Kinesiology 1, 2, 102; Mathematics 1A, 38A-38B, 104; Physics 5; Psychology 41, 142; Sociology 18.

### E. PHYSICAL SCIENCES

Any courses for which the student is eligible in Astronomy, Atmospheric Sciences, Chemistry (except Chemistry A), Earth and Space Sciences (except Earth and Space Sciences 115, 116, M117, and M118), Mathematics (except Mathematics 1A, 38AB, 104), and Physics (except Physics 5). Also, Engineering 11 and 20; Geography 1, M102, 104, 105, 106; Economics 145, 146; Linguistics 145; and Philosophy 125, 128, 134, and 135.

### F. LIFE SCIENCES

Any courses for which the student is eligible in Bacteriology, Biology (except Biology 30), and Kinesiology (except Kinesiology 1, 2, 102, 106, 108, 109, 170A-170B and 175). Also applicable, Anthropology 1A, 1B, 11, M12 (same as Public Health M12), 130A-130B, 132; Geography 2, 5, 108, 109, 110, 112; Earth and Space Sciences 115, 116, M117, and M118; Linguistics 198; Psychology 15, 110, 111, 115, 116, 117, 118A-118B-118C, 120 and 121.

### G. SOCIAL SCIENCES

Any courses for which the student is eligible in Anthropology (except Anthropology 1A, 1B, 11, M12 (same as Public Health M12), 130A-130B, 132, 173A-173B), Archaeology M131, M132, Asian American Studies, Communication Studies (except Communication Studies 142 and 175), Economics (except Economics 40, 141, 144, 145, 146, 147, Geography (except Geography 1, 2, 5, M102, 104, 105, 106, 108, 109, 110, 112, 171), History, Indo-European Studies M131, M132, Political Science, Psychology (except Psychology 15, 41, 110, 111, 115, 116, 117, 118A-118B-118C, 120, 121, 131A-131B, and 142), and Sociology (except Sociology 18). Also applicable: Journalism 112, 181, 192, 195 (UCLA courses only); Kinesiology 106, 108, 109, 170A-170B, 175; Linguistics 100, 103, 170; Women's Studies 100, M148.

### H. HUMANITIES

Any courses for which the student is eligible in Classics, Communication Studies 142 and 175, English, (except English 136A-136B-136C; English as a Second Language (except English as a Second Language 33A-33B-33C, 103J, 103K, 106K, 107K, 109K, 111K, 122K); Folklore, French, Germanic Languages, Humanities, Indo-European Studies 140, M150, Italian, Linguistics (except 100, 103, 145, and 170), Near Eastern Languages, Oriental Languages, Philosophy (except 125, 128A-128B, 134, and 135), Slavic Languages, Spanish and Portuguese, and Speech.

#### Acceptable courses in the College of Fine Arts are:

Art 30A, 50, 51, 52, 53, 54, 55, 101A-101D, 103A-103D, 104B-104D, 105A-105E, 106A-106C, 108A-108B, 109A-109D, 110A-110D, 112A-112B, 114A-114D, 115A-115C, 118A-118D, 119A-119C, 120A-120B, 121A-121B, 122.

Dance 140A-140C, 151A-151B.

Integrated Arts 1A-1C.

Music 2A-2C, 130, 131A-131B, 132A-132B, 133, 134, 135A-135C, 136, 137, 138, 139, 140A-140C, 142A-142B, 143A-143B, M144, 147, 150A-150C, 152, M154A-154B, 157, 188A-188Z, 189.

Theater Arts 5A-5C, 102A-102B-102D, 103A-103B, 104A-104B, 105, 106A-106E, 108, 110, 113, 114, 130A-130B.

## Old Requirements

Students who have completed 36 or more quarter units prior to the beginning of Fall Quarter 1978 may choose to complete the new requirements or Plan A or Plan B as described below.

Courses taken prior to the Fall Quarter 1978 may be applied according to the list in the Catalog of the year in which the course was taken.

Students reentering the College after an extended absence may petition the Dean of the College to graduate under the breadth requirements of Catalogs published prior to Fall 1978.

## PLAN A

### Option 1

The Student will ordinarily take three courses in each of the three divisions outside the division of his own major. He may, however, use courses authorized by the Council on Educational Development to replace one of the three courses in each division, provided that the Executive Committee of the College has designated each course as appropriate to the division in which it is applied.

### Option 2

The student will take three courses, excluding elementary and intermediate foreign language, in each of two divisions outside the division of his own major, and in addition complete course 5 in one foreign language. Successful completion of a proficiency examination that is administered by a foreign language department (at UCLA) certifying proficiency at the level of course 5 is acceptable on this option. Courses authorized by the Academic Senate Council on Educational Development and by the Executive Committee cannot replace course 5 in a language but may replace one of the three required courses in each of the two remaining divisions, provided the courses so applied have been designated as appropriate to the division.

For the purposes of both options, except for the individual courses specified below, courses in the student's major division may not be used to satisfy any of these requirements. In no case may courses in the student's major department or courses required for the major be used to satisfy these requirements. Courses in other divisions required in preparation for the major may be used to satisfy these requirements. Courses used exclusively to satisfy College breadth requirements may be taken on a passed/not passed basis. Acceptable courses in the College of Fine Arts applicable as humanities are listed below under H.

## PLAN B

The student will take seven courses in any division outside the division of his own major, and either one course in each of the two remaining divisions or two courses in one of the remaining divisions. The divisional requirements may be satisfied according to E-H above. Acceptable courses in the College of Fine Arts applicable as humanities courses are listed under H.

No courses in foreign language will apply on Plan B unless the student has passed course 5 in one foreign language at the College level. If the student has completed course 5 in one foreign language, then all elementary and intermediate foreign language courses taken at the College level are acceptable for satisfaction of this requirement under the division of humanities.

Courses required for the major or in preparation for the major may not also be used to satisfy this requirement. In no case may courses in the student's major department be used to satisfy this requirement. Courses used to satisfy College breadth requirements may be taken on a passed/not passed basis.

No interdisciplinary (CED) courses may be used on Plan B.

## Credit For Advanced Placement Tests

Students may fulfill a part of the College requirements with credit allowed at the time of admission for College Entrance Examination Board Advanced Placement Tests with scores of 5, 4, or 3. Advanced Placement Test credit will fulfill requirements in the College of Letters and Science as follows:

TEST	CREDIT ALLOWED ON COLLEGE REQUIREMENTS
Biology	Biology 2: 4 units; Unassigned, 6 units (Life Science)
Chemistry	Chemistry General: 10 units (Physical Science)
English	Composition and Literature: 10 units (Score 3) (Subject A and 10 units Humanities)  English 3: 4 units; English 4: 6 units (Score 4 or 5) (English 4, Humanities 6 units)
Foreign Language	Course 5: 10 units (Humanities)
History—American	U.S. History: 10 units (Social Science and American History and Institutions)
History—European	History 1C: 4 units; European History, 6 units (Social Science)
Mathematics (AB test)	Mathematics 31A: 5 units (Physical Science) <sup>1</sup>
Mathematics 31AB: 10 units (Physical Science) <sup>4</sup>	
Physics General: 10 units (Physical Science) <sup>2</sup>	
Physics General: 5 or 10 units (Physical Science) <sup>4</sup>	

Some portions of Advanced Placement Test credit are evaluated by corresponding UCLA course number. If a student takes the equivalent UCLA course, a deduction of UCLA unit credit will be made prior to graduation.

<sup>1</sup>Students who pass the Mathematics AB examination with a score of 3, 4, or 5 receive 5 units of credit for Mathematics 31A. Students who score 3, 4, or 5 on the Mathematics BC examination will receive 10 units of credit for Mathematics 31AB. Students who take both examinations will receive a maximum of 10 units of credit.

<sup>2</sup>Students who pass the Physics B examination with a score of 3, 4, or 5 will receive 10 units of credit for General Physics. Students who score 3, 4, or 5 on the Physics C, part I examination will receive 5 units of credit for General Physics. Students who take Physics C, part I and II will receive 10 units of credit for General Physics. Students who take both examinations will receive a maximum of 10 units of credit.

Any student who has completed 36 quarter units at the time of the examination will receive no Advanced Placement test credit.

## Credit by Examination

Within the College of Letters and Science, eligibility for credit by examination is for the most part limited to students who have established their superiority by being approved as Departmental Scholars, or by their participation in a departmental honors program, or by their admission to the College Honors Program. A student not eligible by any of these criteria may nevertheless petition to the Dean: his petition should make clear his superiority at least in the area of the course in question and in related work. Petitions for credit by examination are available only through an appointment with a College counselor. A \$5 fee will be charged for each petition.

## Declaration of Major

A student who has 90 or more units of credit toward the degree must declare a major. A student who does not already have a major should file a petition for declaration of major with the department or committee in charge of the proposed major. If accepted in the major, he shall thereafter be advised by a representative of the department or the committee.

We urge students not to choose a major hastily or thoughtlessly. Many freshmen enter the University uncertain about their field of concentration. If an entering student does not specify a major offered by the College, his major will officially be listed as *Undeclared*. Such students are not restricted in any way from taking introductory courses in any department in the College. Usually the student who enrolls in a variety of courses, acquiring a back-

ground in two or three of the broad fields of human knowledge — the natural sciences, the social sciences, the humanities — will be able to decide upon his area of interest and complete his undergraduate studies readily in the normal four years. We advise not making this important decision until some of the many fields of study offered at the University have been explored, but some major programs, especially in the natural sciences, have prerequisites requiring as much as two years of sequential studies, and thus may not be open to third-year students who have not yet begun the appropriate prerequisite courses. Once a major has been decided upon, the fields from which courses must be selected to satisfy the College breadth requirements can be defined; if in the first year a variety of courses throughout the College has been sampled, some of these courses will very likely count toward satisfaction of the requirements in the different general areas.

A freshman or sophomore who has entered the University with a particular major that he does not intend to complete should not change to another major until reasonably certain of his academic goals. Students who are in doubt about their interests and abilities can get help and guidance from the College of Letters and Science office, the Psychological and Counseling Services Center, and the Placement and Career Planning Center. In many departments, counselors and faculty members are available to discuss their particular disciplines and related areas.

## Regulations Governing the Major

A major shall consist of not less than nine (36 units), nor more than 15 (60 units) upper division courses, except that a departmental major may be increased by three more upper division courses (12 units) in other departments, with the approval of the Executive Committee of the College.

The majors shall be designated as **departmental, inter-departmental, or individual**.

A departmental major shall consist of a group of coordinated upper division courses, of which at least six courses are in one department, set up and supervised by a department.

An interdepartmental major shall consist of at least 13 coordinated upper division courses, of which not more than eight are in one department, set up and supervised by a committee appointed by the Executive Committee of the College.

A student who has some unusual but definite academic interest for which no suitable major is offered in the University of California and who has completed at least three quarters of work (a minimum of nine courses) in the University with a grade-point average of B (3.00) or higher may, with the consent of the Dean of the College and with the assistance of a faculty adviser appointed by the Dean, plan his own major. 1) The **individual major** must be submitted to and approved by the Dean of the College no later than the first week of classes of the third quarter before the student's intended graduation. The request should be accompanied by a statement from the student, defining the purposes of the major and its relation to his goals, and explaining the reasons why the program cannot be accommodated within some existing major. There must be an accompanying statement from a faculty adviser indicating that there has been significant faculty consultation in devising the program. The faculty adviser should be a regular member of the faculty of the College of Letters and Science, with a professorial title in a department that offers a major in the College. 2) Each request for an individual major should list the course numbers and titles in the preparation for the major and in the major itself, including an indication of the relevance of each course or group of courses to the program. The major should consist of at least twelve and not more than fifteen upper-division courses, a majority of which are in departments offering a major in the College. 3) The major may not include any courses taken on a P/NP basis except that one or two 199 courses may be included in the major and may be graded in this way. CED and other experimental courses may not be used as part of a major. 4) A senior thesis is required of each student with an individual major. An outline of the thesis, worked out with the help of the faculty adviser, should be submitted to the Honors Program office no later than the first week of the second quarter before graduation. The faculty adviser will pass final judgment on the

quality of the thesis: a copy of the thesis must be filed in the Honors Program office. The Dean must certify that the student has completed the requirements of his major, including completion of the thesis, before the degree is granted. The title of the major will not appear on the diploma, but will be entered in the memoranda column on the student's official transcript. The major will be indicated on the diploma as Individual Field of Concentration. Further information about the individual major may be obtained at the Honors Program Information Window or from one of the Honors Program counselors.

Students in good standing are sometimes permitted to have a *double major*, consisting of two departmental majors in this college, provided they can be completed within the maximum limit of 208 units. Double majors in the same department with very few exceptions are unacceptable. If the majors are not in the same division, the student will designate one of the two majors as his principal one, in order to identify his division for the purpose of satisfying the breadth requirements. (See Plans A and B, Breadth Requirements.) Courses used to satisfy the requirements for the principal major may also be used to satisfy the requirements for the secondary one, but *not more than five courses may be common to both majors*.

For *double majors*, courses outside the department of the principal major which are required in preparation for that major may be used to satisfy the breadth requirements. Courses used to meet the requirements for the secondary major (including preparation for the major) may be used to satisfy the breadth requirements under Plan A, but not to satisfy the requirements of a seven-course sequence under Plan B. They may be used to satisfy the other one or two courses under Plan B.

A student who has been away from the University for several terms should consult with his major department concerning the major requirements under which he will graduate.

*Change of Major.* A student in good standing who wishes to change his major may petition the department or committee in charge of his proposed major, provided that the student can complete his proposed field of study *without exceeding the 208-unit limit*. Final action on the petition will be taken by the Dean of the College. Certain majors may be unavailable. A change of major may be denied if all preparatory courses have not been satisfactorily completed. A student on probation may not normally change his major. No change of major will be permitted after the opening of the student's last quarter. Each student who has declared his major shall be advised by a representative of the department or committee before enrolling in classes.

Students who fail to attain a grade-point average of at least C (2.00) in work taken in the prerequisites for the major, or in courses in the major, may, at the option of the department or committee in charge, be denied the privilege of entering or of continuing in that major. The student must attain an average grade of C (2.00) in all courses undertaken in the major.

## Organized Majors in the College of Letters and Science

### DEPARTMENTAL MAJORS LEADING TO THE BACHELOR'S DEGREE

The College offers departmental majors in the following fields. These majors lead to the degree of Bachelor of Arts unless otherwise noted.

African Languages  
Ancient Near Eastern Civilizations  
Anthropology  
Arabic  
Astronomy  
Atmospheric Sciences  
Bacteriology  
Biochemistry\*  
Biology  
Business-Economics  
Chemistry\*  
Chinese  
Classics  
Economics  
English  
English-Greek  
English-Latin  
French  
French and Linguistics



General Chemistry\*  
 General Physics  
 Geography  
 Geography-Ecosystems  
 Geology\*  
 Geology (Engineering Geology)\*  
 Geology (Geochemistry)\*  
 Geology (Paleobiology)\*  
 Geology (Non-renewable Natural Resources)\*  
 Geophysics (Applied Geophysics)\*  
 Geophysics (Geophysics and Space Physics)\*  
 German  
 Greek  
 Hebrew  
 History  
 Italian  
 Italian and Special Fields  
 Japanese  
 Jewish Studies  
 Kinesiology\*  
 Latin  
 Linguistics  
 Linguistics and English  
 Linguistics and French  
 Linguistics and Italian  
 Linguistics and Oriental Languages  
 Linguistics and Philosophy  
 Linguistics and Psychology  
 Linguistics and Spanish  
 Mathematics  
 Mathematics-Applied Science  
 Philosophy  
 Physics\*  
 Political Science  
 Portuguese  
 Psychology\*  
 Psychology, General  
 Quantitative Psychology  
 Scandinavian Languages  
 Slavic Languages  
 Sociology  
 Spanish  
 Spanish and Linguistics

## INTERDEPARTMENTAL MAJORS LEADING TO THE BACHELOR'S DEGREE

Afro-American Studies  
 Chicano Studies  
 Communication Studies  
 Cybernetics\*  
 East Asian Studies  
 Economics-System Science  
 Ethnic Arts (Intercollege)  
 Indo-European Studies  
 Latin American Studies  
 Mathematics-Computer Science\*  
 Mathematics-System Science  
 Near Eastern Studies  
 Study of Religion

\*Leading to the degree of Bachelor of Science

Requirements of these majors are listed in detail on the following pages.

## SPECIAL PROGRAM IN AFRICAN STUDIES

*Committee in Charge.* C. Ehret (Chairman), History, J. Maquet, R. Sklar.

*Adviser.* C. Ehret.

This program is designed primarily for (1) students who plan to live and work in Africa or who are interested in government and public service careers involving African affairs, and (2) students who plan to pursue graduate work in one of the social sciences or Near Eastern and African languages with primary concentration on the African field.

The underlying philosophy of the program in African Studies is that persons with a firm grounding in one of the established disciplines can make the best contribution to an understanding of Africa and its problems. Thus, the special program in African Studies can be taken only jointly with work toward a bachelor's degree in one of the following fields: anthropology, economics, geography, history, Near Eastern and African languages, political science, or sociology. The student completing this special program will receive a degree with a major in his chosen discipline and specialization in African Studies. The student's major department will certify completion of the Special Program in African Studies.

*Preparation.* The introductory courses listed here in three of the following departments: Anthropology 5A and 5C;

Economics 1 and 2, or 100; Geography 1 and 3; History 10A-10B; Linguistics 1 or 100; Sociology 1 or 101. Training in Arabic, French, Portuguese or an African language is highly recommended.

*Upper Division.* The student is required to take a departmental major in the social sciences, or by special arrangement with the Committee Chairman, in the humanities or arts. In addition, he is required to take a course related to Africa in each of four departments, one of which must be African Languages 190. African Languages 190 and one of the other three required upper division courses related to Africa may, however, be replaced by a three-quarter sequence of any African language.

## SPECIAL PROGRAM IN ASIAN AMERICAN STUDIES

*Committee in Charge.* H. Wagatsuma (Chairman), Anthropology, B. Befu, D. Farquhar, J.M. Hawkins, H.E. Plutschow.

*Adviser.* R. Hirano, Asian American Studies Center, 3232 Campbell Hall.

The program in Asian American Studies is intended to promote the study of Asian and Pacific peoples in the United States from several disciplines. It provides a general introduction to Asian American Studies for those who anticipate advanced work at the graduate level or careers in research and community work related to the Asian American.

Courses with Asian American Studies content are offered through various departments in the College of Letters and Science and through the Council on Educational Development (CED). In addition, a two-course introduction, Asian American Studies 100AB, is available which provides an interdisciplinary overview of both the historical and contemporary experience. Students may participate in the program by undertaking a course of study which focuses on the special roles and experiences of Asian and Pacific peoples in the United States through a departmental major or the interdepartmental major in East Asian Studies.

*Preparation.* Asian American Studies 100AB, Introduction to Asian American Studies.

*Upper Division.* Since Asian American Studies is not a degree-granting program, students participating in it must complete an organized major.

## CERTIFICATE PROGRAM IN DIVERSIFIED LIBERAL ARTS

In order to earn a credential to teach in California elementary schools, a student must complete the Teacher Credential Program in the Graduate School of Education and either earn a satisfactory score on the Commons Section of the National Teachers Examination, or complete the Diversified Liberal Arts Program (DLAP) in the College of Letters and Science.

To earn the Certificate in Diversified Liberal Arts, the student must complete all the requirements for the Bachelor's degree in the College of Letters and Science. In addition, the student must complete required and elective courses in four areas: (1) English, (2) Mathematics, and the Physical or Life Sciences, (3) Social Sciences, (4) Humanities, Fine Arts and Foreign Language.

Most of the requirements for one of the areas will be satisfied by the student's major; the student must complete seven courses (28 units) in each of two other areas, and eight courses (32 units) in the fourth area. The student decides in which area to complete the eighth course. A minimum C (2.0) grade point average is required in each of the four areas. Courses in preparation for or on the student's major and in satisfaction of the D requirement may not be taken P/NP.

Courses in Divisions outside the major, which are required as preparation for or as part of the major, may be applied toward the area course requirements. However, no course may be applied in more than one area. Completion of the Program will satisfy the breadth requirements of the College of Letters and Science. The Dean of the College will certify completion of the Program.

For additional advice concerning the Program, students should consult a counselor in the College of Letters and Science. For information regarding the Teacher Credential

Program in the Graduate School of Education, students are urged to see a counselor in Room 201 Moore Hall.

## Area 1. English

*Composition and Grammar. Required:* Two courses: English 120A plus one course in satisfaction of the D requirement. If the student wishes to complete the Area 1 requirements with additional composition and grammar, the courses must be chosen from the following: English 130, Linguistics 1, 2, and 100.

*Literature. Required:* One course from English 10A, 10B, 10C, 112, 113, Humanities 1A, 1B, and all upper division courses in English literature for which the student has the prerequisites. The student may complete more than one course from this list to satisfy the Area 1 course requirement.

*Speech. Required:* One course from Communication Studies 10, 100, Speech 1, 2, 107 and 109. The student may complete more than one course from this list to fulfill the Area 1 course requirement.

## Area 2. Mathematics and the Physical or Life Sciences

*Mathematics. Required:* Mathematics 38A-38B and 104. Other courses in Mathematics may be substituted for one or more of these with the written approval of the Department of Mathematics and the Dean of the College of Letters and Science.

*Physical or Life Sciences. Required:* A minimum of 12 units in Physical Sciences and/or Life Sciences, apart from Mathematics. To fulfill the Area 2 requirement, the student may elect courses that satisfy the Physical Sciences or Life Sciences breadth requirements.

## Area 3. Social Sciences

*History. Required:* One course, History 7A, 7B, 179A, or 179B. Other courses that the student may elect to fulfill the total area course requirement are those listed as fulfilling the Social Science breadth requirements.

## Area 4. Humanities, Fine Arts, and Foreign Language

Although there are no specific course requirements, courses used in this area must be selected from those courses listed as fulfilling the Humanities breadth requirements and, in addition, any courses in foreign language and Dance 10A, 10B, 10C; Music 1, 113A-113B; Theater Arts 118A, 118B, 119.

Students who plan to pursue the Diversified Liberal Arts Program should begin to take courses in their freshman year that will fulfill these requirements. Transfer students may petition to have suitable courses completed at other institutions applied to the requirements of this Program.

*The Teacher Credential Program in the Graduate School of Education. Required:* Education 100, 112, 312, 315AB, 318AB and 324AB.\* Students may commence and complete the Teacher Credential Program as graduates or undergraduates. All students must file an application to be admitted to the Teacher Credential Program either at UCLA or at another institution.

\* Please Note: The Dean of the College has agreed to accept 12 units of required 300 series courses toward the bachelor's degree for undergraduate students accepted in the Teacher Credential Program. See page 20, 1, (b).

## SPECIAL PROGRAM IN INTERNATIONAL RELATIONS

*Adviser.* D.O. Wilkinson, Department of Political Science.

This program can only be taken jointly with a major in political science, and all requirements for the political science major must be met, by or in addition to meeting the requirements for this special program. The student completing this special program will receive a degree with a major in political science and specialization in international relations. The program is designed to serve the needs of: (1) students desiring a general education focused on international affairs; and (2) students preparing for graduate work in international affairs, whether in a social science, in area study, or in a school of foreign service.

The program also partially serves the needs of: (1) students planning careers (in business, law, journalism, or library service) with an international emphasis; and (2) students preparing to teach social science in the secondary schools. These students should govern their programs primarily by the preparation requirements of the professional school or teaching credential of their choice.

Courses in management and administration, and in verbal and written communications, will ordinarily increase the career options of students in this program.

*Preparation.* Political Science 1, 2, and 3. History 1A-1B-1C, or any three courses selected from History 8A-8B, 9A-9D, 10A-10B. Economics 1 and 2, or 100. Sociology 1 or 101. Anthropology 22, 100 or 102. Geography 3 or 5.

*Upper Division.* The political science major should be completed as follows: Political Science 110; any four upper division courses in Field II, International Relations; Political Science 168L, and three additional upper division courses in Field IV, Comparative Government; one additional course from Field I, or two additional courses both in Field III, Field V or Field VI.

Other social sciences courses required: Geography 140; Sociology 140; two courses from Economics 110, 111, 112, 180, 190; three courses from History 147A-147C, 169, 178A-178B, 193.

Language requirement: completion of the sixth quarter course (or its equivalent, as prescribed by the language department), with a grade of C or better, of any modern foreign language. French 6, German 6, Spanish 25, Russian 6, are most frequently offered in fulfillment of this requirement, but see also the offerings listed under Portuguese, Italian, Germanic Languages, Near Eastern and African Languages, and Oriental Languages. Arabic, Chinese, French, German, Japanese, Russian and Spanish, are the languages of widest career utility in international affairs.

*Area Focus.* Students are advised but not required to concentrate their political science, geography, history and language courses so as to achieve broad familiarity with one area such as Latin America, Africa, the Atlantic area, the Soviet sphere, East Asia, Southeast Asia, South Asia, or the Middle East.

## SPECIAL PROGRAM IN URBAN STUDIES OR ORGANIZATIONAL STUDIES

*Adviser.* R. Fried, Department of Political Science.

Students may elect to combine one of these programs with a departmental major and may petition to have the area of specialization recognized with the bachelor's degree.

The option of completing an individual major in Urban Studies or Organizational Studies is also open to qualified students.

Students with departmental majors should seek advising in the appropriate department. Students interested in the individual major should consult a counselor in the College of Letters and Science.

The requirements for the specializations, to be taken in conjunction with the major in the Division of Social Sciences, are:

*Preparation.* At least five of the following courses appropriate to the courses to be taken in the specialization: Economics 1 and 2, Sociology 18 and 109, or the equivalent, Political Science 1, Psychology 10, Sociology 1 or 101, Geography 4.

*Urban Studies Specialization.* (1) At least three courses outside the major department, chosen from: Political Science 182A, Sociology 125, Economics 120, Geography 150, Anthropology 160, Psychology 168. (2) One of the following suites of courses, outside the major department: Political Science 180, 182B, 188B; Economics 121, 130, 131, 133, Sociology 124, 154, 155; Geography 145, 146, 152, 156; History 189A, 189B, 180J-180K; Psychology 127, 135, 137A. (3) Internship experience in an urban governmental or community service organization.

*Organizational Studies Specialization.* (1) At least three courses outside the major department, chosen from: Political Science 181, 190, Sociology 121, 141, Management 190, Psychology 149. (2) One of the following suites of three courses, outside the major department: Political Science 146, 147, 180, Economics 170, 171, Sociology 124, 140, 152, Geography 148, 163, Psychology 135, 148,

189. (3) Internship experience in a governmental or service organization.

## SPECIAL PROGRAM IN WOMEN'S STUDIES

*Committee in Charge.* K.K. Sklar (Chair), History, F. El Guindi, B. Gutek, L.B. Nilson, M. Strobel, R. Wasserstrom, R. Yeazel.

*Adviser.* M. Strobel, Director, Special Program in Women's Studies.

Students completing a bachelor's degree may petition to receive a Women's Studies Specialization in addition to a major in their chosen discipline.

This program is designed to promote the integration of the study of women into traditional academic disciplines. It is oriented toward the student who wishes to undertake studies in an established discipline with a special emphasis on the roles, contributions, and cultural images of women. At the same time, the program is also designed to provide a view of women in society from the perspective of several different disciplines. With these purposes in mind, two Women's Studies courses have been instituted in order to provide a multidisciplinary over-view of research on women and sex roles and to present new research and theory in this area.

*Preparation.* Women's Studies 100, Introduction to Women's Studies.

*Upper Division.* The student participating in this program is required to complete a departmental major in one of the following departments: Anthropology, Biology, English, History, Political Science, Psychology, or Sociology. Students may petition to have other departments accepted. The requirement of a departmental major is included to provide the student with a strong background in the subject matter and analytic tools of a discipline. These are a necessary preparation for a multidisciplinary program and will enable students who desire further training to embark on related graduate study.

Students are required to complete at least eight classes (none of which may be pass/not pass) from the Women's Studies list. These eight must include Women's Studies 100, Introduction to Women's Studies; Women's Studies 197, Senior Seminar in Women's Studies, and at least one course from each of two areas outside the student's major department. Each quarter the Women's Studies Committee will prepare a list of departmental courses with Women's Studies content. The core courses of the Women's Studies Program are offered on a regular basis by individual departments (Anthropology 151, 163, Education M148/Women's Studies M148, English M107/Women's Studies M107, French 158, History 171C, 171D, 171E, Philosophy 192, Psychology M165/Women's Studies M165, Sociology 160. Courses offered through the Council on Educational Development (CED) that are on the Women's Studies list as well as departmental special topic courses and seminars also may be applied to the specialization.

Students are encouraged to declare their specializations in Women's Studies as early as possible and to discuss with the Director their proposed course of study.

## AFRO-AMERICAN STUDIES MAJOR

*Committee in Charge.* A. Robinson (Chairman), History, S. Coben, P. Fontaine, A. Gill, K. Hill-Scott, B. Raven.

The major in Afro-American Studies is designed to provide UCLA students with a program of courses leading to a Bachelor of Arts degree in Afro-American Studies. The major offers an opportunity to study in a systematic way the origins, experiences and conditions of people of African descent in the United States and elsewhere in the New World.

The curriculum has two fundamental goals. First, it aims to provide a comprehensive introduction to the crucial life experiences of Afro-Americans. Secondly, it seeks to assist students in the development of academic and professional skills which will enable them to assume useful roles in society.

Accomplishing these objectives requires that students in this program assume a significant measure of responsibility for the actual design of their course work, in conjunction with the faculty adviser for the Afro-American Studies program whom candidates for the program should seek out at the earliest date. Upon entering the major and

after consultation with the program's faculty adviser, students will choose an area of concentration from one of the departments listed below. Four lower division and six upper division courses must be taken within the chosen department. Two additional upper division courses from the approved list must be taken in departments outside of the student's field of concentration. Finally, Afro-American Studies majors are required to complete two seminars, a junior seminar and a senior colloquium, offered by the program.

*Preparation for the Major.* History 10A; four lower division courses in one concentration: *Anthropology:* Anthropology 1A, 1B, 5A, 5C; *Economics:* Economics 1, 2, 4, Mathematics 3A; *English:* English 3, 4, Linguistics 1, 2; *History:* History 6A, 6B, 6C, 10B; *Philosophy:* Philosophy 4, 5B, 6, 22; *Political Science:* Political Science 1, 6, Sociology 1, Economics 1; *Psychology:* Psychology 10, Anthropology 11, Biology 2, and one quantitative course from the list below: *Sociology:* Sociology 1, Linguistics 1, 2, and one quantitative course from Mathematics 50A, Psychology 41, Economics 40, Public Health 160A, or Sociology 18. Students concentrating in Psychology or Sociology are strongly urged to complete the required lower division quantitative course at the earliest possible moment.

*The Major.* (1) Anthropology 164, History 176AB. (2) six upper division electives within the department of concentration from the approved list of courses. (3) two upper division electives outside the department of concentration selected from the approved list. (4) two seminars offered by the Afro-American Studies Program.

*Honors Option.* An Honors Option is also available. Students participating in this option are required to complete an independent research paper or project. Normally, this paper or project would receive three quarters of credit and would be undertaken with the guidance of a faculty member.

## MAJOR IN CHICANO STUDIES

*Committee in Charge.* R. Rocco (Chairman), Political Science, J. Gómez-Quinoñes, R. Paredes. *Adviser.* C.M. Haro, Chicano Studies Center.

This multidisciplinary program leading to the Bachelor of Arts degree in Chicano Studies is designed to provide systematic instruction for liberal arts and pre-professional majors who wish concentrated study of the Chicano experience. Viewed as developmental, the program subjects to critical investigation and analysis the Chicano reality: social economic, educational, historical, political and psychological.

This major is recommended for students who plan to prepare themselves for graduate study as well as students preparing for public service careers. Students are encouraged to spend up to one year in either a) a service agency in the Chicano community or, b) in a professional research project on the Chicano experience.

*Preparation for the Major.* \* One course from each of the following departments: Anthropology 22, 5A, or 5C; Economics 1 or 2; History 6A, 6B, or 6C; Political Science 1; Sociology 1; Spanish 5 or its equivalent.

*The Major.* \* This consists of three elements, one of which is optional.

1. *Major Core.* Eight courses: Education 102; English 105; History 186A, 186B, 197; Political Science 147; Sociology 124\*\* or 155\*\*; Spanish 141\*\* or M149.\*\*

2. *Major Concentration.* \* Four courses in one discipline selected from the following: Anthropology 100, 119, 122A, 139, 143, 145AB, M146, 150, 160, 170AB, 172; Economics 110, 120, 121, 150, 151, 152, 172; English 104, 106, 171, 172, 173, 174, 188, 189, 190; History 173B, 181, 182, 183, 188, 189B; Political Science 115, 142, 149, 171, 172B, 173, 174, 181, 182A, 186, 190, 191; Psychology 127, 130, 133D, 134, 135, 136, 137A, 137B, 137C, 143, 175; Sociology 109, 113, 120, 123, 125, 129, 140, 142, M143, 155\*\*, or 124\*\*; Spanish 100, 103, 105, 109, 115, M118, 121A, 121B, 137, 139, 142A, 142B, 141\*\*, or M149.\*\* The student may petition the Committee in charge of the major to include in the Major Concentration area a course not on the approved list. CED courses may be applied only by petition.

\*Students must complete prerequisites for all courses in preparation for and on the major.

\*\*Course may not be used on both Major Core and Major Concentration.

3. *Optional Multi-disciplinary Senior Thesis.* Prerequisite: senior standing. Chicano Studies Majors will have the option during their senior year to enroll in two 199 courses in their Major Concentration area, with the intention of producing a Chicano Studies undergraduate thesis related to the major concentration. Enrollment in the two 199 courses will be with the advice and consent of a faculty member. The first quarter course will include thesis conceptualization and formulation, along with preliminary data collection for the thesis. The second quarter course will entail completion of the data collection, analysis of the data, and termination of the thesis. The Multi-disciplinary Senior Thesis is optional.

*Course Limitations.* Not more than two 199 courses may apply on the Major Concentration; 199 courses applied on the Multi-disciplinary Senior Thesis option may not also be used on the Major Concentration area. Registration in special studies courses (199) must be approved by the departmental chairman and either the Chairman or Adviser for the Chicano Studies Major in writing. Not more than two CED courses may be applied on the Major Concentration.

## MAJOR IN COMMUNICATION STUDIES

*Committee in Charge.* P. I. Rosenthal (Chairman), Speech, P. French, E. Keenan, G. Levine, C. Moore.

The major in Communication Studies seeks to provide the student with a comprehensive knowledge of the nature of human communication, the symbol systems by which it functions, the environments in which it occurs, its media, and its effects. Employing critical and empirical approaches, the major draws its resources from the social sciences, humanities, and fine arts. The program offers two areas of specialty involving studies ranging from dyadic to mass communication. The specialization in Mass Communication centers upon formal and institutional communication systems and the macrocosmic social contexts in which they function. The specialization in Interpersonal Communication centers upon face-to-face communicative interaction in the small group environment. Students selecting the major must complete the required lower division prerequisites and a minimum of 16 upper division courses as set forth below.

Enrollment in the major is limited. Admission to the major will be by application to the Committee in charge. Applications are available at Royce Hall 232.

For purposes of Breadth Requirements the major in Communication Studies is designed as a major in the Division of Social Sciences.

*Preparation for the Major.* Sociology 1, Psychology 10, Communication Studies 10, Linguistics 1. Linguistics 2 is required for students who elect to specialize in Interpersonal Communications.

*The Major.* Required core courses: Communication Studies 100 and 101, Anthropology M146 or Linguistics 100.

### Specializations.

**A. Studies in Mass Communication.** (1) *Theory and Method.* Required courses: Communication Studies 140, 152, Sociology 122, and one course from Psychology 137B, Political Science 141, or Sociology 150. (2) *Modes of Mass Communication.* Two courses chosen from Communication Studies 160, 165, 170. (3) *Media and Media History.* Two courses chosen from Journalism 192, Theater Arts 108, 110A, 116 or Communication Studies 175. (4) *Electives* (five courses). Two courses chosen from Communication Studies 120, 130, Psychology 137A or Sociology 152, Sociology 154 or Psychology 135, Sociology 155. Three courses chosen from one of the following three groups: (a) Language Theory. Linguistics 100, 170, Communication Studies 142, 150, Psychology 123, Philosophy 172. (b) American Studies. English 101B, 101C, 115, History 177A, 177B, 180A, 180B, 187, Political Science 114A, 114B. (c) Social Systematics. Anthropology 141, 144, 145A, 145B, 149A, 149B, Sociology 144A-144B, Anthropology 148 or Sociology 151.

**B. Studies in Interpersonal Communication.** (1) *Theory.* Psychology 135 or Sociology 154; Psychology 137A or Sociology 152. (2) *Methods.* Three courses required: Communication Studies 120, Management 182, Psychology 174. (3) *Heterogeneous Groups Communication.* Three courses chosen from Anthropology 139, Communication Studies 130, Sociology 124, 155. (4) *Electives* (five courses). Two

courses chosen from Communication Studies 140, 160, 165, 170, Sociology 122. Three courses chosen from one of the following three groups: (a) Language Theory: Linguistics 100, 170, Communication Studies 142, 150, Psychology 123, Philosophy 172. (b) Media and Media History. Journalism 192, Theater Arts 108, 110A, 116 or Communication Studies 175. (c) Social Systematics. Anthropology 141, 144A-144B, 145A, 145B, 149A, 149B, Sociology 144A-144B, Anthropology 148 or Sociology 151.

## MAJOR IN CYBERNETICS

*Committee in Charge.* J.W. Carlyle and N. Levan, (Co-Chairmen), System Science, E.C. Carterette, A.D. Grinnell, P. Ladefoged, J.J. Vidal.

This major provides an introduction to cybernetics (general theoretical foundations for information processing, communication, control, and system analysis) accompanied by complementary studies of models and phenomena, with particular attention to those arising in the life sciences. The major is appropriate preparation for technical employment in cybernetics, and in its roles in biological and health sciences, or for graduate or professional studies emphasizing interdisciplinary research in these fields. Courses in technical cybernetics for the major are offered by the Department of System Science (School of Engineering and Applied Science), and accompanying course-work is taken in Psychology, Biology, Linguistics, Mathematics, the School of Medicine, and related disciplines. Options are arranged within the major as follows: (1) cybernetics and linguistics; (2) mathematical cybernetics; (3) cybernetics and psychology, emphasizing physiological psychology, perception and learning; (4) cybernetics and biology, emphasizing physiology, cell biology, and the nervous system; (5) cybernetics and premedical studies.

*Preparation for the Major.* Chemistry 11A-11B-11BL-11C-11CL or 13A-13B; Engineering 10C, 10F, 10S, or comparable experience with rudiments of computer programming; Mathematics 31A-31B-31C or 3A-3B-3C and 31C; Physics 8A or 6A; Physics 8C or 6B. Four additional courses selected from: Chemistry 21, 22, 24; Mathematics 32A, 32B, 32C, 60; Physics 6C, 8B, 8D, 8E; Psychology 10, 41. The major adviser will suggest selections appropriate to the various options; in general Cybernetics students are encouraged to complete as much as possible of the series Chemistry 21-22-24, Mathematics 32, and Physics 8 or 6 at some time during their four-year programs.

*The Major.* Plan I: Biology 189A-189B, one course in group (a) below (Biology 111 is recommended), and eleven additional courses selected as indicated below. Plan II (for pre-medical students and others who have completed Biology 4A-4B or the equivalent): two courses in group (a) below, and eleven additional courses. In Plan I or Plan II, the remaining eleven courses in the major are to be selected from groups (a) through (f) and must include four courses in group (e) and five courses in not more than two of groups (a), (b), (c), (d). The groups are: (a) upper-division courses in Bacteriology and Biology except 189 (recommended: Biology 111, M132, 138, 144, 158, 166, 171); (b) Linguistics 100, 103, 104, 120A, 120B, 145, Psychology 122, 123; (c) Psychology 110 through 124, 150, 151; (d) courses in Mathematics numbered 110 and above; (e) courses in System Science numbered Engineering 120 through 129; (f) other upper-division courses for which the student is eligible in Chemistry, Physics, Computer Science, Electrical Sciences and Engineering (Engineering 100 and 110 through 119), Biocybernetics (Engineering 196B), Biological Chemistry, Biomathematics, Physiology, Public Health.

## MAJOR IN EAST ASIAN STUDIES

*Committee in Charge.* D. Farquhar (Chairman), History, H. Plutschow, H. Wagatsuma.

This major is designed to meet the needs of students who (1) are seeking a general education on East Asia; (2) are planning careers which will necessitate knowledge of, and/or residence in, East Asia; and (3) desire a background in East Asian Studies as a basis for research and/or community work related to the Asian American.

*Preparation for the Major.* History 9B-9C; Oriental Languages 1A-1B-1C or Oriental Languages 9A-9B-9C or a parallel Cantonese sequence; Oriental Languages 11A-11B-11C or Oriental Languages 19A-19B-19C. Students planning to pursue classical Chinese in the Major will need Oriental Languages 13A-13B-13C in addition to the above courses.

*The Major.* This consists of three parts:

1. Four courses selected from the following: Anthropology 103C; Asian American Studies 100A, 100B; Geography 186; History 191A-191E, 192, 193, 195A-195B-195C; Political Science 135, 136, 159, 160, Sociology 134.

2. Five courses selected from the following: any courses in the social sciences listed above under "1" not being used to satisfy that requirement; any upper division courses in the Department of Oriental Languages not being used to satisfy other parts of the Major Requirements; any new upper division courses relevant to East Asian or Asian American studies (including no more than three CED courses) which may be approved by the Executive Committee of the College on the recommendation of the Advisory Committee; Art 114B, Art 114C, Art 115B, 115C; Dance 140B, 145;\* Music 140B, 141, 145, 146A-146B-146C, 147A-147B.\*

3. The prescribed courses in one of the following areas (courses offered to satisfy this requirement will not also satisfy other parts of the Major requirements): (a) *Language:* Oriental languages 121A-121B and two other upper-division courses in Chinese; or Oriental Languages 119A-119B and two other upper-division courses in Japanese. (b) *Archaeology:* Any four of the following: Oriental Languages 170A-170B; Anthropology 109,\* 175A\*-175B\*;\* (c) *Geography:* Geography 132 or 133, 186; and two additional upper-division Geography courses. (d) *History:* Four upper-division or graduate courses in East Asian or Southeast Asian history (History 191A-191E, 193, 195A-195B-195C, 196C-196D, 197 when in the East Asian field, 214). (e) *Political Science:* Political Science 115,\* and three courses selected from the following: Political Science 135, 136, 159, 160, 161, 197 when in the East Asian field. (f) *Sociology:* Sociology 124\* and three courses selected from the following: Sociology 113\*, 126\*, 134\*, 151,\* 154.\*

\*Courses so marked have prerequisites which are not included among the courses mentioned here.

## MAJOR IN ECONOMICS-SYSTEM SCIENCE

*Committee in Charge.* M. Aoki (Chairman), Engineering, J. Carlyle, M. Intriligator, S. Jacobsen, J.G. Riley.

This major is an alternative to the regular departmental major in Economics, and combines work in the Department of System Science (School of Engineering and Applied Science) with preparation in economic theory and in those aspects of mathematics and statistics that are necessary for the study of quantitative aspects of economics and systems theory. The major is appropriate for students who plan graduate study with emphasis on such areas as economic theory, mathematical economics, econometrics, feedback and control systems, optimization, computing techniques, and the modeling and analysis of various socio-economic systems.

*Preparation for the Major.* Economics 1 and 2; Engineering 10C or 10S; Mathematics 31A-31B-31C, 32A-32B-32C, 60.

*The Major.* Fourteen upper division courses are required consisting of six courses in Economics, six courses in System Science, and two courses in Mathematics. Selections must include: Economics 101A, 101B, 102, and one from Economics 144, 145, 146, 147; Engineering 128A, 129A, and one from Engineering 121C, 122A, 127B, 128A; Engineering 120A or Mathematics 150A or 152A; at least one from Engineering 120B, Engineering M120C/Mathematics M151, Mathematics 150B, 152B. System Science selections are made from courses numbered Engineering 120A, 120B, 120C, 121C, 122A, 122B, 124A, 127B, 128A, 128D, 128L, 129A, 129L.

For purposes of the College breadth requirements, this major is considered to be in the division of Physical Sciences. Economics-System Science majors may not offer courses in Economics as breadth courses in the Social Sciences.

## INTERCOLLEGE MAJOR IN ETHNIC ARTS: INTERDISCIPLINARY STUDIES

This is an interdepartmental major open to students in both the College of Fine Arts and the College of Letters and Science.

The major includes a core of seven courses from the departments of Anthropology, Art, Dance, Folklore and

Mythology, Music, and Theater Arts; a concentration in one of these six disciplines; at least three courses in one foreign language; a senior colloquium; and electives selected by the student with approval of the Adviser in the area of concentration. The student remains in the college of his choice and fulfills the breadth requirements of that college. The student will elect his area of concentration at the beginning of the junior year. Counseling is available in the department of concentration and in the College of Fine Arts.

Admission to the major will be by special application to the Committee in Charge. For details of the major, see Ethnic Arts.

### MAJOR IN INDO-EUROPEAN STUDIES

This major will be discontinued effective June 1978. Petitions to enter the major will not be approved.

### MAJOR IN LATIN AMERICAN STUDIES

*Committee in Charge.* F. El Guindi (Chairperson), Anthropology. S. Arora, C.F. Bennett, W.O. Bright, B. Herrick, J.A. Skirius, C. Velez, C. Klein.

For details of the curriculum leading to the degree of Bachelor of Arts, see Latin American Studies. Students should see an adviser in the Latin American Center, 10343 Bunche Hall.

### MAJOR IN MATHEMATICS-COMPUTER SCIENCE

*Committee in Charge.* C. Stone (Chairman), Mathematics, B. Bussell, D. Cantor, B. Engquist, M. Goldberg, L. Levine, D. Martin.

This major, an alternate to the regular departmental major in Mathematics, consists of an integrated program of courses offered by the Department of Mathematics and the Computer Science Department (School of Engineering and Applied Science). In addition to the appropriate studies in Mathematics, the interdepartmental major permits study in the principal disciplines of Computer Science, including theoretical foundations of computer science, methodology of computing, computer system design, programming languages and systems, and computer applications. This major is administered by the Mathematics Department, Mathematical Sciences 6356. The Mathematics Department can arrange advising appointments and can provide current information on changes in requirements. The major leads to the Bachelor of Science degree.

*Preparation for the Major.* Mathematics 31A, 31B, 31C, 32A, 32B, 32C, Physics 8A, 8C or Physics 6A, 6B, Engineering 10C, Computer Science 20, and 30. Students who take Physics 8A, 8C are urged to take Physics 8B.

*The major.* Fourteen courses, as follows. (i) Mathematics 110A, 115, 150B or 152A. (Normal order: 115, 110A, 152A or 150B.) (ii) Four additional courses in Mathematics chosen from courses numbered 110 or above. (Suggested: 113, 114, 140A, 140B, 142, 144, 152B or 150A, 153.) (iii) Computer Science M123B (Engineering M123B), 131, 141, 151A and 152A, 151B and 152B. (Recommended order for Hardware: 151A with 152A, 151B with 152B; recommended order for Software: 131, 141, M123B, 152A and 152B are laboratories counting 1/2 course each.) (iv) One additional course chosen from Engineering 121C, 127B, Computer Science 111A, M124A (Engineering M124A), 132, 171. Credit will not be allowed toward the major for both Mathematics 140B and Computer Science M124A. Management 210A may be substituted for Mathematics 144.

Students with 90 units or more as of September 1973 are exempt from Computer Science 30.

*Minimum Standards.* Effective Fall 1976, each course taken in preparation for the major must be completed with a grade of C- or higher. (A student who does receive a D or an F in a course may repeat the course once.) Furthermore, each student in the major must maintain an average of 2.0 or better in upper division Mathematics courses in the major and a 2.0 or better in the upper division Computer Science and Engineering courses in the major.

Students with 60 or more quarter units of college credit will not be admitted to the major unless they have completed one year of calculus and meet the same minimum standards listed above for all college-level mathematics

and computer science courses completed. This requirement applies both to transfer students and to continuing UCLA students not already in the major.

Transfer students admitted to the Mathematics-Computer Science major should consult an advisor for the major at the earliest opportunity.

Students with substantial knowledge of programming in the PL/I language may be exempted from Engineering 10C by passing a special placement examination. This examination is given during registration week each quarter by the Computer Science Department. Students seeking exemption from other courses should consult a mathematics-computer science adviser.

Departmental Honors in Mathematics-Computer Science will be awarded at graduation to those students who (a) have been admitted to the Mathematics-Computer Science Honors Program, (b) have completed a suitable special project or participating seminar as part of the program, and (c) at graduation, have a GPA of at least 3.6 in upper-division Mathematics courses in the major and 3.6 in upper-division Computer Science and Engineering courses in the major. Students may apply for admission to the program after having completed at least two upper-division courses in Mathematics and eight upper-division units in Computer Science and Engineering courses in the major. Application forms and further information can be obtained at the Mathematics Undergraduate Office, Mathematical Sciences 6356.

The Departmental Scholar Program is available to interested and qualified students who wish to work towards a Master's Degree in either Mathematics or Computer Science. See Departmental Scholar Program.

### MAJOR IN MATHEMATICS-SYSTEM SCIENCE

*Committee in Charge.* H. Fattorini (Chairman), Mathematics, S. Hu, J. Omura, S. Port, P. Wang.

This major is an alternate to the regular departmental major in Mathematics, and combines work in the Department of System Science (School of Engineering and Applied Science) with thorough preparation in mathematics, including those aspects significant in the theory of systems, information, and control. The major is appropriate for students who plan graduate study in mathematics, applied mathematics, or engineering, with emphasis on mathematically based research relevant to such fields as: communication, computation, control, operations research, optimization, stochastic processes, system analysis. This major is administered by the Mathematics Department, Mathematical Sciences 6356.

*Preparation for the Major.* Mathematics 31A-31B-31C, 32A-32B-32C, 60, Engineering 10C, Physics 8A or 6A, 8C or 6B. Upper division or transfer students who have not had the opportunity to enroll in Mathematics 60 may substitute Engineering 127B by petition in which case, course may not be applied on the major.

*The Major.* Thirteen upper division courses as follows: (1) Mathematics 115 and 5 additional mathematics courses numbered between 110 and 199; (2) Five courses in System Science selected from Engineering 120 through 129 and 199G; (3) One course, either in System Science selected from the list in (2), or in Computer Science; (4) One additional upper division course in Biology, Chemistry, Economics (numbered 101 or above), Mathematics (numbered between 110 and 199), Physics, or Psychology. One of the thirteen courses must be either Mathematics 150A or Engineering 120A. (Credit will not be allowed towards the major for both.)

*Some Recommended Selections.* General, and preparation for graduate study: Mathematics 110A-110B, 131A-131B, 132; Engineering 120A or Mathematics 150A-150B; Engineering 121C, 128A, 128D, 129A. Automata, computability, and discrete systems: Engineering M123B, 128D, Mathematics 112B, 113, 114. Control, optimization, and computing methods: Engineering 121C, 122A, 128A, 129A; Mathematics 135A-135B. Communications and random processes: Engineering 120B; Engineering M120C or Mathematics M151; Mathematics 150B-150C.

### MAJOR IN NEAR EASTERN STUDIES

*Committee in Charge.* M. Morony (Chairman), History, P. Jabber, I.K. Poonawala.

This major is designed primarily for the following classes of students: (1) those seeking a general education and desiring a special emphasis in this particular area; (2) those who plan to live and work in the Near East whose careers will be aided by a knowledge of its peoples, languages, and institutions, and (3) students preparing for academic study in the various disciplines pertaining to the Near East. Selection of courses should be decided partly by the student's own special objectives except that the same Near Eastern Language must be maintained in both lower and upper division.

*Preparation for the Major.* The first year course in Arabic, Armenian, Hebrew, Persian or Turkish; candidates must also obtain a reading proficiency in French, German, Italian, Russian or Spanish as demonstrated by the completion of six quarter courses or their equivalent in the language of their choice. Candidates may substitute for the European language requirement Engineering 10S and one of Mathematics 50A, Psychology 41, Sociology 18, Political Science 6, or Economics 40, plus one of Psychology 142, Sociology 116, Political Science 102, Economics 141 or Geography 171. Also required are History 9D and four courses chosen from History 1A-1B-1C; Anthropology 5A, 5C; Economics 1, 2; Geography 3; Political Science 2, 3; Sociology 1.

*The Major.* Required: sixteen courses as follows: (1) Completion of the advanced level or its equivalent in Arabic, Armenian, Hebrew, Persian or Turkish; (2) History 134A-134B, 136A-136B, and two additional courses in the history of the Near East which are related to the major language; (3) four courses (two of which must be in the same discipline) from: Anthropology 110, 123; Art 101D, 104B-104C-104D; Economics 110, 111, 112, 190; Geography 187, 188; Political Science 132A-132B, 164, 165; Sociology 132, 133. This program may be modified in exceptional cases with the permission of the adviser.

### MAJOR IN STUDY OF RELIGION

*Committee in Charge.* R. Benson (Chairman), History, (Winter and Spring quarters) M. Adams, K. Bolle (Chairman), Fall quarter P. Ford, E. Scharfe.

The UCLA major in the Study of Religion has a twofold purpose. In the first place it is designed to give students a broad humanistic perspective. It introduces students to several religious traditions of mankind and thus to an appreciation of the very nucleus of civilization in various periods of history and various parts of the world as well as to an understanding of fundamental human orientations. In the second place, the program asks the student to select one particular religious tradition for study at greater depth. Cohesion and integrity in the program are furthered by some courses dealing with philosophical problems in religion and with general anthropological reflections.

The program requires one year of language study which should be related to the major tradition of the student's concern. This minimum requirement will allow every student to develop some idea of the basic problems in understanding religious texts. Students contemplating graduate study will generally do more than fulfill the minimum requirement.

It is hoped that in the future a group of courses will be added to the nine groups of the present program to allow for a concentration of sociological and philosophical problems of religion.

*Preparation for the Major.* Anthropology 22; Philosophy 2; three courses chosen from History 1A-1B-1C, 10A-10B, 9A-9B-9C-9D.

*The Major.* The major requires a minimum of 16 upper division courses. These must include: History 124A or 124D; Anthropology 140 or 144; two of the following: Philosophy 175, 191, 193, 195.

In addition a student is to select one of the following groups as his main area of study and is to take 3 courses in that main area, and 3 related courses in foreign language as indicated below. (The language courses may be either upper or lower division. If any requirements have been satisfied prior to admission to the program, they will be honored upon the recommendation of the appropriate instructor in the program. Another language pertinent to the student's main area may be substituted with the consent of the committee in charge of the program. Among these languages are Hittite, Ugaritic, Syriac, Coptic, Persian, Armenian, French, German, Irish, Welsh.)

**Group 1: Ancient Near East and Eastern Europe.** Three courses selected from the following: History 124C; Ancient Near East 130, 150A, 150B, 150C, 170; Indo-European Studies 131, 132; Iranian 170. Three courses in one of the following languages: Ancient Egyptian or Akkadian.

**Group 2: Indo-European Traditions.** Three courses selected from the following: English M111D, M111E; History 124F; Classics 140; Scandinavian Literature 141; Iranian 170; Slavic M179. Three courses in one of the following languages: Sanskrit, Latin, Greek.

**Group 3: Greece and Rome.** Three courses selected from the following: Classics 161, 162, 166A, 166B; History 197 (Roman History: Christianity and Imperial Rome). Three courses in one of the following languages: Latin or Greek.

**Group 4: Israel and Judaism.** Three courses selected from the following: English 108A; History 137A-137B, 138A-138B; Hebrew 120, 130, 135, Hebrew 220 (Studies in Hebrew Biblical Literature); Jewish Studies 110, 150A-150B, 151A-151B, 199; Ancient Near East 170, 171. Three courses in Hebrew.

**Group 5: Christianity.** Three courses selected from the following: Philosophy 105, 106; English 108B; History 118A-118B, 121A-121B, 131A-131B, 141B, 177A-177B-177C, 207; Ancient Near East 170, 172; Classics M170A. Three courses in one of the following languages: Latin or Greek.

**Group 6: Islam.** Three courses selected from the following: Philosophy 104; History 134A, 135A, 135B; Arabic 150A-150B; Iranian 150A-150B. Three courses in Arabic.

**Group 7: South Asia.** Three courses selected from the following: History 124B, 124E, 124F, 124G, 196A, 197 (South Asian Religions); Oriental Languages 167; Iranian 170. Three courses in Sanskrit.

**Group 8: Far East.** Three courses selected from the following: History 124B, Oriental Languages 172A-172B, 173, 174. Three courses in one of the following languages: Sanskrit, Chinese, Japanese.

**Group 9. Traditional and Non-Literate Cultures.** (Choose A or B)

A. Three courses selected from the following: Anthropology 107A-107B; Linguistics 150A-150B. Three courses in a language chosen in consultation with an instructor in this area.

B. Three courses selected from the following: Anthropology 105A, 108, 207, M257; Folklore and Mythology M111, M123A, M125, M129, 130. Three courses in a language chosen in consultation with an instructor in this area.

The student will select six courses in traditions chosen from at least two Groups outside his main area of study, excluding foreign language courses.

**Honors Major.** Honors in the interdepartmental major, Study of Religion, provides exceptional students with an opportunity to do independent research under the tutorial guidance of a faculty member associated with the interdepartmental program in the Study of Religion. A student admitted to Honors by the Committee in Charge of the Major should take three 199 courses under the guidance of the sponsoring professor. These courses will be taken in the student's senior year and will count as part of the regular requirement of sixteen upper division courses. Honors culminates in an Honors Thesis which the candidate should be capable of defending before his or her sponsoring professor and at least two members of the Committee in Charge of the Major.

In order to qualify for admission students should have a minimum grade point average of 3.4. They should consult the sponsoring professor of their choice and with his or her approval make their desire known to the Committee in Charge of the Major. They should do so preferably before the end of their junior year, and no later than the beginning of their senior year. The 199 courses designed for the program and the thesis topic should be approved by the Committee.

## Preparation for Various Professional Curricula

The following pre-professional curricula are not degree programs in the College. Courses listed under each curriculum are presented to assist students who plan to apply to professional schools at the conclusion of their sophomore year (90 units) or junior year (135 units). Students who are

not accepted by the professional schools must declare a major in the College and be able to complete degree requirements without exceeding 208 units. New students entering in these curricula will be listed as Undeclared Majors and will be advised in the College unless an adviser is named below in the presentation of the curriculum.

*The Pre Health Care Advising Office, 1339 Murphy Hall*

Information and counseling on preparing for health care professional school is available through this office together with assistance in putting together an application at the time of applying. Open counseling sessions are held weekly or biweekly for premeds, pre-dents, and pre-nurses (time and place are announced in the "campus events" section of the "Daily Bruin" and posted by 1339 Murphy Hall). For counseling on preparing for other health care professional schools, inquire at this office.

COPE (Counseling on Pre-health Education) student counselors are on duty each week day in the Court of Sciences by Young Hall. COPE counselors can answer questions and give referrals.

## PREDENTAL CURRICULUM: THREE YEARS

The College of Letters and Science offers a predental curriculum designed to fulfill the basic educational requirements for admission to several dental schools and the general educational requirement of the College of Letters and Science. It is advised that the student determine and satisfy the specific requirements of the dental schools to which he/she expects to apply.\*

\*School of Dentistry, see Pre-Dental Requirements.

The student will be more adequately prepared for the predental curriculum if the following subjects are taken in high school: English, history, mathematics (algebra, geometry and trigonometry), chemistry, physics, and foreign language.

The 135 quarter units of work required for admission to the School of Dentistry include the following:

General University Requirements: (1) Subject A; (2) American History and Institutions.

Specific UCLA School of Dentistry Requirements:\*\* (1) English 3 or 4; (2) Sciences: Chemistry 11A-11B, 11BL-11C, 11CL or Chemistry 13A-13B, 21, 22, 24; Physics 3A, 3B, 3C; Biology 4A-4B, 13B and Psychology 10.

\*\*Other dental schools may have different requirements.

Social sciences and humanities should also be included in the 135 quarter units for which the student may consider such courses as anthropology, history, economics, psychology, political science, appreciation of art and/or music, and philosophy.

For further information, consult "Admissions Requirements of U.S. and Canadian Dental Schools" AADS, 1625 Massachusetts Avenue, N.W. Washington, D.C. 20036.

## PREDENTAL HYGIENE CURRICULUM: TWO YEARS†

†The School of Dentistry reserves the right to limit enrollment if applications exceed available facilities, and to require interviews and aptitude tests if they are necessary in the selection of the class. For further information see the ANNOUNCEMENT OF THE SCHOOL OF DENTISTRY, SAN FRANCISCO.

The University offers a four-year program in dental hygiene leading to the degree of Bachelor of Science. The first two years may be taken at Los Angeles; the last two years must be taken in the School of Dentistry in San Francisco.

The 90 quarter units of work required for admission to the School of Dentistry include general University requirements and additional specific requirements, as follows (the numbers in parentheses refer to courses at the University of California, Los Angeles, which fulfill the requirements):

*Curriculum Requirements.* (1) Subject A; (2) American History and Institutions. (The examination in American History and Institutions may be taken in the School of Dentistry, but it is preferable to satisfy the requirements in the predental program); (3) English 3 or 4; (4) Chemistry 11A-11B, 11BL-11C, 11CL or 13A-13B, 21, 22, 24; (5) Biology 4A-4B; (6) Physics 3A-3B-3C or 6A-6B-6C; (7) Psychology 10, and one additional course; (8) 20 units in Social Sciences and Humanities (including foreign language).

## PREMEDICAL STUDIES: FOUR YEARS

*Program Adviser.* See major department.

Prehealth Care Advising Office. 1339 Murphy Hall.

Students who intend to apply for admission to a medical school and who wish to complete the requirements for a bachelor's degree before such admission should select a major within the College. *Medical schools have no preference as to major. A student should choose the major in which he/she is most interested and can do best.* In addition to fulfilling the requirements of the chosen major, the student is advised to ascertain and satisfy the specific requirements for medical schools to which he expects to apply.

High school preparation for premedical studies at the University should include: English, three units; United States history, one unit; mathematics, three and one-half units; chemistry, one unit; physics, one unit; biology, one unit; foreign language (preferably French or German), two units. It is desirable that a course in freehand drawing be taken in high school.

Usually the following courses are required for admission to the UCLA medical school: English, 12 quarter units including at least one course in English Composition; Chemistry 11A-11B, 11BL-11C, 11CL or 13A-13B, 21, 22, 24; Physics 3A-3B-3C or Physics 6A, 6B, 6C; Biology 4A-4B; M132. Courses in physical chemistry and calculus are strongly recommended. Course requirements for admission to other University of California medical schools vary slightly (e.g. UCLA and UCSD require genetics). Requirements for admission to medical schools outside the University of California also vary somewhat so that students should consult the publication, "Medical School Admission Requirements, USA and Canada," Association of American Medical Colleges, 1 Dupont Circle, N.W., Washington, D.C. 20036. Also consult "The Education of Osteopathic Physicians," AACOM, 4720 Montgomery Lane, Suite 609 Washington, D.C. 20014.

## PRENURSING CURRICULUM: TWO YEAR

The University offers a four-year course leading to the Bachelor of Science degree in nursing. The prenursing curriculum in the College of Letters and Science is designed to prepare students for the program in the School of Nursing. Students should apply to the School of Nursing when they have completed or have in progress 84 quarter credits of liberal arts courses with at least a grade-point average of 2.8. Since students must apply during the Fall of the year prior to the year in which they wish to be enrolled, they must present their proposed curriculum for the remaining quarters.

The curriculum as set forth below includes the specific requirements for application to the School of Nursing. Enrollment in the School is limited.

Since students who have completed the two year prenursing curriculum cannot be assured of admission to UCLA's School of Nursing, all prenursing students should become familiar with the admission requirements of other nursing programs. These requirements vary from school to school so it is imperative that prenursing students obtain this information as early in their college careers as possible. Contact schools of nursing directly and attend open counseling sessions in UCLA's School of Nursing (times posted in the Office of Student Affairs, 12-139 Center for the Health Sciences) and those given by the Pre Health Advising Office (posted by 1339 Murphy Hall). Students who are not accepted by the School of Nursing must declare a major in the College of Letters and Science to be admitted to the College.

New students admitted to the College in this curriculum will be counseled in the College as Undeclared Majors, but may seek additional advisement during posted Open Counseling sessions. Students in the College who do not transfer to the School of Nursing must declare a major and be able to complete all degree requirements within 208 units.

*Prenursing Requirements:* (1) English 3 or 4; (2) Chemistry 11A-11B, 11BL or 13A, and/or 15, 15L; (3) Biology 4A-4B; (4) Anthropology 5A; (5) Sociology 1 or 101; (6) Psychology 10; (7) Psychology 15; (8) Bacteriology 10; (9) Physics 10 or one year of high school physics with laboratory; (10) Public Health 111 or 115 or 193; (11) Kinesiology 13. Recommended electives in the social and biological sciences.

## PREOPTOMETRY CURRICULUM: TWO YEARS

A two-year program designed to prepare students for admission to optometric schools may be completed in the College of Letters and Science. Students planning to transfer to the School of Optometry at Berkeley are advised to contact the Dean of the School of Optometry, University of California, Berkeley, California 94720 as early in their preprofessional studies as possible.

The student will be adequately prepared for preoptometric studies if he has taken the following subjects in high school: English, history, mathematics (algebra, geometry and trigonometry), chemistry, physics and foreign language.

The 90 quarter units of work required for admission to the School of Optometry, Berkeley, include the following:

General University Requirements — (1) Subject A, (2) American History and Institutions.

Specific UCB School of Optometry Requirements — (1) English 3 and 4; (2) Chemistry 11A-11B, 11BL-11C, 11CL or 13A-13B, 21; (3) Physics 3A-3B-3C; (4) Biology 4A-4B; Psychology 10; (5) Mathematics 3A-3B-3C or Mathematics 31A-31B-31C and 50A or Psychology 41.

The balance of the 90 quarter units required for admission may be selected from the social sciences, foreign languages and the humanities.

## PREPHARMACY CURRICULUM: TWO YEARS

Adviser: Robert A. LeWinter, Appointments may be made at A7222, Center for the Health Sciences.

The School of Pharmacy on the San Francisco campus of the University offers a four-year curriculum leading to the degree of Doctor of Pharmacy. To be admitted to this curriculum a student must have met all requirements for admission to the University and have completed, with an average grade of C (2.00) or better in the University of California or in another institution of approved standing, at least 90 quarter units of the program set forth below. Students taking the prepharmacy work at the University of California normally will be enrolled in the College of Letters and Science. If taken elsewhere, the courses selected must be equivalent to those offered at the University of California. In order to complete prepharmacy studies in the minimum time, students should complete elementary chemistry, trigonometry, and a full year of intermediate algebra in high school.\*

\*Students who have completed the two-year prepharmacy curriculum at Los Angeles cannot be assured of admission to the School of Pharmacy of the San Francisco campus. When the number of qualified applicants for the Doctor of Pharmacy curriculum exceeds the available facilities, selection will be made on the basis of scholarship as determined from the College record. A personal interview may be required. Applications for admission to the School of Pharmacy, San Francisco campus, must be filed at the latest by 1 November preceding the September of proposed admission. Send to the Office of Student Affairs, School of Pharmacy. Blanks may be obtained from the office of the Director of Admissions, University of California Medical Center, San Francisco 94122. For further information see the ANNOUNCEMENT OF THE SCHOOL OF PHARMACY, SAN FRANCISCO, which may be obtained from the Dean, School of Pharmacy, University of California Medical Center, San Francisco 94122.

Curriculum Requirements: First Year. (1) Subject A; (2) English 3 and 4; (3) Chemistry 11A-11B, 11BL-11C, 11CL or 13A-13B; (4) Trigonometry and intermediate algebra (if not completed in high school); (5) Electives: six or seven elective courses should be selected from courses in foreign language, social sciences, and humanities offered in satisfaction of the lower division requirements of the College.

Curriculum Requirements: Second Year. (1) Biology 4A-4B; (2) Physics 3A, 3B, 3C; (3) Mathematics 3A-3B-3C or 31A-31B-31C; (4) American History and Institutions; (5) Electives, two-three.

## PREPHYSICAL THERAPY CURRICULUM: THREE OR FOUR YEARS

Students who intend to apply for admission to a Physical Therapy School should select a major (Kinesiology and Psychology are commonly selected) and complete the following prerequisite courses: one course in Human Anatomy and one course in Physiology (Kinesiology 12,14), two courses in Biology (Biology 4A and 4B), two courses in Chemistry (11A and 15, 15L), Physics 10 or 3A, 3B, Psychology 10, 115, 127, 130 recommended, Public Health 44 or 100, and one course in statistics. The prerequisite courses should be taken for a grade and not on a P/NP

basis. GPA's for these courses should not be lower than 3.0, with no grade lower than a "C".

Certificate programs in Physical Therapy are available for the Baccalaureate degree at the following California schools: 1) University of California, The Medical Center, San Francisco, 2) University of Southern California, 3) Children's Hospital, Los Angeles. Students are urged to write each school early in the sophomore year to obtain details concerning specific admission requirements and application deadlines. Information concerning out-of-state programs can be obtained from the American Physical Therapy Association, 1156 N.W. 15th St., Washington, D.C. 20005.

## Prepublic Health Curriculum: Two Years

See the Announcement of the UCLA School of Public Health, the section of this Catalog under Public Health, and request further information from the Office of Student Affairs, 21-236B Public Health, UCLA, Los Angeles, California 90024.

## Other Professional Curricula in the University

### PRELAW STUDIES

Law schools have no preference in regard to specific majors or particular courses. Admission to law school is based on the quality of an applicant's academic work, LSAT scores, and other qualities as reflected in letters of recommendation, in the written application, and in interviews. The College of Letters and Science offers advising on preparing for and applying to law schools through biweekly drop-in sessions. *Individual appointments cannot be made.* For the time and place of the drop-in sessions, see "Campus Events" section of the *Daily Bruin*. The Learning Skills Center, 271 Dodd Hall, offers preparation seminars on the "Law School Admission Test" approximately one month prior to each administration of the LSAT. For additional information, see "Law School Admission Bulletin and LSAT Study Guide" (obtainable from Admissions Office, UCLA Law School) and *The Prelaw Handbook* (obtainable from local book stores).

## THE COLLEGE OF FINE ARTS

The College of Fine Arts, established on the UCLA campus in 1960, administers the departments of Art, Dance, Music and Theater Arts. Together with the College of Letters and Science, the College of Fine Arts is the foundation in the liberal arts upon which the balance of the University's academic and professional structure rests.

The appropriateness of education in the fine arts in the University is fully recognized, and in recent years a true explosion has taken place. Further, professional training in the fine arts is becoming increasingly acknowledged as an appropriate and vital activity for the American university. Thus, faculty and students are not only concerned with the history and evolution of the various arts, but they are also interested in the creation or the performance of a work of art.

As one of the nation's greatest and most rapidly growing centers of vitality in the fine arts, Southern California presents UCLA with both an opportunity to take advantage of this vitality and an obligation to assist its development.

By completing additional requirements as determined by the Graduate School of Education and the State Department of Education, students may also qualify for standard teaching credentials (see the ANNOUNCEMENT OF THE GRADUATE SCHOOL OF EDUCATION).

The College of Fine Arts admits students only in the fall.

Some departments require auditions, portfolios, or evidence of creativity, but these should not be sent with the application, since detailed information regarding this requirement will be mailed to the student upon receipt of his application. All students requesting a major in the College of Fine Arts are screened by faculty committees. Deadline date for applications is November 30, 1978 for admission in the Fall Quarter of 1979.

Students may secure answers to their questions about academic procedures and regulations, program planning and degree requirements by calling 825-1397 or 825-1762,

or by coming to the Student Services window of the Dean's Office, located in Murphy Hall, Room A-333. The College counselor is available at the same location (or by phone, 825-1554) if help is needed regarding academic difficulty and related matters.

## Guidelines for Admission to Advanced Standing

Since the College of Fine Arts admits all students on a quota basis, first preference will be given to those students who, in addition to meeting the general requirements for admission, will have completed all the general college requirements and have an overall grade-point-average of 3.00.

Further, in the interest of all applicants, preference will be given to those students who, in consideration of their total record, will be able to complete the work for the B.A. degree without exceeding the established maximum of 208 units.

In addition to the above, the selection committee of each department of the College will do its own screening to ascertain that the student has the appropriate background or talent to fit successfully into the program. For detailed information regarding specific departmental requirements, please contact the department in which you desire to major.

## Requirements for the Bachelor's Degree

The candidate shall have completed for credit 45 courses (180 units) of which at least sixteen courses (64 units) shall be upper division courses (numbered 100-199).

No more than one course (4 units) of Physical Education 1 and 2 and/or Kinesiology 1 and 2A-2Z may be counted toward the degree. No more than four CED courses (16 units) and no more than two courses (8 units) of Freshman Seminars will be counted toward the degree.

Credit for 199 courses is limited to four courses (16 units), two courses (8 units) of which may be applied to the major. All 199 courses must be taken for a letter grade.

Only work of passing quality will apply toward these unit requirements.

University Extension courses with the prefix "X" or those numbered in the 400 or 800 series do not apply toward the degree.

Credit earned through the College Level Examination Program (CLEP) will not be counted toward the bachelor's degree in the college.

Students must complete the work for the bachelor's degree with no less than 180 or no more than 208 quarter units. Students may not enter a major in the College of Fine Arts after having earned more than 120 quarter units.

*The Study List.* Each quarter the student study list must include from twelve to seventeen units. Petitions for more than seventeen units must be filed and approved by the Dean of the College prior to the deadline dates listed in the annual ANNOUNCEMENT OF THE COLLEGE OF FINE ARTS.

If a student has not filed his study list by the end of the second week of classes, he must secure the permission of the Dean of the College to continue for that quarter.

Undergraduate students who wish to take courses numbered in the 200 series must petition for advance approval of the department chairman and the Dean of the College, prior to enrollment and must meet the specific qualifications for such courses. Courses numbered in the 400 and 500 series are not available to undergraduate students in the College of Fine Arts.

## SCHOLARSHIP REQUIREMENTS

A C average (2.0) is required in all work attempted in the University of California, exclusive of courses in University Extension and courses attempted on a passed/not passed basis. A C average (2.0) is also required in all upper division courses in the major attempted in the University as well as in all courses applying on the General College requirements and the General University requirements.

See Grades and Scholarship Requirements for details regarding the Minimum Progress which is required of students in the College of Fine Arts.

## RESIDENCE REQUIREMENTS

Of the last 45 units completed for the bachelor's degree, 35 must be earned in residence in the College of Fine Arts. (A student is "in residence" only while enrolled and attending classes as a major in one of the departments of the College of Fine Arts.) Not more than 18 of these 35 units may be completed in summer sessions at UCLA.

*University Extension.* Courses in University of California Extension (either class or correspondence) may not be offered as part of the residence requirement.

*Concurrent Enrollment.* Concurrent enrollment in courses at another institution or in University Extension (including correspondence courses) is permitted only in extraordinary circumstances, and no credit is given for such courses unless the approval of the Dean has been obtained by petition prior to enrollment.

## SUBJECT REQUIREMENTS

All students complete the specific subject requirements established by the University, the College of Fine Arts, and the student's major department.

### General University Requirements

See Subject A (English Composition) and American History and Institutions.

### General College Requirements

The general requirements of the College of Fine Arts provide for breadth in the student's education, and are planned to insure a degree of basic skill in communication — both in English and in one foreign language, and to offer the student an introduction to each of the broad fields of human learning: science/mathematics, social science, and the humanities.

Students attending a California junior college should consult their counselors to determine which junior college courses are appropriate and are accepted in satisfaction of the general college requirements by the College of Fine Arts.

Individual departments may require additional courses in any of the five areas. No "198," "199" or CED courses and no seminars, pro-seminars or freshman seminars may be applied on the general requirements of the College. Courses which are multiply-listed (numbers preceded by "M") may not be applied on these requirements.

**English (Grammar and Rhetoric).** [4 units] English 3 with a grade of "C" (2.0) or better. Must be completed by the end of the freshman year. This course may not be taken for a Passed/Not Passed grade.

**English (Composition and Literature).** [4 units] English 4, with a grade of "C" (2.0) or better; must be completed by the end of the sophomore year. This course may not be taken for a Passed/Not Passed grade.

**Foreign Language.** [12 units] Three college courses in one foreign language, through the third level, other than the foreign language taken in high school. This requirement must be completed by the end of the sophomore year. If level 3 is completed with at least 4 quarter units of work, without taking levels 1 and 2, an additional 2 courses (8 units) must be completed from the approved lists of courses that comprise the general requirements. Some majors may require the completion of the language prior to entry into the major. Proficiency examinations may not be used to complete this requirement.

**Science/Mathematics.** [8 units] One course in physical or biological science and one course in another natural science or in mathematics.

#### *Physical and Biological Courses*

Anatomy  
Astronomy  
Atmospheric Sciences  
Bacteriology  
Biology  
Botany  
Chemistry  
Entomology  
Geology

Kinesiology (Phys. or Biol.)

Meteorology

Microbiology

Mineralogy

Oceanography

Paleontology

Physics

Physiology

Zoology

#### *Other Natural Science and Mathematics Courses*

Anthropology (physical or biological only)

Ecology (physical or biological, not crossed with social science or humanities)

Environmental Science (physical or biological, not crossed with social science or humanities)

Geography (physical only)

Mathematics (no remedial or history)

Psychology (physical or biological only)

**Social Science.** [12 units] One course in history to the 17th century, one course in history from the 17th to 20th centuries, and one other social science course.

#### *Other Social Science Courses*

Anthropology (except physical or biological or courses dealing with language study)

Economics (principles, history and theory only)

Geography (except physical)

History (except medical or geology)

Political Science

Psychology (except physical)

Sociology and Social Science

**Note:** Survey courses in history which cover "antiquity to present" will be applied only on History after 17th century or "other social science."

**Humanities.** [12 units] One course in The Arts, one course in Literature, one course in Philosophy and/or Religion. Performance, studio or movie/film courses do not meet this requirement. Courses in the student's major department may not apply on this requirement.

#### *The Arts Courses*

Art, Dance, Music and Theater Arts (history, appreciation and criticism only)

Integrated Arts

Classics 151ABC

Architecture (history or survey only)

#### *Literature Courses*

English, ethnic, American or foreign literature, including work in translation

Humanities

Classics (except 151ABC)

Folklore/Mythology

#### *Philosophy/Religion Courses*

Philosophy

Religion

Any course applied on one of the specific subject areas may not also be applied on another requirement. No course used to satisfy any general University requirement may also be applied to the general College requirements.

A few course areas that DO NOT APPLY on the general college requirements are: Business, Communications, Criminology, Education, Engineering, Family Life, Marriage and Child Care, Field Studies, Home Economics, Independent Studies, Interdisciplinary Studies, Journalism, Law, Mass Media, Public Health, Speech, and Writing.

**Additional Non-Major Department Requirements For The Degree:** 3 Upper Division courses (12 units) completed outside the student's major department. These courses may not apply on the General College requirements. Studio, performance, activity, and 199 (Independent Studies) courses may not apply on this requirement.

## OPTIONAL GENERAL COLLEGE REQUIREMENTS

Students graduating by June, 1980 have the option of satisfying the former general requirements of the College of Fine Arts in lieu of the foregoing General College Requirements. (In all cases, the general University requirements and the major requirements will be those currently in effect at the time of graduation.)

Under the Optional Plan the student must take at least 96 units of work outside the major department (8 of which must be upper division units), including the 56 units needed to complete these optional breadth requirements.

The optional requirements, which must be met in full without exceeding the 208 unit limit, are as follows:

### ENGLISH COMPOSITION

One course in English composition (English 3) with a grade of "C" (2.0) or better, taken at UCLA or transferred from another institution, is required of all students. This course may not be taken for Passed/Not Passed grade, and must be completed by the end of the sophomore year (90 units of work).

A foreign student whose entire secondary school work was completed in his native tongue, excluding English, may satisfy this requirement with English 33C if completed with a grade of "C" (2.0) or better.

### FOREIGN LANGUAGE; LIFE, PHYSICAL AND BIOLOGICAL SCIENCES; SOCIAL SCIENCES; AND HUMANITIES

Thirteen courses (52 units) chosen from these four areas, including at least three courses (12 units) in one foreign language, and at least three courses (12 units) in each of two other areas. Any course applied on one of these four general requirements may not also be applied on another of these requirements.

#### Foreign Language

At least three courses in one foreign language are required of all students. This requirement must be met no later than the end of the junior year. All courses in foreign language, except foreign literature in English translation, may be applied to this requirement.

Without reducing the total number of units required for the bachelor's degree, high school foreign language work with grades of "C" or better and not duplicated by college work will count as follows: the first two years together equal two college courses and the third and fourth years each equal one college course. No more than the equivalent of three college foreign language courses taken at the high school level will count toward the required thirteen courses.

A foreign student whose entire secondary school work was completed in his native tongue, excluding English, may upon petition be considered as having fulfilled the foreign language requirement.

#### Life, Physical and Biological Sciences

Courses from any of the life, physical and biological sciences will meet this requirement.

#### Social Sciences

Students may select courses to meet this requirement from the following: most courses in anthropology, economics, geography, history, political science, psychology, and sociology. Any economics, history or political science course taken to satisfy the University requirement in American History and Institutions may also be applied on this requirement.

#### Humanities

Courses to meet this requirement may be selected from the following areas:

*The Arts:* courses in art, dance, music, theater arts, and integrated arts, except that courses in the student's major department may not apply on this requirement. Also courses in Classics or Folklore and Mythology.

**Note:** Performance or studio courses do not meet this requirement.

*Literature:* all courses in English, American or foreign literature (classical to contemporary), including work in translation. In addition to literature courses offered by language departments, *literature* courses given by the Department of Classics and the Department of Humanities are also acceptable. Any English Department course taken to satisfy the University requirement in American History and Institutions may also be applied on this requirement.

*Philosophy:* all courses in philosophy; also courses in religion offered by other departments.

#### CREDIT FOR ADVANCED PLACEMENT TESTS

Credit earned through the CEEB Advanced Placement Examinations may be applied on the General College requirements as follows: credit for English 1 and 2 (with scores of 4 or 5 only) will apply on the English Composition requirement; all foreign language credit will apply on the foreign language requirement; all credit in science and mathematics will apply on the science/mathematics requirement; and all credit in history will apply on the social sciences requirement.

It is important to note that portions of Advanced Placement Test credit may be evaluated by corresponding UCLA course numbers, e.g., History 1C. If a student takes the equivalent UCLA course, *deduction of unit credit for such duplication will be made prior to graduation.*

### Departmental Requirements

#### THE MAJOR

Each candidate for the bachelor's degree is required to complete a major in the College of Fine Arts with a scholarship average of at least two grade points per unit (C average) in all upper division courses, and must be recommended by the chairman of his major department.

A *major* is composed of not less than 14 courses (56 units), including at least nine upper division courses (36 units). The major includes both lower and upper division courses, arranged and supervised by the department and approved by the Executive Committee of the College.

Special attention is directed to the courses listed as *preparation for the major*. In general, it is essential that these courses be completed before upper division major work is undertaken. In any event, they are essential requirements for the completion of the major.

As changes in major requirements occur, students are expected to satisfy the new requirements insofar as possible. Hardship cases should be discussed with the departmental adviser, and petitions for adjustment submitted to the Dean of the College when necessary.

Any student failing to attain a scholarship average of at least two grade points per unit in his major department may, at the option of the department, be denied the privilege of a major in that department.

A department may submit to the Dean of the College the name of any student who, in the opinion of the department, cannot profitably continue in the major, together with a statement of the basis for this opinion and the probable cause of the lack of success. The Dean may permit a change of major, or may, with the approval of the President, require the student to withdraw from the College.

Any department offering a major in the College of Fine Arts may require from candidates for the degree a general final examination in the department.

### ORGANIZED MAJORS AND CURRICULA IN THE COLLEGE OF FINE ARTS

Majors leading to the degree of Bachelor of Arts are offered in the following areas:

History of Art, Design, Painting/Sculpture/Graphic Arts.

Dance.

Music with specialization in Composition and Theory Ethnomusicology, History and Literature, Music Education, Performance, Systematic Musicology.

Theater, Motion Pictures/Television.

Ethnic Arts: Interdisciplinary studies.

Students interested in obtaining teaching credentials for California elementary and secondary schools should consult the Graduate School of Education.

### ETHNIC ARTS: INTERDISCIPLINARY STUDIES

An intercollege, interdepartmental major is offered in Ethnic Arts. It is open to students in both the College of Fine Arts and the College of Letters and Science. The student remains in the college of his choice and fulfills the breadth requirements of that college. Counseling is available in the department of the student's concentration.

The degree is not viewed necessarily as a foundation for graduate study, but may become so with proper course selection if that is the student's aim.

The major includes a core of seven courses from the departments of Anthropology, Art, Dance, Folklore and Mythology, Music, and Theater Arts; a concentration in one of the six disciplines; at least three courses in one foreign language; a senior colloquium; and electives selected by the student.

Admission to the major will be by special application to the Committee in Charge.

For details of the major, see Ethnic Arts.

### INDIVIDUAL MAJORS

A student who is already regularly enrolled and attending classes at UCLA, who has some unusual but definite academic interest for which no suitable major is offered, and has completed at least three quarters of work (a minimum of 9 courses) at the college level with a grade-point average of 3.0 or higher, or the equivalent in creative work and performance, may, with the assistance of a faculty adviser in consultation with the chairman of the faculty adviser's department, and with the consent of the Dean, plan his own major. A majority of the courses in the major must be in departments in the College of Fine Arts with no more than three performance or studio courses. The individual major is subject to the 208 unit limit and must comply with all University and College requirements.

A student interested in an individual major should consult the Student Information section of the Dean's Office for information and forms necessary to implement such a major.

The major should be submitted and approved by the first quarter of the junior year, but no later than the first week of classes of the third quarter before the student's intended graduation.

The individual major must be approved by the Executive Committee of the College before it may be accepted in lieu of a departmental or interdepartmental major. The faculty adviser (who must be a regular member of the faculty of the College of Fine Arts) shall supervise the student's work in lieu of a department or committee, and the student's study list must be approved by him and the Dean before it will be accepted by the Registrar. A senior paper or project is required of each student with an individual major.

The Dean must certify that the student has completed the requirements of his major before the degree is granted.

### COUNSELING AND PROGRAM PLANNING

The College of Fine Arts has established an academic counseling program designed to orient the student to the University's offerings and facilities, and to assist him in crystallizing his educational objectives and in planning his course of studies. The program includes meetings at the departmental level, and individual interviews with departmental counselors and faculty advisers.

Prior to registration and enrollment in classes, each new student is assigned to a departmental adviser in his major department, and it is expected that the student will return to him for program planning each quarter. It is the adviser's function to help the student make wise decisions concerning his educational goals, but not to dictate what he should do. It is the responsibility of the student to become familiar with University and College requirements and to make his own decisions.

### Honors in the College of Fine Arts

#### DEAN'S HONORS

Dean's Honors will be awarded at the end of the Spring Quarter to students completing the previous year's pro-

gram with distinction according to criteria established by the Dean of the College.

### DEPARTMENTAL HONORS PROGRAMS

Each department offering an undergraduate major may establish an Honors Program including special courses, or supplementary and advanced directed study, or both.

### COLLEGE HONORS WITH THE BACHELOR'S DEGREE

College Honors are awarded at graduation to students with a superior overall grade-point average. The honor designations and the requirements for each are Cum laude, an overall average of 3.4; Magna cum laude, 3.6; Summa cum laude, 3.8. To be eligible for College Honors, a student must have completed at least 20 graded courses (80 units) in the University of California.

A list of students graduating with Departmental and/or College honors will be published in the Commencement Program, and honors earned will be recorded on each student's diploma.

## SCHOOL OF ARCHITECTURE AND URBAN PLANNING

The School of Architecture and Urban Planning offers programs of study leading to the degrees Master of Architecture (M.Arch.), M.A. in Architecture and Urban Planning, and Ph.D. in Urban Planning. Currently, the School offers educational opportunities for a broad spectrum of careers, including a number that are not yet common in practice, but which reflect emerging social needs. The programs of the School of Architecture and Urban Planning at UCLA reflect the University's concern with the escalating problems of the changing urban environment and its largely untapped potentialities.

In order to relate closely to public affairs and practitioners in the field, the School has established the Urban Innovations Group. The Urban Innovations Group undertakes "real-world" projects to provide graduate students with opportunities to gain practical experience. It also affords faculty opportunities for professional service. To reflect the nature of the problems and the opportunities associated with the creation and maintenance of environments of the future, the projects are on-going and programmatic. They range from pure research, applied research, development, and prototype testing to full scale implementation. The Urban Innovations Group provides a bridge or transition between pure academic pursuits and professional practice.

### Architecture and Urban Design

In an increasingly urban civilization, the unprecedented rate of growth of the world's population places increasing demands on the architecture profession to provide for man's needs to live and work in close proximity with other men. A new technology of city building is being evolved to keep pace with the accelerated rate of urban growth. Advances in methods of construction, building economics and organization, together with insights gained in the social and behavioral sciences, place at our disposal new resources with which to respond to the urban challenge. This enormous undertaking demands a group of professionals who can direct diverse forces toward the realization of better environments. The field of architecture, like so many of our professions and institutions today, is undergoing radical change. The old pattern of architectural practice as something that transpires between an individual architect and his client is no longer valid. The new pattern of the large architectural office serving a corporate client's needs may also soon fade. A more radical view of the architect is emerging. Increasingly, he is offering his services as a member of an interdisciplinary team of problem-solving specialists. To fulfill this role the architect will have to become a specialist himself; thus, the term "architect" will have in the future many specialized meanings.

### THE AREAS OF STUDY

The Program is organized around areas of study which represent major directions within architecture and urban design.



## A. Projects in Architecture and Urban Design

The practical application of problem analysis and design method to environmental problems. The student acquires the ability to analyze and conceptualize specific designs as he participates, individually or in teams, in projects which vary in scale and complexity from the design of individual components to urban systems.

Courses: 401. Projects in Architecture; 402. Projects in Urban Design; 403. Project Studio with a Specific Topic; 403A. Projects in Systems Building; 403B. Projects in Energy Conserving Design; 403C. Projects in Man-Environment Relations; 403D. Projects in Educational Facilities; 403E. Projects in Health Facilities; 403F. Projects in History; 403G. Projects in Design Methods; 411. Introductory Design Studio; 412. Building Design and Programming Studio; 413. Building Design and Landscape Studio; 414. Major Building I; 415. Major Building II; 416. Comprehensive Design Studio; 421. Basic Design; 422. Basic Design.

## B. Methodology and Computer-Aided Design

Courses in methodology, modeling, and computer-aided design are intended to introduce the role of systematic, logical methods in architectural and urban design, and to provide a background in the necessary mathematical and computational skills necessary for application of these methods in practice. The advanced courses usually deal with research topics.

Courses: 224. Methodology: Design Theory; 225A. Information Systems; 226A. Computer Applications in Architecture and Urban Planning (intro); 226B. Computer Applications in Architecture and Urban Planning (advanced); 227A. Computer Graphics; 227B. Computer-Aided Design; 228A. Mathematical Models in Arch/UD; 228B. Research in Design Methods.

## C. Environmental Technology

Explores the technological elements of the built environment, architectural scale, with particular emphasis on the comprehensive view of design problem-solving. Subjects include climatology, construction, environmental controls, energy, life safety, materials, services, structures, etc.

Courses: 431. Structures I; 432. Structures II; 433. Structures III; 434. Structures IV; 436. Construction Documents; 437. Building Construction; 438. Systems Building; 439. Methods in Building Systems Development; 441. Environmental Control Systems; 442. Building Climatology; 443. Heat and the Thermal Environment; 444. Light and the Visual Environment; 445. Sound and the Auditory Environment; 446. Introduction to Energy Conserving Design.

## D. Socio-Physical Research and Design

The purpose of this portion of the curriculum is to expand the student's awareness in the areas of overlap between psychology and architecture, and to increase the student's technical proficiency in these areas. These areas could be called overt behavior or form/behavior relation, cognitive processes in design, and social/ethical issues.

Courses: 180. Visual Thinking; M192. Housing Patterns; 258. Research in Man Environment Relations; 278. Research Methods in Man Environment Relations; 292. Social Building Theory; 293. Experiencing the Environment; 294. Environment Psychology; 295. Cognitive Processes of Design; 296. Social Analysis of Buildings; 297. Group Processes in Design; 298. Social Meaning of Space; 299. Application of Behavioral Research to the Design Process.

## E. Architectural and Urban Analysis

Examination of properties and relations of the elements of architecture and the urban environment. The needs and behavior of individuals and groups are studied with respect to their mutual inter-relation in order to understand the environmental consequences. Emphasis is on exact methods of analysis.

Courses: 210. Health Care Facilities; 218AB. Urban Structure: Analysis and Modeling; 238. Research in Urban Analysis; 244. Projects in Urban Building Systems; M255. Urban Morphology; 271. Elements of Urban Design; 274. Introduction to Urban Design; 275. Urban Form; 279A. Housing for Developing Countries; 290. Design Seminar in Educational Systems and Facilities.

## F. Environmental Management

The development of management procedures for forecasting, planning and designing the systems of the physical environment. On the assumption that architects and urban designers will become agents of change who will act upon the future physical environment, the forms of organization to fulfill this role are examined. The introduction and management of innovation in the architecture and urban design professions, both in theory (teaching and research) and practice (Urban Innovations Group Workshop) is also stressed.

Courses: 203A-203B. Decision-Making in Planning and Design; 204. Imaging the Future; 291. Architectural Programming and Theory; 460. Architectural Management; 461. Professional Organization and Practice; 490. Urban Innovations Group Workshop.

## G. Theory, History and Criticism

Theory, history, and criticism support the field of architecture and urban design as both an activator of the professional discipline as well as the repository of its accumulated knowledge, values, and philosophies. Work in this subject area develops the conceptual frames of reference by which the project and its context are defined, examines the criteria for analysis and evaluation, probes the methodological issues underlying the design process, and stimulates an awareness of the evolution of society and culture as the context within which architectural and urban form are manifested.

Courses: 190. Man and His Environment: Urban Form and Urban Life; 191. Modern Architecture; 201A. Architectural Theory; 282A. Image and Cultural Symbolization; 285. Architectural Case Study; 286. History of Specific Building Types; 287. Ancient and Islamic Architecture in the Mediterranean Area; 288. Architectural History: The Medieval Period.

## H. Special Studies

Courses: 289. Special Topics in Architecture/Urban Design; 496. Special Projects in Architecture; 497. Special Projects in Urban Design; 596. Directed Individual Research and Study; 598. Preparation for Thesis.

## The Degree Master of Architecture

### THE FIRST PROFESSIONAL DEGREE PROGRAM (M.ARCH.I)

The objective of the program is to provide the student with the basic professional education necessary for the practice of architecture and urban design as they are evolving today and in the future. The competence and sensitivity which an environmental designer must bring to his task requires intensive exploration of a number of subject areas, and the ability to organize and purposefully integrate widely varied forms of information relevant to a given project. In this curriculum, a structured sequence of lectures, seminars and design projects is complemented with individual and group extracurricular work intended to exemplify both usual and unusual forms of professional activity. The M.Arch.I Program is officially accredited by the National Architectural Accrediting Board (NAAB).

### Admission Requirements

For admission to this program, the applicant must first meet the entrance requirements of the Graduate Division of the University, including a bachelor's degree from the University of California or its equivalent and a grade average of B or better. In addition, the School of Architecture and Urban Planning requires that the applicant submit the material outlined in the Departmental Application Form. Particular emphasis is placed on the Statement of Purpose, letters of recommendation, and evidence of creative or analytic ability in either graphic, written, or mathematical form.

Good command of spoken and written English is absolutely essential and no foreign student will be allowed to attend classes until he passes the Graduate Division's English fluency exam and completes any required remedial courses. The M.Arch.I program is a full-time program and does not accept part-time students. All new students must enter fall quarter.

Additional information about the program may be obtained by writing directly to the Graduate Adviser of the Architecture and Urban Design Program.

## Degree Requirements

### Required Courses

The student is required to take the following courses, in the sequence indicated. Students with previous background in the topic covered by any of the required courses may petition the M.Arch.I Curriculum Committee to waive specific required courses and replace them with electives. However this will not reduce the minimum number of 27 courses required in the M.Arch.I program or the three year residency requirements. All students must maintain a 3.0 grade point average in all courses.

First Year		
Fall	411	Introductory Design Studio
	421	Basic Design I
	191	Modern Architecture
Winter	412	Building Design Studio
	437	Building Construction
	431	Structures I
Spring	413	Building Design With Landscape Studio
	442	Building Climatology
	432	Structures II
Second Year		
Fall	414	Major Building Design Studio I
	433	Structures III
		Elective
Winter	415	Major Building Design Studio II
	441	Environmental Control Systems
		Elective
Spring	401	Elective Studios and Projects
		Elective
		Elective
Third Year		
Fall	401	Elective Studios and Projects
	291	Architectural Programming
		Elective
Winter	416	Comprehensive Design Studio
	461	Professional Practice and Ethics
		Elective
Spring	598A	Thesis Preparation
		Elective

### Elective Courses

Elective course offerings are designed both to allow students to explore specific subject areas in depth and to gain a breadth of exposure to different topics. The student is required to take at least seven elective courses. At least four of these must be taken within the School of Architecture and Urban Planning.

It is intended that Elective studios and projects courses taken in the Spring of the second year and the Fall of the third year will be prepared for, where necessary, by taking appropriate lecture and seminar courses. Many of the elective lecture/seminar courses are organized into sequences leading up to specific studio or project courses. At least two of the electives taken in the second year must be in preparation for undertaking a specific studio or project in the Spring of the second year or Fall of third year. (See course descriptions for details.)

### Thesis

The student is required to prepare and complete a thesis during the year immediately prior to graduation. The thesis may take the form either of an independent design project or an independent piece of research. Each year, a single committee will be formed to supervise the work of all students choosing to undertake design thesis. Each student who chooses to undertake a research thesis may nominate a three-person committee to supervise this work. Two members of this committee, including the chairperson, must be from the Architecture/Urban Design faculty.

## ADVANCED GRADUATE STUDIES THE SECOND PROFESSIONAL DEGREE PROGRAM (M. ARCH. II)

The advanced graduate studies in Architecture/Urban Design at UCLA with an emphasis on professional studies give students the opportunity to explore in depth certain areas of professional and academic specialization. An innovative attitude toward the future of the architectural profession is emphasized and is explored in seminars, projects and field experience.

There are areas of specialization offered in Theory and Methods and in Professional Applications.

### Core Sequences in Theory and Methods

Areas currently being offered are: (1) Design Methods, (2) Systems Building, (3) Energy-Conserving Design, (4) Social Building, (5) Computer Aided Design, (6) Open (course sequences to be arranged in response to individual student's needs).

### Core Sequences in Professional Application

Areas currently being offered are: (1) Urban Design, (2) Housing, (3) Health Care Facilities, (4) Open (course sequences to be arranged in response to individual student's needs).

Each of these areas consists of an organized sequence of three core courses including a minimum of one project course and a number of related highly recommended courses. Certain core sequences are offered only every other year. Core sequences may be introduced, deleted or changed from year to year, contingent upon faculty availability.

In addition to the currently offered core sequences, an "open option" in each category is available to students who enter with their own specific and well defined program of study. Proposals for this open option require prior approval by the Curriculum Committee.

Each applicant is urged to state in his/her application the areas in which he/she proposes to specialize, and every student is required to commit him or herself to the approved areas by the beginning of the second quarter. Work on the thesis is to be in the chosen areas of specialization, and may not be commenced until the required courses have been completed.

### Admissions Requirements

For admission to this program, the applicant must first meet the entrance requirements of the Graduate Division of the University, including the grade average of B or better. In addition, the School of Architecture and Urban Planning requires that the applicant hold the degree Bachelor of Architecture (B.Arch) from an accredited school, and submit the material outlined in the Departmental Application Form. Particular emphasis is placed on the Statement of Purpose, letters of recommendation, evidence of professional quality, creative or analytic ability in either graphic, written, or mathematical form.

Good command of spoken and written English is absolutely essential and no foreign student will be allowed to attend classes until he passes the Graduate Division's English fluency exam and completes any required remedial courses.

Additional information about the program may be obtained by writing directly to the Graduate Advisor of the Architecture and Urban Design Program.

### Degree Requirements

The student is expected to be at least two years in residence at UCLA and undertake at least six quarters of work.

A thesis is required. Three faculty members (at least two from SAUP) will serve as members of the Thesis Committee. When all three have signed the thesis proposal, the student may sign up for Preparation for Thesis course (598) and may begin work on the thesis itself. This course should be taken at some point during the last year of study.

Students working towards a professional degree, M.Arch. II (*Master of Architecture*), are required to complete a minimum of eighteen courses with a total of at least 72 units distributed in the following way:

1. a) One core sequence should be chosen from the area of Theory and Methods (3 courses).

b) One core sequence should be chosen from the area of Professional Application (3 courses).

One of the above cores should be taken as a primary area of specialization and the other one as a secondary area. In the primary area of specialization the student is advised to take all the recommended courses. The secondary area may be taken as a sequence of core courses only.

In certain primary areas of specialization a Letter of Certification is conferred at graduation.

2. Eleven courses are to be electives. Among these are the recommended courses in the area of primary specialization. Three electives may be taken at large from upper division or graduate courses offered campus wide. For students requiring greater interdisciplinary study permission may be granted by the Curriculum Committee to increase this number.

3. At least five of the above courses must be numbered in the 400 professional series. Three of these must be courses 401, 402, or 403.

4. Thesis Preparation course (598) must be taken at least once.

## ADVANCED GRADUATE STUDIES THE MASTER OF ARTS DEGREE (M.A.) PROGRAM IN ARCHITECTURE AND URBAN DESIGN

The advanced graduate studies in Architecture/Urban Design at UCLA with an emphasis on academic studies give students the opportunity to explore in depth certain areas of specialization. An innovative attitude toward the future of the architectural profession is emphasized and is explored in seminars, projects and field experience.

There are areas of specialization offered in Theory and Methods and in Professional Applications.

### Core Sequences in Theory and Methods

Areas currently being offered are: (1) Design Methods, (2) Systems Building, (3) Energy-Conserving Design, (4) Social Building, (5) Computer Aided Design, (6) Open (course sequences to be arranged in response to individual student's needs).

### Core Sequences in Professional Application

Areas currently being offered are: (1) Urban Design, (2) Housing, (3) Health Care Facilities, (4) Open (course sequences to be arranged in response to individual student's needs).

Each of these areas consists of an organized sequence of three core courses including a minimum of one project course and a number of related highly recommended courses. Certain core sequences are offered only every other year. Core sequences may be introduced, deleted or changed from year to year, contingent upon faculty availability.

In addition to the currently offered core sequences, an "open option" in each category is available to students who enter with their own specific and well defined program of study. Proposals for this open option require prior approval by the Curriculum Committee.

Each applicant is urged to state in his/her application the areas in which he/she proposes to specialize, and every student is required to commit him or herself to the approved areas by the beginning of the second quarter. Work on the thesis is to be in the chosen areas of specialization, and may not be commenced until the required courses have been completed.

### Admission Requirements

For admission to this program, the applicant must first meet the entrance requirements of the Graduate Division of the University, including the grade average of B or better. In addition, the School of Architecture and Urban Planning requires that the applicant submit the material outlined in the Departmental Application Form. Particular emphasis is placed on the Statement of Purpose, letters of recommendation, evidence of professional quality, creative or analytic ability in either graphic, written, or mathematical form.

Good command of spoken and written English is absolutely essential and no foreign student will be allowed to attend classes until he passes the Graduate Division's English fluency exam and completes any required remedial courses.

The Master of Arts in Architecture and Urban Planning is available to students holding a Bachelors degree in Architecture (5 years), a Bachelor of Arts in Architecture (4 years), or a Bachelor or Master's degree in related fields, including anthropology, geography, planning, economics, human factors, psychology, and sociology, who pursue a study that emphasizes a more academic orientation. This path of study will prepare students for one or more specialized research and teaching functions related to the profession of architecture and urban design.

Additional information about the program may be obtained by writing directly to the Graduate Advisor of the Architecture and Urban Design Program.

### Degree Requirements

1. The student is expected to be at least two years in residence at UCLA and undertake at least six quarters of work.

2. A thesis is required. Three faculty members (at least 2 from SAUP) will serve on a thesis committee. When all three have signed the thesis proposal, the student may sign up for the Preparation for Thesis (course 598) and begin work on the thesis itself. The 598 course should be taken at some time during the last year.

3. Students working towards an M.A. (Master of Arts in Architecture) are required to complete a minimum of 16 courses (with a total of at least 64 units) of graduate or upper division work.

4. The M.A. student is required to choose only one area of specialization.

5. Seven courses may be taken from upper division or graduate courses offered campus wide.

6. The University of California minimum requirements for the Master of Arts degree must be completed.

In certain primary areas of specialization a Letter of Certification is conferred at graduation.

## THE URBAN PLANNING PROGRAM

The Urban Planning Program in the School of Architecture and Urban Planning offers a curriculum leading both to the Master of Arts and the Ph.D. degrees. The normal route of study requires two years of course work for the Masters. The Ph.D. program generally requires at least two years of study beyond the M.A. and prior to beginning dissertation research. This allows a student to pursue his planning studies in greater depth and to acquire a higher degree of competence in the relevant skills than is possible in the two years at the Master's level.

The curriculum is organized so that a student may obtain at the Master's level not only a theoretical and practical understanding of urban and planning processes, but also acquire a working knowledge of advanced analytical techniques for planning, capabilities for carrying out evaluations of complex urban phenomena, and critical interactive and learning skills.

An important aspect of the student's education in the Urban Planning Program is the opportunity for organized field work and internships as well as for applied research. Opportunities for applied research vary from year to year. Current work includes, but is not limited to, research on social indicators for monitoring changes in metropolitan areas, comparative studies in urbanization and planning, environmental impact analysis, environmental evaluation, transportation for the elderly, and transfer of knowledge to Third World countries.

## THE MASTER OF ARTS DEGREE (M.A.) PROGRAM IN URBAN PLANNING

### Admission Requirements

Undergraduate preparation. The minimum requirement for admission is a baccalaureate degree from an accredited institution; a concentration in one of the social sciences, engineering, or economics is desirable, but not essential. Students who have background deficiencies in study areas such as mathematics, economics, or sociology, will be required to round out their knowledge by taking additional

courses prior to their residence. (Please consult Department.) There is no foreign language requirement for the Master of Arts.

Students are expected to devote full time to their studies. It is recommended that students not plan to work more than 20 hours per week on outside jobs.

In terms of a formal curriculum at the Master's level, the student may elect one of five existing Areas of Policy Concentration (APC). The first, Urban-Regional Development Policy, concerns planning for broad social and economic objectives of subnational development. This APC provides a framework for policies planning in housing, urban renewal, urban-regional economic growth, and urbanization in industrializing countries, among others. The second, Public Service Systems, is concerned with knowledge about the general system embracing services that are supplied publicly or semi-publicly, the specific sectors or services comprising this system, and analytical techniques for planning and evaluating the delivery of public services such as transportation, education, housing, health and recreation. The third, Environmental Planning and Management, deals with the quality of the physical environment in rural and urban areas. The major areas of concern here are land use planning, environmental impact studies, and residuals management. The fourth area, Social Development Policy, is concerned with policy aspects of human development, community-neighborhood development, community organization and collective action, and the development of tools and methods for social planning. The fifth area, Urban Design, is concerned with the unique contribution that the theories, methods, and techniques evolving within urban planning can make to the field of urban design. In general, it represents a blending of the fields of urban planning and architecture. In addition to the preceding structured APC's, students may devise their own "Sixth APC" in consultation with appropriate faculty members.

Complementing their work in an Area of Policy Concentration, students elect courses from the Core curriculum. Core courses are distinguished from those in the Area of Policy Concentration in that their subject matter cuts across different specializations. Work is offered in five areas of core specialization: Professional Development, Planning Theory, Quantitative Planning Methods, Methods of Evaluation and Public Choice, and Methods of Implementation.

Specifically, the student must take 18 courses (72 units) of graduate and upper division work, of which at least 13 courses (52 units) will be graduate courses. Students may petition, however, to transfer up to 24 units of course work completed while on graduate status from another University of California campus, provided that these were not formerly applied to another degree, and up to 8 units from other schools.

To fulfill the requirements of both the Graduate Division and the Urban Planning Program for the Master's Degree, students may submit either a thesis (Plan I) or take a comprehensive examination (Plan II). The thesis is intended to provide students with the opportunity for independent scholarly research. Students choosing Plan I are expected to submit a research paper of publishable quality not to exceed in length the usual article for professional-scientific journals (up to 10,000 words). The comprehensive examination (Plan II) may take the form of a long-term project (Plan A) or a two week examination (Plan B). Plan A is a client-oriented project recommended for students who are more interested in practical applications of what they have learned in their coursework than in scholarly research. The time-span and magnitude of the final project should approximate that of a thesis. Students choosing the two week examination (Plan B) will work individually in the solution of a planning problem designed by a faculty committee. This examination is offered for all Areas of Policy Concentration during the break between Winter and Spring quarters each year.

### The Ph.D. Degree

The Ph.D. in Urban Planning requires at least two additional years beyond the Master's level prior to beginning dissertation research. The minimum requirement for admission is a Master's degree in planning or a closely related field, and a 3.5 grade point average in all graduate work completed. Students applying to the doctoral program without a Master's degree will automatically be considered for the Master's program. Subsequent admission to the Ph.D. program depends on formal application and successful review

of the student's work during the second year. Ph.D. students are required to pass a written qualifying examination in the core area of Planning Theory. In addition, the student must also pass a written and oral exam in his major field (APC) and complete requirements in the areas of quantitative methods and a minor field. After the student has successfully completed the examinations, he sits for an oral candidacy examination covering the prospectus of his dissertation. After passing this examination which is administered by the student's Doctoral Committee, the student is eligible for advancement to candidacy and may begin work on his dissertation.

### THE CONCURRENT JD/MA DEGREE PROGRAM

The concurrent program was established to enable interested students to receive a JD degree from the School of Law and an MA degree in planning at the completion of four years. Students interested in this program must first apply and be admitted to the Law School. During the first year of study, students apply to the Urban Planning Program to begin formal Master's studies, and hence the concurrent degree program, during their second year. Admission is based upon several factors including the completion of the first year in Law School with a "B" average. The student's first year is spent full-time in Law School. The second and third years of study are a mixture of planning and law courses; the fourth year is spent full-time in the Planning Program.

Persons interested in more detailed information regarding any of the above planning programs should contact the Graduate Counselor.

## SCHOOL OF DENTISTRY

The UCLA School of Dentistry occupies facilities in the Center for the Health Sciences. It enrolls classes of 106 students each year in a four-year course of study leading to the degree of Doctor of Dental Surgery. Students undertake a comprehensive program in the biological and technological sciences to foster the highest standards of clinical competence in the practice of dentistry. Opportunities exist for outstanding students to graduate early or to complete their requirements for graduation in less than four years.

### Predental Requirements

Modern dentistry provides exciting opportunities for blending art and science, technology and biology. The predental student will therefore wish to test his, or her, abilities in handling both biological and physical sciences. In addition, there are many other aspects in the broadening scope of dentistry which contribute to preparation for a career in private practice, in academic dentistry, and in the Armed Forces and Public Health Service.

It is desirable, however, for predental students to prepare themselves for broad professional activities. They should take advantage of the opportunity at the college level to extend their cultural background, their knowledge of languages and the behavioral sciences.

The basic educational requirement for admission to the School of Dentistry is a minimum of three years of college work (90 semester or 135 quarter units including the courses listed under the College of Letters and Science in this bulletin).

Applicants must provide proof of U.S. citizenship or permanent immigrant visa.

### APTITUDE TEST

The School requires satisfactory performance on the American Dental Association Aptitude Test given by the Council on Dental Education of the American Dental Association.

The Aptitude Test is given in October and April and all applicants are required to take this examination no later than October of the calendar year prior to the one for which they are applying. In order to avoid delay of application processing, it is advisable that the student take this examination during (or prior to) the April testing period.

When taking this test, the candidate should specify the schools where applications are to be filed so that the test results may be mailed directly to the appropriate schools.

## APPLICATION PROCEDURE

UCLA participates in the American Association of Dental Schools Application Service (AADSAS). Application materials are available April 15-October 15 and may be obtained from:

AADSAS  
P.O. Box 1003  
Iowa City, Iowa 52240

Completed applications for UCLA are accepted by AADSAS no later than October 15 of the year prior to that in which the student wishes to enroll. At the time of application, a check for \$20.00 payable to The Regents of the University of California should be forwarded to:

Office of Student Affairs and Admissions  
UCLA School of Dentistry  
Los Angeles, California 90024

Interviews are not generally used in assessing the suitability of an applicant to the UCLA School of Dentistry; however, the Committee on Admissions, in certain circumstances, may request interviews with individual applicants. Letters of recommendation are not required by this school, but will be considered if submitted. Applicants wishing to submit additional information not covered in the application form, which may be helpful, may do so in a letter to the Committee on Admissions in no more than two typewritten (double spaced) pages.

Notice of acceptance, rejection or alternate status will be sent to the applicant following completion of the formal evaluation by the Admissions Committee, beginning December 1 of any given year. Notification of rejection does not necessarily imply similar Committee action on subsequent applications.

An applicant receiving a letter of acceptance to the School of Dentistry must submit a deposit of \$50.00 (applicable to registration fees) within 30 days, unless otherwise indicated, in order to reserve a place in the class. This deposit is refundable for a period of six weeks following acceptance upon written notice to the Admissions Committee that the student wishes to withdraw his application. After this time period, the deposit is refundable only if the candidate's acceptance is rescinded by the School of Dentistry.

### Individual Programs of Study in the Dental Curriculum

Special programs of study for students may be arranged within the framework of the dental school curriculum. Normally these programs are available only after the student has completed the first year and with the approval of the Dean's Office and the chairman of the department responsible for the additional course work.

Graduate work leading to the M.S. degree is offered in Oral Biology, either separately or in conjunction with the D.D.S. program. See the departmental announcement elsewhere in this catalog for further information.

## GRADUATE SCHOOL OF EDUCATION

The Graduate School of Education consists of one department, the Department of Education. The School is administered by the Dean, an Associate Dean, an Assistant Dean for Business Affairs and Internal Management, an Assistant Dean for Programs, an Assistant Dean for Research, and an Assistant Dean for Student Affairs.

The Department of Education is administered by a Chairman and two Vice Chairmen.

### Graduate Degree Programs

The following graduate degree programs are offered for the development of leadership in education: The Master of Education, the Master of Arts, the Doctor of Education, and the Doctor of Philosophy, as well as a joint Doctor of Philosophy degree program in Special Education with California State University at Los Angeles.

### THE MASTER OF EDUCATION DEGREE (M.ED.)

The Master of Education program is a professional master's degree program providing preparation for mid-level professional positions in schooling or for advanced

professional study. Emphases include practice, applied studies, and knowledge related to professional skills. Persons with above-average capabilities, with long-term commitment to the profession, and who are high in initiative and self-direction are sought. The Master of Education Degree is the appropriate degree to provide professional foundation study for students selecting the Doctor of Education program for advanced graduate study.

Qualification for the degree requires fulfillment of a minimum of 36 units from upper-division and graduate courses (in the 200/400 series) completed in graduate status. At least 20 of the required 36 units must be taken in professional (400 series) Education courses. The specialization fields available to students in the Master of Education degree program are indicated below:

1. The specialization in Administrative and Policy Studies in Education is designed to prepare competent, highly trained educational professionals for careers as administrative leaders. Basic professional study is combined with intensive internship experience. In addition to six required Education courses, two specified research methodology courses and one approved elective course must be completed.

2. The specialization in Curriculum and the Study of Schooling is designed to develop individuals who will be competent in the generation and/or analysis of goals pertaining to curriculum educational programs, and in the selection and organization of learning opportunities, at all levels of schooling. Such individuals may be prepared as generalists capable of assisting specialists in subject matter areas with respect to the planning and analysis of curriculum programs, or as curriculum specialists in connection with particular subject matter areas. Basic professional preparation is combined with subspecialization study in an elected field of interest. In addition to four specified and required Education courses, the student must complete five courses selected from designated lists of electives.

3. The specialization in the Teaching of Reading is directed to the development of requisite skills and abilities as well as to the dissemination of knowledge regarding the latest techniques and materials in the reading field. Basic professional study is combined with subspecialization study in an elected field of interest. In addition to six specified and required Education courses, the student must complete at least three courses from a designated list of electives.

Final examinations for the Master of Education Degree include a comprehensive written examination and a performance examination; no thesis plan is offered. A maximum of seven quarters is permitted for completion of the degree.

### THE MASTER OF ARTS DEGREE (M.A.)

The Master of Arts program is an academic master's degree program providing preparation for advanced graduate study or for careers in basic research. Emphases include theory, research methodology, basic studies, and in-depth knowledge in a selected major area of education. The Master of Arts Degree is the appropriate Education master's degree for students planning to pursue the Doctor of Philosophy Degree in advanced graduate study; the Master of Arts Degree in conjunction with specified supplementary requirements may serve as prerequisite to study in the Doctor of Education degree program.

In completion of degree requirements, the student selects one of three major areas of education, and further selects a field of study within the major area for some specialized preparation and for possible thesis research. The major areas and participating specialization fields are shown below:

*Area I: Social and Philosophical Studies in Education*

- (a) Philosophy of Education
- (b) Sociology and Anthropology of Education

*Area II: Educational Psychology*

- (a) Counseling
- (b) Early Childhood Development
- (c) Learning and Instruction
- (d) Research Methods and Evaluation
- (e) Special Education

*Area III: Organizational and Administrative Studies in Education*

- (a) Business-Economic Education
- (b) Higher Education
- (c) Vocational-Technical Education

Qualification for the Master of Arts Degree in Education requires fulfillment of nine upper-division and graduate courses (36 quarter units) completed in graduate status, of which at least six courses (24 quarter units) must be graduate courses in the 200/500 series in Education; no more than two courses (8 quarter units) may be in the 500 series.

To meet the methodology requirement, two courses must be selected from the following Education courses: 200A, 200B, 210A, 210B.

The student may complete requirements for the Master of Arts Degree in Education by submitting a satisfactory thesis or by passing a comprehensive examination. A maximum of seven quarters is permitted for completion of the degree.

### THE DOCTOR OF EDUCATION DEGREE (ED.D.)

The Doctor of Education program is a professional doctoral degree program preparing students for careers of leadership and applied research in the schools and community educational programs. Emphases include practice, applied studies, and knowledge related to professional skills.

In completion of degree requirements, the student selects one of two major areas of education, and further selects an educational specialization within the major area as a base for his professional study and for his dissertation research. The major areas and participating specialization fields are shown below:

*Area I: Social and Philosophical Studies in Education*

(No participating specialization fields.)

*Area II: Educational Psychology*

- (a) Early Childhood Development
- (b) Learning and Instruction
- (c) Research Methods and Evaluation
- (d) Special Education

*Area III: Organizational and Administrative Studies in Education*

- (a) Administrative and Policy Studies in Education
- (b) Business-Economic Education
- (c) Curriculum and the Study of Schooling
- (d) Higher Education
- (e) Vocational-Technical Education

Although there is no specific unit requirement, the Doctor of Education student will be expected to complete such course work as his Guidance Committee may specify in preparation for qualifying examinations. Course work must include a minimum of one approved breadth course, including a final examination, in each of four specified categories, and a minimum number of courses beyond the baccalaureate degree in research methods or formal processes of inquiry and the application of research findings to the practice of education; in addition, the student must complete a field experience minimally approximating a one-course requirement.

Qualifying examinations include written examinations on breadth course and major area study, a professional competency performance examination, and an oral examination employing topics from education related to the student's research proposal.

A dissertation embodying the results of independent investigation is required of every candidate. A maximum of 20 quarters is permitted for completion of the degree.

### THE DOCTOR OF PHILOSOPHY DEGREE (PH.D.)

The Doctor of Philosophy program is an academic doctoral degree program preparing students for careers in basic research or college-level instruction. Emphases include theory, research methodology, basic studies, and in-depth knowledge in education and an approved cognate field.

In completion of degree requirements, the student selects one of three major areas of education, and further selects an educational specialization within the major area for some specialized preparation and for dissertation research. The major areas and participating specialization fields are shown below:

*Area I: Social and Philosophical Studies in Education*

- (a) Comparative and International Education
- (b) Philosophy and History of Education
- (c) Sociology and Anthropology of Education

*Area II: Educational Psychology*

- (a) Counseling
- (b) Early Childhood Development
- (c) Learning and Instruction
- (d) Research Methods and Evaluation
- (e) Special Education

*Area III: Organizational and Administrative Studies in Education*

- (a) Administrative and Policy Studies in Education
- (b) Curriculum and the Study of Schooling
- (c) Higher Education

Although there is no specific unit requirement, the Doctor of Philosophy student will be expected to complete such course work as his Guidance Committee may specify in preparation for qualifying examinations. Course work must include a minimum of one approved breadth course, including a final examination, in each of four specified categories, and a minimum number of courses beyond the baccalaureate degree in research methods or formal processes of inquiry; in addition, the student must complete a research internship minimally approximating a one-course requirement.

Qualifying examinations include written examinations on breadth course, major area, and cognate study, and an oral examination employing topics from both education and the cognate discipline which are related to the student's research proposal.

In addition, the student is required to pass an appropriate examination, administered by the Graduate Division, which will test his ability to read and understand the written form of one foreign language acceptable to the Graduate School of Education and to the Dean of the Graduate Division.

A dissertation embodying the results of independent investigation is required of every candidate. A maximum of 20 quarters is permitted for completion of the degree.

### JOINT DOCTOR OF PHILOSOPHY DEGREE (SPECIAL EDUCATION) UCLA AND CSULA

Students seeking information regarding emphases and requirements of the joint Ph.D. degree program should consult the Joint Doctoral Adviser, Dr. Judith Margolis, at UCLA, 126B Moore Hall, or the Chairman of the Department of Special Education, California State University at Los Angeles.

### FIELDS OF SPECIALIZATION

(NOTE: Not all specialization fields participate in all Education degree programs; see foregoing information on specific degree program requirements.)

More detailed information regarding fields of specialization may be secured by contacting the Office of Student Services in the Graduate School of Education or by consulting the UCLA ANNOUNCEMENT OF THE GRADUATE SCHOOL OF EDUCATION.

### Graduate Study Admission Requirements

General qualifications for admission to a program of graduate study leading to an advanced degree in Education are:

1. The currently specified University requirements for admission to the Graduate Division.
2. An earned grade-point average of at least 3.0 (based upon upper-division undergraduate and graduate work).
3. A minimum total score of 1000 on the combined quantitative and verbal sections of the Graduate Record

Examination. (The Miller Analogies and Doppelt Mathematical Reasoning Test may be substituted for the Graduate Record Examination; minimum scores are 48 and 19 respectively.)

Information regarding additional specific admissions requirements applicable to respective degree programs as well as that pertaining to special admissions criteria may be obtained from the Office of Student Services, Moore Hall 201.

A student seeking admission to a program of graduate study in the Graduate School of Education must file formal applications with both the Graduate School of Education and the Graduate Admissions Office indicating his professional interest. He must also submit the results on the Aptitude Test of the Graduate Record Examination and an official transcript of his record *in duplicate* from each college and university he has attended. Requests for application forms may be made directly to the Office of Student Services of the Graduate School of Education, Moore Hall, University of California, Los Angeles. The last day to submit advanced degree program applications for each quarter of the 1978-79 academic year is indicated in the Calendar section of this Catalog.

The Dean of the Graduate Division may deny admission if the record of scholarship is not sufficiently distinguished, or if the undergraduate program has not been of such character as to furnish an adequate foundation for advanced academic study. Applications for advanced study in education are referred by the Dean of the Graduate Division to the Graduate School of Education for recommendation before admission is approved.

## Transfer of Credit

By petition, units and grade points for courses completed in graduate status on other University of California campuses may apply to master's programs at UCLA. If approved, such courses may fulfill up to one-half the total course requirement, one-half the graduate course requirement, and one-third the academic residence requirement.

Also by petition, with the approval of the Department and the Dean of the Graduate Division, courses completed with a minimum grade of B in graduate status at institutions of acceptable standing other than the University of California may apply to UCLA master's programs. A maximum of two such courses (the equivalent of eight quarter-units or five semester-units) may apply, but these courses may not be used to fulfill either the graduate-course requirement or the academic-residence requirement. No transfer credit is allowed for either the Ed.D. or Ph.D. degree.

## Credit for University Extension Courses

University Extension courses (100 series) taken *before* July 1, 1969 (identified with an asterisk in the University Extension bulletin of the appropriate year) may apply to UCLA master's programs on approval by the Department and Dean of the Graduate Division. No more than two such courses (8 units) may apply, and they must have been completed after the student received his/her bachelor's degree.

Courses in University Extension taken *after* July 1, 1969 may not apply to the University minimum of nine courses required for master's degrees, with the following exception. By petition to the Dean of the Graduate Division and with the recommendation of the major department, a maximum of two concurrent courses (100, 200, or 400 series) completed through the University Extension (with a grade of B or better, after the student has received his/her bachelor's degree) may be counted toward the nine-course University minimum requirement and toward the graduate-course requirement for the master's degree. However, the program for the master's degree shall include at least two graduate courses in the 200 or 400 series completed after admission to regular graduate status.

Grades earned in University Extension are not included in computing grade averages for graduate students nor for the removal of graduate scholarship deficiencies. Correspondence courses are not applicable to graduate degrees.

Petitions for acceptance of credit for courses taken in University Extension are to be submitted to the Office of Student Services in the Graduate School of Education.

## Continuous Registration

All graduate students are to register for three quarters every year until completion of all requirements for the degrees for which they are working, unless they are granted a formal leave of absence. Enrollment in either Summer Session does not constitute a substitution for the requirement of continuous registration. Failure to register or to take a leave of absence will constitute presumptive evidence that the student has withdrawn from the University.

## Standard of Scholarship

UCLA requires at least a B average in all courses taken in graduate status on any campus of the University of California and in all courses applied toward advanced degrees. This standard applies to all graduate students, including candidates in graduate level certificate programs.

## Credit by Examination

Graduate students in good standing may petition to the appropriate instructors, the Department, and the Dean of the Graduate Division for permission to take courses for credit by examination, up to a maximum of three courses. To be eligible for this privilege, a student must be registered in graduate status at the time of the examination. Credit earned by examination may be applied toward the minimum course requirements for master's degrees, but it cannot apply to academic residence requirements for master's and doctoral degrees.

## Enrollment in Summer Session Courses

Enrollment of prospective graduate students in Summer Session courses does not constitute admission to graduate status in the University, which is possible only through application for graduate admission during the regular academic year. This is true also for students readmitted to graduate status who wish to resume their study in the Summer Sessions.

Students who wish to enroll in Summer Session courses and apply them to requirements for graduate degrees or credential certification should consult the Graduate Adviser in the Office of Student Services.

## Graduate Record Examination

The Aptitude Test of the Graduate Record Examination or the equivalent is required prior to admission to graduate status for all degree and advanced credential candidates.

Arrangements for taking the Graduate Record Examination may be made by contacting the Educational Testing Service at Box 955, Princeton, New Jersey, 08540 or 1947 Center Street, Berkeley, California 94704.

The results of this examination should be sent to the Office of Student Services, Graduate School of Education, University of California, Los Angeles, California 90024.

## Teacher Education Laboratory

The Teacher Education Laboratory offers courses of study leading to basic teaching credentials, the Bilingual Emphasis Credential, the Specialist Credential in Reading, and the Master of Education Degree. The Laboratory's major purpose is to generate new knowledge about teacher education by developing several experimental teams for the preparation of new and experienced classroom teachers, and by examining the effects of those teams.

The Teacher Credential Program prepares candidates for initial employment as classroom teachers. Students enroll with faculty teams which represent different philosophical and instructional approaches to teaching and learning. In each team, students may earn credentials to teach in elementary schools, secondary schools, or both. Courses are taught by Education professors and experienced classroom teachers from nearby elementary and secondary schools. Upper division undergraduates and graduates are eligible for this one-year program, which includes supervised teaching in public school classrooms.

The Reading Specialist Program is designed to develop high levels of competence in reading instruction, curriculum development, and evaluation. Upon completion of

the program, the candidates qualify for both the M.Ed. Degree and the Specialist Credential in Reading. Individuals with two or more years of classroom teaching experience are eligible.

## Certificate (Credential) Programs

The Graduate School of Education has received approval from the Commission for Teacher Preparation and Licensing for the following credentials:

1. The Teaching Credential with authorization in single subject instruction.
2. The Teaching Credential with authorization in multiple subject instruction.
3. The Teaching Credential with Bilingual Emphasis.
4. The Specialist Credential in Reading.
5. The Services Credential with specialization in pupil personnel services. (Basic authorization)
6. The Services Credential with specialization in pupil personnel services. (School Psychologist authorization)

Approval is pending on the following credential:

1. The Services Credential with specialization in administrative services.

For information concerning requirements, credential applicants must consult the Office of Student Services, Graduate School of Education.

## TEACHING CREDENTIALS ADMISSION REQUIREMENTS

The approved program leading to a teaching credential may be entered in the junior, senior, or graduate year. Course work is sequenced and must be started in the Fall Quarter. Admission is by application only; forms may be secured from the Office of Student Services, Moore Hall 201. The last day to submit applications for the academic year 1979-80 is February 15, 1979. Early application is recommended.

Applications will be reviewed by the Committee on Teacher Admissions, Credentials, and Standards; attention will be given to qualifications as a whole including:

1. Grade-point average.
2. Probability of employment, as determined by the applicant's background, experience, or personal qualities.
3. Skill in teaching as determined by the applicant's previous experience.

Letters of recommendation are optional but useful to the Committee on Teacher Admissions, Credentials, and Standards in review of the applicant's qualifications.

Students qualifying for admission for a fifth year of professional preparation in the Graduate School of Education must meet the general admissions requirements of the Graduate Division of the University and must have an earned grade-point average of at least 3.0 (based upon upper division undergraduate and graduate work).

## Office of Student Services

The Office of Student Services, Moore Hall 201, helps prospective students in Education explore and choose appropriate fields and levels of school service; advises them concerning courses and procedures to follow in qualifying for graduate degrees, credentials, and certification for public school service; and counsels them on professional matters.

In addition, the Office serves as a selection agency to determine eligibility for professional programs under the supervision of the Teacher Education Laboratory, handles details of enrollment in classes, refers graduate-program candidates to appropriate faculty advisers; makes recommendations for scholarships and fellowships; conducts research on student and professional problems; and formulates periodic reports on student personnel.

The staff consists of a Head who coordinates the work of the Office, a Graduate Adviser who handles advising of all candidates for graduate degrees, and counselors who advise candidates for credentials.

It is important that each student establish contact with the Office of Student Services so that he may determine his eligibility for the program he wishes to enter, receive assistance in the selection of courses, and fulfill all require-

ments for admission. Enrollment for a second quarter is contingent upon his having completed all necessary steps satisfactorily during the first quarter.

### The Neuropsychiatric Institute School

The Neuropsychiatric Institute (NPI) School is a demonstration facility for the Graduate School of Education, offering observation, classroom participation, and graduate research opportunities for students in the specialization field of Special Education. The School is comprised of nine classrooms on the seventh floor of the Neuropsychiatric Institute in the UCLA Center for Health Sciences.

The NPI School provides schooling for some 60 emotionally disturbed and mentally retarded children and adolescents hospitalized on the inpatient wards of the UCLA Neuropsychiatric Institute and Mental Retardation Center. The staff includes a Special Education Director in charge of research and training, and five demonstration teachers who direct their respective staffs of teachers and teaching assistants at the early childhood, elementary, secondary, and adult levels. There is, in addition, an outpatient educational consultation team; the staff further participates in the research and teaching activities of the UCLA Department of Psychiatry.

### University Elementary School

The University Elementary School serves as a center for research, inquiry, and experimentation in education as well as providing a research laboratory for more than twenty other departments in the University. Thousands of visitors from all parts of the world visit the University Elementary School every year. Demonstrations are planned for these visitors as well as university classes in education, psychology, pediatrics, psychiatry, art, music, kinesiology, and many other departments on request. Closed-circuit television provides classroom and other specialized demonstrations for University students at many points on campus. Opportunities for internship are available to a limited number of teachers and education students. Many extension workshops for teachers and administrators are held each summer.

The staff of the School includes a director, associate director, principal, master teachers, teachers temporarily assigned from public school districts, teachers engaged in residency training, and students learning to teach. Some are generalists, others specialize in a subject field. Auxiliary personnel include a nurse, social worker, and consultants from medicine, psychology and psychiatry.

A heterogeneous population representing all children from three to twelve years old who are eligible for public education are educated in this nongraded school in team-taught classrooms. Each student is individually diagnosed and his educational program is custom tailored to his needs. Students who are physically, educationally, or emotionally handicapped are "mainstreamed" in regular classes.

The School plant is designed to utilize fully a beautiful setting combining indoor and outdoor work areas. With minimum architectural change, it has been adapted to house an innovative educational program. The plant includes 17 classrooms, a community hall, art studio, children's library, conference rooms, film and observation room, office facilities, and a playground designed to facilitate an innovative instructional program in movement.

### The Center for the Study of Evaluation

The Center for the Study of Evaluation (CSE) was established in 1966 by the Federal Government to improve the way in which educational programs are evaluated. Under the sponsorship of the National Institute of Education, CSE conducts basic research and develops products for use in school systems and social action programs. Actual evaluation studies and training programs are also conducted under contracts with various UCLA departments and with state and federal agencies.

A limited number of research assistantships are available to qualified graduate students. The positions provide experience in the areas of psychometrics, research design, product development, programming, bilingual education, and evaluation. Students work and study in these areas

under the direction of faculty members and a highly trained professional staff. Further information about the Center is in the ANNOUNCEMENT OF THE GRADUATE SCHOOL OF EDUCATION.

## SCHOOL OF ENGINEERING AND APPLIED SCIENCE

The Bachelor's degree program is designed to give each student a thorough grounding in the fundamentals of engineering, in the applied sciences and applied mathematics, and an intelligent awareness of the humanities, social sciences, and/or fine arts so that in the future he or she can move into any new technical area with confidence and ability. Engineering is such a broad field and pervades so many aspects of our society that no engineer can be equally familiar with every branch of applied technology. For this reason, the curriculum at the UCLA School of Engineering and Applied Science includes not only the core group of courses which emphasize enduring fundamentals common to all branches of engineering, but also includes a wide variety of additional course options to meet the individual interests and objectives of the student. Specialization is provided at the bachelor's degree level through elective courses chosen in a major field, which, together with the core courses, provide the student with a base for more advanced study or for entering the professional field directly.

Instruction is offered in: acoustical engineering, aerospace engineering, bioengineering, ceramic engineering, chemical engineering, civil engineering, computer engineering, control systems engineering, earthquake engineering, electrical and electronics engineering, general engineering, environmental engineering, fluid mechanics, geotechnical engineering, information and communications theory, materials science, mechanical engineering, metallurgy, nuclear engineering, plasma engineering, soil mechanics, solid mechanics, structural engineering, systems science, and water resources.

### Admission Requirements

Applicants for admission to the School of Engineering and Applied Science must satisfy the general admission requirements of the University as outlined in the section entitled "Admission to the University." In the future entrance to the school may be based on the results of a further examination of student grades and test scores.

### THE FRESHMAN LEVEL

While many students will take their first two years in engineering at a community college, an applicant may qualify for admission to the School of Engineering and Applied Science in freshman standing. It is anticipated that admission to the School will require that the following subjects be taken when satisfying the University admission requirements:

Algebra . . . . .	2 years
Plane geometry . . . . .	1 year
Trigonometry . . . . .	½ year
Chemistry and physics with laboratory . . . . .	2 years

It is also highly recommended that the student take a course in technical drafting while in high school.

Applicants are encouraged to apply either at the freshman or junior level. Students who begin their college work at a California community college are expected to remain at the community college to complete the lower division requirements in chemistry, mathematics, physics, and the recommended engineering courses before transferring to the University. Experience indicates that transfer students who have completed the recommended lower division program in engineering at California community colleges are able to complete the remaining requirements for the B.S. degree in six quarters (two academic years) of normal full-time study.

### THE JUNIOR LEVEL

Applicants for admission to the School in junior standing should have completed 21 to 23 courses (84 to 92 quarter units) in good standing, including the following minimum subject requirements:

1. Two and one-fourth courses in chemistry, equivalent to UCLA's Chemistry 11A-11B-11BL; 2. six courses in mathematics, equivalent to UCLA's Mathematics 31A-31B-31C and 32A-32B-32C; 3. four courses in physics, equivalent to UCLA's Physics 8A-8B-8C-8D.

Students transferring to the School from institutions which offer instruction in engineering subjects in the first two years, in particular, California community colleges, will be given credit for certain of the degree requirements. (See the upper division segment.)

### Departmental Scholars

The School may nominate exceptionally promising undergraduate students (juniors and seniors) as Departmental Scholars to pursue bachelor's and master's degree programs simultaneously.

Minimum qualifications include the completion of 24 courses (96 quarter units) at UCLA, or the equivalent at a similar institution, and the requirements in preparation for the major. To obtain both the bachelor's and master's degrees the Departmental Scholar will fulfill the requirements for each program and maintain a minimum average of B. The student may not use any course to fulfill requirements for both degrees.

Interested students should consult the Assistant Dean, Undergraduate Studies, room 6412, Boelter Hall, well in advance of application dates for admission to graduate standing.

### College Level Examination Program (CLEP)

Credit earned through the College Level Examination Program (CLEP) will not be counted toward the bachelor's degree.

### Requirements for the Degree of Bachelor of Science

The School of Engineering and Applied Science at UCLA awards the Bachelor of Science degree to students who have satisfactorily completed a program of four years of engineering studies.

The curricular requirements for the Bachelor of Science degree consist of the lower division and upper division segments (46¼ courses, 185 units), and the University requirements in scholarship, Subject A (English composition), American History and Institutions, and senior residence. At least a 2.0 grade point average must be achieved in all University courses of upper division level offered in satisfaction of the subject requirements and required electives of the curriculum. The University requirements are described under the section entitled "General Regulations". The lower division and upper division requirements are described below:

### The Engineering and Applied Science Curriculum

#### Lower Division (23¼ Courses, 93 Units)

	Units First Quarter	Units Second Quarter	Units Third Quarter
Freshman Year			
Chemistry 11A-11B-11BL . . . . .	4	5	—
Mathematics 31A-31B-31C . . . . .	4	4	4
Physics 8A-8B . . . . .	—	4	4
English 3 . . . . .	4	—	—
Engineering 10* . . . . .	—	—	4
Electives** . . . . .	—	4	4
	12	17	16

\*The Computer Science Department offers a placement examination each quarter during registration week to permit students to demonstrate proficiency in the subject area of Engineering 10 based on outside work experience and/or courses completed elsewhere. Satisfactory performance on the placement examination will exempt students from the Engineering 10 subject requirement, and will allow them to select another technical or major field elective course of their choice to satisfy the unit requirement.

\*\*The lower division electives shall include the following: one course in the life sciences, three courses in the humanities-social sciences-fine arts area, and one free elective.

Sophomore Year	Units First Quarter	Units Second Quarter	Units Third Quarter
Mathematics 32A-32B-32C†	4	4	4
Physics 8C-8D	4	4	—
SEAS Core*	4	4	8
Electives**	4	4	4
	16	16	16

†Mathematics 32C may be taken before Mathematics 32A and 32B.

\*The SEAS core requirement consists of 8 courses (32 units) to be chosen from 5 subject areas. The core is described immediately following the Upper Division segment of the Curriculum. For courses to be taken in the sophomore year, students should consult their major field advisers.

\*\*The lower division electives shall include the following: one course in the life sciences, three courses in the humanities-social sciences-fine arts area, and one free elective.

## Upper Division (23 Courses, 92 Units)

Prerequisite for junior status: Satisfactory completion of the minimum subject requirements specified under admission to the School at the Junior level.

Junior Year	Units First Quarter	Units Second Quarter	Units Third Quarter
SEAS Core*	8	4	4
Mathematics Elective**	4	—	—
Electives†	—	12	12
	12	16	16
Senior Year			
Electives†	16	16	16
	16	16	16

\*The SEAS core requirement consists of 8 courses (32 units) selected from five subject areas subject to the unit restrictions indicated in the table below.

\*\*To be chosen from a School approved list.

†The upper division elective courses shall include the following:

1. Four courses in the humanities-social sciences-fine arts area; 2. Two free electives; 3. Twelve major field electives. For specific requirements within the humanistic and major field areas please refer to the section entitled "Elective Courses."

## SEAS Core (8 Courses, 32 Units)

The student is to select 8 core courses (32 units) from the 5 subject areas listed below. The minimum and maximum number of units allowed in each of the 5 subject areas is also given.

Subject Areas (5)	Courses (12)	Unit Range	
		Min.	Max.
Electrical Sciences	Engineering 100. Electrical and Electronic Circuits. (4)	4	8
	Engineering 100B. Engineering Electromagnetics. (4)		
Thermal and Materials Sciences	Engineering 14*. Science of Engineering Materials. (4)	8	12
	Engineering 105A. Engineering Thermodynamics. (4)		
	Engineering 105D. Transport Phenomena. (4)		
Mechanics	Engineering 102. Mechanics of Particles and Rigid Bodies. (4)	8	12
	Engineering 103A. Elementary Fluid Mechanics. (4)		
	Engineering 108. Introduction to Mechanics of Deformable Solids. (4)		
Systems	Engineering 106B. Introduction to Design and Systems Methodology. (4)	4	8
	Engineering 121C. Systems and Signals. (4)		
	Engineering 127B. Elements of Probability and Information. (4)		
Computer Processes	Engineering 124A. Applied Numerical Computing. (4)	0	4

\*Not open for credit to students who have had Engineering 107B.

Transfer Credit for Community College Transfer Students.

Many sophomore courses in circuit analysis, strength of materials, and properties of materials may satisfy Engineering 100, Engineering 108, and Engineering 14 respectively.

A course in digital computer programming, using a higher-level language such as Fortran IV or PL/1, will satisfy the requirement, Engineering 10.

Certain lower division technical courses such as surveying, engineering drawing, engineering measurements, and descriptive geometry will be given credit as free electives. (A maximum of three courses may be free electives.)

**Elective Courses:** The Engineering and Applied Science Curriculum for the Bachelor degree includes provision for 24 elective courses to be chosen within the following categories:

1. Free electives, 3 courses, 12 units.

Any course yielding credit acceptable to the University of California may be selected. It is, however, strongly recommended that the student select additional technical courses for some of these units.

2. Humanities, Social Sciences, and/or Fine Arts, 7 courses, 28 units. To be chosen from an approved list.

Of the seven courses, at least three (12 units) must be upper division courses. Students from California community colleges (only) may reduce this to two upper division courses (8 units) provided they are in the same field; however, all students, including California community college transfers must have a minimum total of 7 humanities courses.

To provide some depth, at least three courses (12 units) must be in the same academic department or must otherwise reflect coherence in respect to subject matter. This group must contain at least two upper division courses.

With few exceptions, courses intended primarily to develop specific skills should be avoided (e.g. dexterity in performance on a musical instrument, ability to manipulate people, grammatical and composition skills, etc.). An exception is effective when the particular "skill" course is prerequisite to another upper division course which is strictly in the humanities or social science (e.g. foreign language and literature courses taught in the language, etc.).

A list of courses which are normally acceptable individually as humanities-social sciences-fine arts electives is available in the Undergraduate Office.

3. Engineering and Science in Society, 1 course, 4 units.

One of the seven humanities-social sciences-and/or fine arts courses or one of the free electives shall be a course (4 units) dealing primarily with engineering and science in society in the 100, 200, or 596 series. To be chosen from an approved list.

4. Life Science, 1 course, 4 units. To be chosen from an approved list.

5. Mathematics, 1 course, 4 units (upper division). To be chosen from an approved list.

6. Major Field, 12 courses, 48 units (upper division).

The major field elective program shall be chosen so as to reflect coherence with respect to subject matter and to prepare the student for an area of specialization (including unified engineering). The twelve courses shall include (a) at least 8 units of laboratory experience to be satisfied by designated laboratory courses or a 4-unit laboratory course and two courses each including 2 units of laboratory experience and (b) one upper division course (4 units) in economics chosen from an SEAS approved list.

7. The engineering design content of the student's program (major field electives, core courses, technical electives, free electives, etc.) must total at least 23 units.

Lists of courses approved to satisfy the elective categories specified above are posted on the bulletin board in the Undergraduate Office, Boelter Hall 6426.

## Engineering Curriculum Planning Procedure

1. Choose the curriculum under which you wish to graduate. You will use the curriculum in effect when you begin full-time continuous study in Engineering at UCLA. However, any student has the option of selecting the Catalog in effect at graduation. Community college transfers have the additional option of choosing the Catalog in effect at the time they began their community college work in an engineering program providing attendance has been continuous since that time.

2. Attend the Junior Conference conducted by the School of Engineering and Applied Science for the purpose of help-

ing you to plan your curriculum. The Conference usually is held during the fourth week of each quarter. For time and place consult the Undergraduate Office, Boelter Hall 6426.

3. Plan your electives. The Elective Selection form approved by the major field adviser must be submitted for approval by the Assistant Dean, Undergraduate Studies, Undergraduate Office, Boelter Hall, room 6426, during the first quarter of the junior year. The deadline for juniors to submit their elective selections is announced each term in the Undergraduate Enrollment Instructions brochure, School of Engineering and Applied Science.

Your regular faculty adviser is available to assist you in planning your electives and for discussions regarding your career objectives. Discuss your elective plan with your adviser and obtain your adviser's approval.

See any member or members of the faculty specially qualified in your major field for advice in working out a program of major field and humanities-social sciences-fine arts electives to prepare you for your professional objective. A list of faculty members and their specialities is posted on the Undergraduate Office bulletin board.

Whenever possible, students are assigned to advisers by major fields of interest. You may request a specific adviser or an adviser in a particular Engineering Department by submitting a Request for Change of Undergraduate Adviser form available in the Undergraduate Office.

Members of the Undergraduate Office Staff are available to assist you with University procedures and to answer any questions which you may have in regard to general requirements.

## GENERAL INFORMATION

**E.C.P.D. Accreditation.** The Engineering Curriculum is accredited by the Engineers' Council for Professional Development, the nationally recognized accrediting body for engineering programs.

**Honors with the Bachelor's Degree.** Students who have achieved scholastic distinction in upper division studies may be awarded the Bachelor's degree with the appropriate honors designation: *Cum Laude*, *Magna Cum Laude*, or *Summa Cum Laude*. Based on grades achieved in upper division courses, a student should have a 3.40 upper division grade point average to qualify for *Cum Laude*, a 3.60 for *Magna Cum Laude*, and a 3.80 for *Summa Cum Laude*. For all designations of honors, students must have a minimum 3.25 grade point average in their major field elective courses to qualify. To be eligible for an award a student should have completed at least 80 units of upper division studies at the University of California.

**Dean's Honor List.** Students following the Engineering curriculum are eligible to be named to the Dean's list each term. They must have carried a minimum load of 16 units and have achieved 12 units of A, with additional units of B or Passed permissible, and no grades of C or lower.

**Work-Study Program.** The Work-Study Program is a plan wherein students combine periods of regular employment in private industry or government activities (federal, state, county, or city) with alternate periods of study. The work experience becomes a regular, continuing and essential part of their professional education.

The plan involves no academic credit for work periods, but students in work periods are encouraged to take such courses as they may be able to arrange, particularly in the Continuing Education Program.

The plan is elective with students and is under the supervision of the Assistant Dean for Undergraduate Students. Information may be obtained and application for the plan may be made in the Undergraduate Office, 6426 Boelter Hall.

**Advising.** It is mandatory for all students entering the undergraduate program to have their courses of study approved by an Engineering Department adviser. After the first quarter, curricular and career advising will be accomplished on a formal basis. Students will be assigned to an adviser by major field of interest whenever possible, and must have their elective course programs approved by the first term of the junior year.

**Passed/Not Passed.** Engineering undergraduate students may take one course per quarter on a Passed/Not Passed basis if the following conditions are met:

1. The student is in good standing, i.e., not on probation.
2. The student is enrolled in at least 3 1/2 courses (14 units) for the quarter including the course taken on a Passed/Not Passed basis.
3. Courses listed in the Engineering and Applied Science Curriculum as required courses may not be taken on a Passed/Not Passed basis. These courses include the chemistry, mathematics, physics, and English courses; Engineering 10 and the SEAS core.
4. In addition to all required courses, major field elective courses and the upper division mathematics elective course may not be taken on a Passed/Not Passed basis.
5. A student who has not elected the Passed/Not Passed option in the preceding quarter may take two courses Passed/Not Passed. A petition must be submitted by the student to the Dean for approval to take two courses on a Passed/Not Passed basis in one term.
6. Student has not received two Not Passed grades. A student who has received two "Not Passed" grades shall be excluded from electing Passed/Not Passed for the next term in residence.
7. A grade of Passed shall be awarded only for work which would otherwise receive a grade of "C" or better.

*Evening Information Center.* The Department of Continuing Education in Engineering and Mathematics, UCLA Extension, maintains in Boelter Hall an Evening Information Center (Room 6266) which is open from 5 to 7 p.m. Monday through Thursday throughout the year except for the month of August and during Christmas and New Year's weeks.

*Library Facilities.* A branch of the campus library is housed within the complex of engineering buildings. Known as the Engineering-Mathematical Sciences Library, it serves the departments of Engineering, Mathematics, Astronomy, and Atmospheric Sciences. Open stacks encourage students to explore and use specialized literature.

*Student Activities.* The abundance and variety of extracurricular activities at UCLA provide many opportunities for valuable experiences in leadership, service, recreation, and personal satisfaction. The Faculty of the School strongly encourages students to participate in such activities, especially those of most relevance to engineering. Among the latter are the student engineering societies such as the Engineering Society, University of California and the Engineering Graduate Student Association; the student publications, and the student-oriented programs of the many technical and professional engineering societies in the Los Angeles area. The UCLA chapter of *Tau Beta Pi*, the national engineering honor society, encourages high scholarship, provides volunteer tutors, and offers many services and programs "to foster a spirit of liberal culture in engineering colleges."

The student body takes an active part in shaping policies of the School through elected student representatives, two for each of the faculty's three major policy committees.

*Women in Engineering.* Women make up twelve and one-half percent of the undergraduate and eight and one-half percent of the graduate enrollment in the School of Engineering and Applied Science. Today's opportunities for women in engineering are excellent, as both employers and educators try to change the image of engineering as a "males only" field. Women engineers are in great demand in all fields of engineering.

The Society of Women Engineers (SWE), recognizing that women in engineering are still a minority, has established a UCLA student chapter to provide for their special needs and interests. This student section of SWE sponsors field trips and engineering-related speakers (often professional women) to provide an introduction to the various options available to women engineers. The UCLA section of SWE, in conjunction with other Los Angeles area schools, also publishes an annual resume book to aid women students in finding jobs.

## Graduate Study in Engineering and Computer Science

The School of Engineering and Applied Science offers graduate study and research in many areas of engineering leading to the following degrees: the M.S. in Engineering; the M.S. in Computer Science; the professional degree,

M.Engr. (Master of Engineering); the Engineer Degree; and the research degrees, Ph.D. in Engineering, Ph.D. in Computer Science. Additionally the school offers a certificate program, on successful completion of which a student will receive a Graduate Certificate of Specialization in one of the fields of Engineering and Applied Science. Graduate students are not required to limit their studies to a particular department. Some of the research activities carried out in the departments are part of the advanced instructional program in the School and offer students the opportunity to obtain professional experience and partial financial support. The School is comprised of the following departments which serve as centers of activity.

## CHEMICAL, NUCLEAR, AND THERMAL ENGINEERING

*Chairman.* D.K. Edwards, 5531K Boelter Hall, telephone: 825-5423.

Areas of specialization within the Department include:

*Chemical Engineering.* Catalysis and surface science, combustion cryogenics, electrochemical and biochemical engineering, molecular kinetics and dynamics, phenomenological and statistical and equilibrium and nonequilibrium thermodynamics. Applications to corrosion control, fuel cells and batteries, pollution control, waste water treatment and water desalination.

*Mechanical Engineering Thermal Sciences.* Boiling and condensation; combustion; conduction, convection, and radiation heat transfer; flow instability and turbulent transport. Applications to aerodynamic heat shields, nuclear reactor thermal-hydraulic design, propulsion and power production, saline water distillation, solar energy utilization, space vehicle thermal control.

*Nuclear Science and Engineering.* Fast and thermal reactor safety, fuel element behavior, fusion reactor technology, neutron transport, nuclear materials, nuclear reactor kinetics, thermal hydraulics, risk-benefit analysis. Applications to nuclear reactor and emergency core cooling system design and nuclear reactor siting.

## COMPUTER SCIENCE

*Chairman.* \_\_\_\_\_, 3732B, Boelter Hall, telephone 825-2929 or 825-2778.

The School of Engineering and Applied Science, through its Computer Science Department, offers M.S. and Ph.D. degrees in Computer Science as well as major and minor fields for graduate students seeking Engineering degrees. The program includes five basic areas:

*Theory.* Theoretical models in computer science; automata theory; formal grammars; computability and decidability.

*Methodology.* Simulation; on-line computation; information storage and retrieval; file management; numerical analysis; optimization; analog and hybrid computers; pattern recognition.

*System Architecture.* Computer system architecture; digital systems; logic design; memory, arithmetic control, data transmission and input-output systems design; computer graphics.

*Programming Languages and Systems.* General and special purpose programming languages; compilers; system programming; syntax, semantics and pragmatics of programming languages.

*Computer System Modeling and Analysis.* Mathematical modeling, analysis and optimization of computer systems; time-sharing systems models; computer scheduling and resource allocation; memory management; data communications; computer-communication networks; performance evaluation (analysis, simulation, measurement).

The Computer Science Department is introducing a new offering in the Master of Science degree program called Computing Systems. It is designed to emphasize management of computer related activities rather than research. The program will include heavy emphasis in group projects and case studies.

## ELECTRICAL SCIENCES AND ENGINEERING

*Chairman.* G.C. Temes, 7732B Boelter Hall, telephone: 825-1702.

The courses and research in this department cover five specialty areas:

*Applied Plasma Physics.* The practical aspects of plasma physics, including plasma production, confinement, and heating; suppression of instabilities; generation, propagation, and interaction of electromagnetic and plasma waves.

*Electromagnetics.* Study of the interaction of electromagnetic waves with complex media; antennas and microwave components; scattering and diffraction theory; moving media; modern optics; electromagnetic and acoustic wave interaction; magnetic and dielectric properties of matter; fiber optics and integrated optics.

*Electric and Electronic Circuits.* Analysis and synthesis of active, passive, digital and distributed circuits; computer-aided circuit design and optimization; theory of nonlinear circuits; investigation of electronic circuits using solid state and quantum electronic devices; study and application of electronic signal processing circuits and systems.

*Solid State Electronics.* Electric, magnetic, conductive and semiconducting properties of matter and the application of these to the investigation of solid state devices. Semiconductor physics, surface studies, device physics and technology, and integrated circuits.

*Quantum Electronics.* High-powered lasers, high gain media, optical resonator design, laser dynamics, nonlinear optics, and infrared detection.

## ENGINEERING SYSTEMS

*Chairman.* \_\_\_\_\_, 7629 Boelter Hall, telephone: 825-8486.

Course work, independent studies and research are offered in the following areas:

*Systems Engineering.* System representation; systems modeling and identification; decision analysis and decision theory; sequential decision processes; applied optimization; design optimization approximation concepts; computer aided design; value and utility theory; sensitivity theory; aggregation and decomposition of stochastic systems; resource allocation; application in engineering and industrial systems.

*Applied Dynamic Systems Control.* Systems engineering principles and applied mathematical methods for modeling, analysis and design of continuous and discrete-time dynamic systems. Emphasis on computation solution methods, simulation and modern applications in engineering, biological and other sciences. Systems concepts; feedback and control principles; stability concepts; applied optimal control; stochastic systems; parameter and state estimation; stochastic control; identification and self-adaptive control; differential games; computer process control. The Biocybernetics option includes application to biology, medicine and pharmacology.

*Water Systems Engineering.* Water resources engineering; surface and groundwater hydrology; optimization of water resource systems; water quality control and management; saline water conversion; economic evaluation of water resources development.

*Economics, Design and Management.* Professionally oriented interdisciplinary and specialized studies in inhabited environments; energy and resource economics and management; project investment and finance; cost-benefit methodologies; creative and computer-aided design; reliability and maintainability.

*Biotechnology.* Life/behavioral science foundations to technology; man-equipment-environment interactions; linear and nonlinear models of living systems in the control loop; quantitative and qualitative methods of biotechnical design and evaluation; applications to transportation and biomedical systems.

## MATERIALS

*Chairman.* C.N.J. Wagner, 6531K Boelter Hall, telephone: 825-6265.

Course work, independent studies and research are offered in the following areas:

*Metallurgy.* Fracture of steels and composite materials, joining of materials; heat treatment of steel, fracture of weld metal; high temperature and fatigue fracture; mechanics of extrusion, forging and rolling; materials synthesis, vacuum metallurgy, structure-property relationships; crystal



growth, casting and modern foundry practice; thin films, super conducting materials.

**Materials Science.** Electron microscopy, x-ray and electron diffraction; theoretical metallurgy, phase transformation in solids; solidification science; electronic materials; solar cells; irradiation effects on structural materials, strengthening mechanism in solids; high pressure effects on solids; elasticity of crystals and crystal defects; structure of liquid and amorphous alloys, and plastically deformed metals; structure and properties of polymers.

**Ceramics.** Oxidation kinetics, mechanical properties of oxides; thermodynamics and strength of ceramic solids, application of ceramics; glass science, and electrical properties of amorphous materials.

**Materials Recycling.** Recycling glass, waste, and plastics.

**Bio-Materials.** Development, characterization and properties of new materials for dental and medical prostheses.

## MECHANICS AND STRUCTURES

**Chairman.** L.A. Schmit, Jr., 6731K Boelter Hall, telephone: 825-1161 or 825-2471.

The educational and research programs of the Department are built upon the faculty's interest and expertise in the following technical disciplines:

**Dynamics.** Dynamics and control of physical systems including space and ground vehicles, industrial machines and manipulators; analytical, experimental and design studies of mechanical and electromechanical systems.

**Fluids.** Experimental and theoretical studies relating to aerodynamics, hydrodynamics, geophysical and environmental fluid mechanics, thermal convection, turbulence, aerodynamic noise, applied acoustics, and bio-fluid mechanics.

**Solids.** Experimental, theoretical and numerical studies in mechanics of solids; including fracture mechanics, optical metrology, micromechanics, geomechanics, adhesive fracture mechanics with emphasis on technical applications, stress and strength analyses.

**Soil Mechanics.** Theoretical, computational, experimental and field studies of soil behavior under static and dynamic loading, including studies of constitutive equations, earth dams, reinforced earth, seismic ground motion, foundations, soil-structure interaction and finite element analyses of geotechnical engineering problems.

**Structures.** Structural mechanics, static and dynamic analysis of structural systems, structural design and optimization methods, fluid-structure interaction (aeroelasticity), finite element methods and related computational techniques, stability and failure analysis of structures, earthquake effects, soil-structure interaction, bio-structural mechanics, field and laboratory experimental techniques.

## SYSTEM SCIENCE

**Chairman.** J.W. Carlyle, 4532 Boelter Hall, telephone: 825-2240 or 825-6830.

The Department offers instruction and research in the general areas of *Information, Control, Computing, Operations Research and Optimization* including: communications and coding; stochastic processes; theoretical computer science; computational techniques in control and optimization; system theory, modeling and identification; biological control; control and coordination in economics; queueing systems and network flows; public systems and urban services; operations research.

Specifically established Ph.D. fields include:

**Automata and Formal Languages.** Machines, grammars, languages; applied logic, computational complexity, theory of computing; finite-state systems, identification and diagnosis, probabilistic machines; context-free languages, families of languages, restricted Turing machines, decision problems, tree automata.

**Communication Systems.** Information theory, source and channel coding (block and convolutional), signal detection, estimation and filtering, modulation and demodulation, data compression, coherent communication and tracking, radar signal processing, optical communication.

**Control Systems.** Optimal control and computing techniques, identification, estimation and adaptivity, stochastic control,

differential games and cooperative games, interactive control and team theory, distributed systems, applications to aerospace systems, biomedical systems, economic systems, process control and controlled thermonuclear reactions.

**Operations Research.** Optimization theory, including linear programming, nonlinear programming, dynamic programming, large-scale mathematical programming, integer programming and associated network flow problems. Applications in engineering, economics, and management sciences. Stochastic processes, including renewal theory, Markov chains, Markov decision processes. Applications to inventory and queueing problems.

**Queueing Systems and Network Flows.** Point processes; queueing systems, single server queues, priority queues; graphs and network flows, maximum flows in nets, signal and multicommodity flows; applications to problems in information delay networks, satellite and computer communication networks, buffer systems, control systems, operations research, public systems.

**System Optimization.** Numerical techniques for optimization of systems; stochastic, distributed, etc. Modeling, simulation and identification; pattern recognition and classification. Public system analysis and urban services allocations.

## ADMISSION TO GRADUATE STATUS

Applications for admission from graduates of recognized colleges and universities will be considered. The basis of selection is promise of success in the work proposed, which is judged largely on previous college record. Before admission is approved, an application for Engineering graduate study will be referred by the Graduate Admissions Section of the Graduate Division, to the School of Engineering and Applied Science for recommendation. Final approval is granted by the Graduate Admissions Section of the Graduate Division.

In addition to meeting the requirements of the Graduate Admissions Section of the Graduate Division, the entering student normally will be expected to have completed the requirements for the bachelor's degree with an undergraduate scholarship record equivalent at least to a 3.0 grade-point average (based on 4.0 maximum) in all course work taken in the junior and senior years. An applicant who fails to meet these requirements might be required to complete additional course work before being admitted to graduate status. These additional courses will not be accepted as part of the course requirement for the master's degree or graduate certificate program.

A student entering the Engineer/Ph.D. program normally will be expected to have completed the requirements for the master's degree with a scholarship record equivalent at least to a 3.25 grade-point average (based on a 4.0 maximum) and to have demonstrated creative ability. Exceptional students with research experience and strong evidence of creativity may petition to proceed to candidacy for the Ph.D. degree without the M.S. degree.

In addition to filing an application for admission with the Graduate Admissions Section of the Graduate Division, prospective students are required to file a special application for admission with the School of Engineering and Applied Science. These supplements may be secured by writing to the Assistant Dean for Graduate Studies, School of Engineering and Applied Science.

## GRADUATE RECORD EXAMINATION

Applicants for the graduate Engineering programs are required to take the Aptitude Test and Advanced Test of the Graduate Record Examination in the subjects in which they majored for the bachelor's degree, or equivalent. Applicants for the graduate Computer Science program are required to take the Graduate Record Examination Aptitude Test and Advanced Test in Mathematics or Computer Science.

Applications for the Graduate Record Examination may be secured by applying to the Educational Testing Service, Box 955, Princeton, New Jersey 08540; or 1947 Center Street, Berkeley, California 94704. Applicants should write to whichever address is closer to their home.

The Educational Testing Service should be requested to forward the test results to the Assistant Dean for Graduate Studies, School of Engineering and Applied Science.

## TIME LIMITATIONS FOR OBTAINING GRADUATE DEGREES

Graduate students with advanced degree objectives in the School of Engineering and Applied Science are normally subject to the following time limitations:

The M.S. student is expected to complete the requirements for the master's degree within three calendar years after being admitted to the M.S. program in the School of Engineering and Applied Science.

The Engr. degree student is expected to complete the field requirements within two calendar years from the time of admission to the Engr. degree program. The student is required to complete all the requirements for the Engr. degree within a period of three calendar years (9 quarters) from the time of admission.

The Ph.D. student who already has a master's degree will be expected to complete the field requirements within two calendar years from the time of admission to the Ph.D. program and to complete the remaining requirements for the Ph.D. degree within an additional period of two calendar years.

In exceptional cases a student without an M.S. degree will be allowed to proceed toward the Ph.D. In such cases the student is expected to complete the field requirements within five calendar years from the time of admission to the Ph.D. program and to complete the remaining requirements for the Ph.D. degree within an additional period of two calendar years.

## REQUIREMENTS FOR THE GRADUATE CERTIFICATE OF SPECIALIZATION IN ENGINEERING AND APPLIED SCIENCE

Each graduate certificate program consists of five courses, two of which must be at the graduate level, 200 series. No work completed for any previously awarded degree or credential can be applied to the certificate. Successful completion of a certificate program requires an overall minimum B average in all courses applicable to a graduate Certificate of Specialization in Engineering and Applied Science. In addition, graduate certificate candidates are required to maintain a minimum B average in 200-series courses. A minimum of three quarters of academic residence is required. The time limitation for completing the requirements of a certificate program is two calendar years. Details regarding the certificate programs may be obtained from the Engineering Graduate Studies Office, 6730 Boelter Hall.

Courses completed for a Certificate of Specialization in Engineering and Applied Science may subsequently apply toward master's and/or doctoral degrees.

## REQUIREMENTS FOR THE DEGREES MASTER OF SCIENCE IN ENGINEERING MASTER OF SCIENCE IN COMPUTER SCIENCE

Students will meet the requirements by satisfactorily completing appropriate courses chosen in accordance with a plan prepared in conference with a graduate engineering adviser and approved by the School. A majority of the total formal course requirement and a majority of the graduate course requirement must consist of courses in engineering (for the M.S. in Engineering) or in computer science (for the M.S. in Computer Science). Additionally, students seeking a graduate degree in Computer Science must demonstrate competence in the Computer Science breadth requirement.

Two options are available in the M.S. program:

**Thesis Plan:** At least nine courses and a thesis are required. Seven of the nine courses must be formal courses, including at least four 200-series graduate courses and no more than three 100-series upper-division undergraduate courses. The remaining two courses must be individual study (Engr. 598) involving work on the thesis. No 400-series or other 500-series courses are applicable toward the M.S. degree requirements.

**Comprehensive Examination Plan:** At least nine courses and a comprehensive examination in the major field of study are required. Of the nine courses, at least five must be 200-series graduate courses; the remaining four courses may be either 200-series graduate courses or upper-division

undergraduate courses. The established fields of study toward the M.S. degree are:\*

Applied Electromagnetics  
Applied Plasma Physics  
Automata and Formal Languages  
Bio-Materials  
Biomechanics  
Ceramics and Ceramic Processing  
Chemical Engineering and Applied Chemistry  
Communication Systems  
Computer Science: Computer System Modeling and Analysis  
Computer Science: Methodology  
Computer Science: Programming Languages and Systems  
Computer Science: System Architecture  
Computer Science: Theory  
Continuum Mechanics  
Control Systems  
Design  
Dynamics  
Dynamic Systems Control  
Earthquake Engineering  
Electronic Circuits  
Environmental Engineering Systems  
Fluid Mechanics  
Human Information Processing  
Hydrology  
Man-Machine-Environment Systems  
Materials Recycling  
Mechanical and Aerospace Engineering Thermal Science  
Mechanical Engineering Design  
Metallurgy and Metal Processing  
Nuclear Science and Engineering  
Operations Research  
Problem Solving and Decision Making  
Product Safety and Reliability  
Quantum Electronics  
Queueing Systems and Network Flows  
Science of Materials  
Soil Mechanics  
Solid Mechanics  
Solid State Electronics  
Structural Design  
Structural Mechanics  
System Optimization  
Urban Systems  
Water Quality Engineering  
Water Resources

\*Suggested programs of study in these fields are available in the appropriate Department offices. A student is free to propose to the School any other field of study, with the support of his adviser.

## REQUIREMENTS FOR THE DEGREE OF MASTER OF ENGINEERING

The requirements for the Master of Engineering degree are satisfied by completion of the Engineering Executive Program. A limited number of graduate students are selected to enroll in this program at the beginning of each Fall Quarter.

The Engineering Executive Program is a two-year work-study program designed for those engineers who eventually will fill high-level executive positions in industry and government. It consists of sequences of graduate-level professional courses (the 400-series) covering significant aspects, and new concepts, in the management of technological enterprises.

To be considered for the program, applicants must qualify for regular graduate status in engineering at UCLA. They must have had five years of responsible full-time professional experience in engineering and must have completed some formal study in statistics. Approximately twenty-five applicants will be selected to enter the program. Criteria for selection are: educational background, professional experience and potential for a managerial career.

A new group of students is admitted to the program each fall. They form a class and remain together for two years, taking the same courses and participating in writing two or more group reports. Classes meet between 3:00 and 9:30 p.m., one day a week, during the Fall, Winter, and Spring Quarters. Special individual and group problems are assigned for the Summer Quarters.

Applications for admission to the program, including official transcripts of college records, are due in the Graduate Admissions Section of the Graduate Division on March 15. There is a fee of \$500 each quarter. Further information may be obtained from the Office of the Engineering Executive Program, School of Engineering and Applied Science, UCLA, Los Angeles, California 90024. The office is located in 6288 Boelter Hall. The telephone numbers are (213) 825-4628 and 825-4471.

## REQUIREMENTS FOR THE DEGREES DOCTOR OF PHILOSOPHY IN ENGINEERING DOCTOR OF PHILOSOPHY IN COMPUTER SCIENCE

A student who expects to complete all of the requirements for the M.S. degree in Engineering or Computer Science at UCLA during the current quarter, and who desires to proceed toward the Ph.D. degree in Engineering or Computer Science, is required to file a Notice of Intention to Proceed to Candidacy for the Degree Doctor of Philosophy before the end of the current quarter. Approval of the Assistant Dean for Graduate Studies in Engineering and Applied Science is required. This approval normally is based on a minimum grade-point average of 3.25 at the master's level, evidence of creative ability and strong supporting letters from cognizant faculty. Exceptional students with research experience and strong evidence of creativity may petition to proceed to candidacy for the Ph.D. degree without the M.S. degree.

The basic program of study toward the Ph.D. degree in Engineering or Computer Science is built around one major field and two minor fields. Each field must be based on a clearly specified written body of knowledge. Certain fields of study have been established formally. These established fields of study are:

Applied Dynamic Systems Control  
\*Applied Mathematics  
Applied Plasma Physics  
Automata and Formal Languages  
Bioengineering  
Ceramics and Ceramic Processing  
Communication Systems  
†Computer Science: Methodology  
†Computer Science: Programming Languages and Systems  
†Computer Science: System Architecture  
†Computer Science: Theory  
†Computer Systems Modeling and Analysis  
Control Systems  
Deformable Solids  
Dynamics  
\*Earthquake Engineering  
Electric Circuits  
Electrochemical Engineering  
Electromagnetics  
Electronic Circuits  
Fluid Mechanics  
Heat and Mass Transfer  
Man-Machine-Environment Systems  
Mathematical Theory of Systems  
Metallurgy and Metal Processing  
\*Nuclear Fuels and Material Behavior  
Nuclear Science and Engineering  
Operations Research  
Quantum Electronics  
\*Quantum Mechanics  
Queueing Systems and Network Flows  
Science of Materials  
Soil Mechanics  
Solid State Electronics  
Structures  
System Optimization  
Water Resource Systems Engineering

\*Established Minor Field Only.  
†Established Field for Computer Science Majors Only.

In both the major and the minor fields emphasis is placed on an understanding of the fundamentals of the areas studied, on the sophisticated interpretation of the bodies of knowledge, and on the ability to correlate and apply this knowledge.

Minor fields should be chosen to provide supportive knowledge for the major field research concentration. However, the provinces of knowledge of the major and minor fields must be distinct. Not all minor fields are required to have primary engineering or computer science content, though a complementary relationship should be demonstrable. A Ph.D. program normally should not contain more than one ad hoc (nonestablished) field.

Students who have completed the M.S. degree at other institutions should consult the chairperson of their Field Committees to determine what portion of this earlier work might be applicable to the requirements of the minor fields. A maximum of two courses completed in graduate status at another recognized institution can be used to satisfy partially a minor field requirement, with the approval of the minor field chairperson and the Assistant Dean for Graduate Studies.

**Major Field Requirement:** The major field normally has a scope corresponding to a body of knowledge contained in a minimum of six courses, at least four of which are 200 series courses. The remainder being 100 series courses, and also the current literature in the student's area of specialization. If a Ph.D. student's major field is chosen from the list of established major fields, approval is pro forma. In exceptional cases, an ad hoc major field may be permitted; in such cases, the student must demonstrate that his proposed major field consists of a correlated cohesive body of knowledge, of suitable quantity and quality, leading to a research area in which the student can find adequate dissertation guidance. Students planning to use an ad-hoc major field in their Ph.D. program should consult the Engineering Graduate Studies Office for the procedures governing ad-hoc major fields. All major fields must have primary content in the area specified by the degree sought. A written preliminary examination in the major field (normally eight hours long) is required. Students enrolled in a Ph.D. program of study will be expected to have passed their written major field preliminary examinations prior to enrolling for the 7th quarter of full-time graduate study.

**Minor Field Requirement:** Minor fields should primarily be drawn from the list of established fields, but ad hoc minor fields will be accepted when properly justified. Each minor field normally embraces a body of knowledge equivalent to three courses, at least two of which are graduate courses. A student may petition to take an examination in a minor field in lieu of taking the courses.

**Oral Preliminary Examination:** An oral preliminary examination (approximately two hours long) encompassing the major and minor fields is required and should take place within a reasonable period of time after the completion of the last of the field requirements.

**Oral Qualifying Examination:** After the student has demonstrated competence in the three fields, the School will notify the Graduate Division of the student's readiness for the oral qualifying examination. The Assistant Dean for Graduate Studies, after consultation with the student and the student's adviser, will nominate the Doctoral Committee for this examination, generally as follows: faculty member directing the research, chairperson; two additional faculty members from related fields in the University of California, but outside the School of Engineering and Applied Science. The Doctoral Committee is appointed by the Dean of the Graduate Division, based on the nomination proposed by the School. The details of the oral qualifying examination are at the discretion of the committee but ordinarily will include a broad inquiry into the student's preparation for research. The Doctoral Committee also reviews the prospectus at the oral qualifying examination. All members of the committee shall be present and the candidate is considered to have failed if more than one member votes "not passed".

## DISSERTATION

The candidate shall prepare a dissertation in accordance with the instructions furnished by the Student and Academic Affairs Section of the Graduate Division. The orientation meetings on the format of theses and dissertations are scheduled for the beginning of each quarter in the calendar in the STANDARDS AND PROCEDURES FOR GRADUATE STUDY AT UCLA. For additional information and assistance in the preparation and submission of the final copies of the manuscript, consult the Manuscript Adviser for Theses and Dissertations, Office of the University Archivist, Powell Library.

## FINAL ORAL EXAMINATION

It is the policy of the School of Engineering and Applied Science to require a final examination of all doctoral candidates. This examination is conducted by the entire Doctoral Committee, and deals primarily with the relation of the dissertation to the general field in which the subject lies.

## REQUIREMENTS FOR THE ENGINEER DEGREE

The Engineer (Engr.) degree program has been established to offer a degree which represents considerable advanced training and competence in the Engineering field, but which does not require the research effort and orientation involved in a Ph.D. dissertation.

The requirements for admission are the same as those for the Ph.D. program. In particular the applicant should have a master's degree and meet the minimum grade-point requirement of 3.25.

The student is required to complete at least five quarters of academic residence in graduate status at the University of California, of which the last two must be spent in continuous residence at UCLA.

**Program of Study:** The basic program of study for the Engineer degree is built around one major field and two minor fields drawn from the list of current fields for the Ph.D. degree in Engineering. In an exceptional case, a student may petition to use an ad hoc field when the established fields do not meet the student's educational objective.

**Course Requirement:** A minimum of 15 courses are required for the Engr. degree. Nine of these should be at the 200-series level. A minimum of six courses (4 in the 200-series) are required for the major field and a minimum of three courses (2 in the 200-series) are required for a minor field. Courses in the 500-series and seminar courses are not applicable for meeting the minimum requirements.

**Major Field Requirement:** Students will be required to pass an eight-hour written major field examination, which shall be the same as the Ph.D. preliminary examination in that field. The level of achievement for meriting a pass in this examination shall be the same as that for the Ph.D. degree. For additional details refer to the paragraph on major field requirements for the Ph.D. degree.

**Minor Field Requirement:** Same as for Ph.D. degree.

**Oral Preliminary Examination:** After passing the major field examination and satisfying the requirements of the two minor fields, the candidate shall schedule a two-hour oral examination, covering all three fields.

**Award of the Engineer Degree:** On successful completion of the course and examination requirements, the candidate is eligible for the Engr. degree and must file the necessary forms in the Graduate Studies Office, 6730 Boelter Hall, for the award of the degree by the Graduate Division. The candidate may, if the candidate so chooses, continue in the Ph.D. program. However, if the student terminates his/her studies with the Engr. degree, the student has the option of applying for return to the Ph.D. program within three years of graduation with the Engr. degree.

## SCHOOL OF LAW

The School of Law offers a three-year curriculum leading to the J.D. degree. The School is accredited by the California Committee of Bar Examiners, is a member of the Association of American Law Schools and is on the approved list of the American Bar Association. Graduates of the School are qualified to become applicants for admission to practice in any state of the United States.

The School is designed to produce lawyers well prepared for the various private and public roles which are assigned to members of the legal profession. Students do not undertake a specific major but have the opportunity to enroll in a wide variety of courses dealing with various legal fields. In addition to the courses in the regular Law School curriculum, students may take two courses for credit in other disciplines in the University. Concurrent degree programs are available for qualified law students with the Graduate School of Management, the Department of Economics, and the School of Architecture and Urban Planning.

The Law School program also permits students to participate in clinical training. These activities consist of field work in a variety of Federal and State agencies accompanied by seminars in the Law School which seek to analyze and expand upon the agency experience. The School also offers an extern program which gives students the opportunity to work in legal agencies away from the School for as long as six months (including the summer), for which they receive academic credit. Extern programs have been offered in Washington, D.C., Micronesia, Alaska, Hawaii and on Indian reservations.

## ADMISSION REQUIREMENTS

Students beginning their professional work are admitted only in the Fall. Applicants must have received the baccalaureate degree from a university or college of approved standing prior to the time at which they begin their work in

the Law School. Applicants are also required to take the Law School Admission Test. Admission is on a competitive basis and is determined by the score in the Test and the grades in college. In appropriate cases the admissions committee may also consider additional factors such as substantial career achievements, significant graduate work, and other information relevant to the successful study and practice of law. Additional information may be obtained in the ANNOUNCEMENT OF THE SCHOOL OF LAW.

## GRADUATE SCHOOL OF LIBRARY AND INFORMATION SCIENCE

The Graduate School of Library and Information Science offers curricula leading to graduate degrees at the master's and doctoral levels and to Certificates of Specialization. The fields of emphasis in these curricula have been grouped into three major areas: librarianship, bibliography, and information science. The School also offers a few undergraduate courses designed to assist students in the use of information resources in their own studies and research. However, the University does not offer an undergraduate major in librarianship, since admission to the degree programs of the School requires a bachelor's degree in a subject major, based on a broad background in the liberal arts and sciences.

### Master of Library Science Program

The School's MLS (Master of Library Science) program has been accredited by the American Library Association since 1962, and has been re-accredited under the 1972 standards. This professional master's degree is based upon a course of study designed to provide both basic professional competencies and knowledge of a field of specialization. A research paper in the field of specialization and a comprehensive examination are degree requirements. Normally, the program requires six quarters of residence. Although students with applicable prior graduate work may be able to complete the program in less time, doing so requires that the student's field of specialization must have been identified and the applicability of prior course work must be approved by the faculty.

Programs leading to post-MLS Certificates of Specialization require a minimum of nine courses and three quarters of study. Requirements for the California State Credential for school librarians may be met concurrently with master's degree requirements provided the student already has the qualifications for a standard teaching credential.

Admission to the School requires that the applicant meet the University's requirements for admission to graduate studies. In addition, the School has identified other data needed for evaluation of applicants for the MLS program: a satisfactory score on the General Aptitude Test of the Graduate Record Examination, letters of reference, and an interview. The School has also established requirements with respect to three special competencies: competence in foreign languages (equivalent to two years of college level course work), college level knowledge of mathematics or statistics, and knowledge of computer programming.

### Doctoral Program

The Ph.D. in Library and Information Science is granted in recognition of distinguished attainment in the theory and practice of library and information science, especially as demonstrated by a significant original research contribution. The School presently offers three areas of research specialization: librarianship, bibliography, and information science. To qualify for advancement to candidacy, the doctoral student is required to pass a set of qualifying examinations. First, the written examinations are designed to test the student's knowledge of the history of library and information science, its present practice, and its essential competencies. Second, the oral examination is intended to test the student's knowledge of the specific area of proposed study and the competence to do research in that area, as a means of assessing the potential ability of the doctoral candidate to complete a successful dissertation and continue subsequent research.

Admission to the MLS program is in the Fall Quarter only; that to the Ph.D. program may be in any quarter of the year. For detailed information on the specific admission and degree requirements for any of the School's programs,

consult the Announcement of the Graduate School of Library and Information Science or call the Graduate Counselor of the School.

## GRADUATE SCHOOL OF MANAGEMENT

The Graduate School of Management offers curricula leading to graduate degrees at the master's and doctoral levels. The School also offers an Executive Program, research conferences, and seminars for experienced managers. Some courses which may be elected by undergraduate students are offered by the Department of Management.

Primary objectives of the Graduate School of Management are:

To provide first-rate professional education for successful management careers in private and public, profit and non-profit enterprises.

To prepare highly qualified teachers and research scholars in the field of management and management-related disciplines.

To enlarge through research the body of systematic knowledge about the management process and the environment in which an enterprise functions, and to disseminate this knowledge through publications and improved teaching materials and learning environment.

To provide superior executive education programs for professional managers. Information about these programs may be obtained from the Office of Executive Education, GSM 2381. (213) 825-2001.

For additional information on the graduate programs outlined below, consult the Announcement of the Graduate School of Management, which is available from the Assistant Dean, Student Affairs, GSM 3371.

### Professional Master's Program

The Professional Master's Program (PMP) is a two-year, full-time program leading to the MBA degree. The PMP is designed to prepare managers and management specialists for roles in organizations of various kinds, including not-for-profit corporations and public institutions as well as business enterprises.

The program aims to develop managerial perspectives and styles of thinking while imparting expertise in a student-selected field of professional specialization. Along with subject matter mastery, the PMP stresses integrating the lessons of various disciplines, translating theory into practice, questioning the past and innovating for the future, and self-guided learning as a continuing basis for effective managerial work.

The four elements of the program are the *nucleus*, the *management core*, the *concentration*, and *electives*. The nucleus develops professional problem-solving and decision-making skills through experiences ranging from laboratory simulations to consulting projects in on-going organizations. Management core subjects require students to learn the fundamentals of disciplines which underlie the practice of management. The concentration, selected by each student from a wide variety of established alternatives or individually tailored to suit special needs, provides specialized knowledge and skills for a particular field of management work. The availability of free electives permits students to pursue subjects of personal interest, whether or not they are closely related to the mainstream of the program of studies.

### UNIT REQUIREMENTS

At least 96 units of work for the MBA degree must normally be completed in residence in the MBA program at UCLA. In special cases, up to 12 units of *post-bachelor's degree* work may be counted toward the 96-unit total; but, ordinarily, when previous work is accepted in satisfaction of subject matter requirements, the student must select additional free electives to complete 96 units of work.

### COMPREHENSIVE EXAMINATION

The comprehensive examination for the completion of the MBA program consists of the student's demonstration of professional management proficiency through the final

written report of the Management Field Study, a team project which is part of the nucleus requirement.

## GENERAL REQUIREMENTS

A 3.0 grade-point average (B) is required for graduation. The PMP must be completed within two calendar years of admission. Acceleration may be possible through the use of summer session or by taking extra-heavy course loads.

## PMP FOR THE FULLY EMPLOYED

A part-time version of the Professional Master's Program is available for a limited number of fully-employed persons. Students in this program proceed on an approximately half-time basis, requiring approximately twelve quarters to attain the MBA. The program's basic time format is Tuesday-Thursday, 3:30-10:00 p.m. It may also be necessary to take Monday or Wednesday late afternoon or evening classes.

## Academic Master's Program

The primary objective of the Academic Master's Program, which leads to the degree Master of Science (M.S.) in Management, is to offer intense study in a specialized field and to prepare students to conduct substantive research.

This course of study is closely related to the Doctoral Program and, in some cases, can constitute the first stage of doctoral work in management. Currently, Business Economics and Management Science are the only fields offered as specializations within the Academic Master's Program. Some students will enter the program with the goal of eventual acceptance into the Doctoral Program. Other students who have not defined their career goals, or whose applications for the Doctoral Program are not strong enough for admission, will be advised to begin work in the Academic Master's Program. In the latter case, a decision on the student's admission to the Doctoral Program is delayed until the student has worked in his chosen field of specialization. For other students, the Academic Master's Program will result in a terminal degree. In every instance, the program's emphasis is on advanced specialized training and the development of research capability. Residence for the Academic Master's Program is required for at least one academic year.

## PLAN OF STUDY

An essential component of successful graduate study in the Academic Master's Program is close work with faculty members of the Graduate School of Management. Incoming students are urged to establish working relationships with faculty members in order to plan their studies. Study toward the M.S. degree in Management consists of prerequisites, specialization, and a research requirement which will culminate in a master's thesis.

## Cooperative Master's Degree Programs

Four master's degree programs are offered by the Graduate School of Management in conjunction with other schools and departments of the campus.

## LATIN AMERICAN STUDIES

A three-year, full-time program is offered, leading to both the MBA (with a concentration in International and Comparative Management) and the Master of Arts degree in Latin American Studies. Applicants must be qualified to enter both the Professional Master's Program and the MA program in Latin American Studies. For further information, contact the Assistant Dean, Student Affairs, Graduate School of Management, and the Graduate Adviser, Latin American Studies.

## LAW

The School of Law and the Graduate School of Management jointly offer a program which makes it possible to earn the Doctor of Law (JD) and MBA degrees simultaneously in four academic years. The program is designed to prepare students for career areas where there is need for strong professional skills in both law and management. All first-year JD program courses are taken in the first year of the program. In the second year, the first-year MBA core requirements and four concentration courses are

taken. Second-year MBA core requirements, four MBA concentration courses, and 61 elective units in the School of Law are completed during the third and fourth years.

Application for admission to the JD-MBA program must be made concurrently to both the School of Law and the Graduate School of Management in accordance with the admission procedures specified by each school. Applicants must be admitted to both schools in order to be admitted to the program. First-year law students may apply for admission to the program prior to March 15 of their first year of law study and must have taken the Graduate Management Admission Test no later than March of the same year. For further information, contact the Assistant Dean, Student Affairs, Graduate School of Management, or the Associate Dean, School of Law.

## MANAGEMENT IN THE ARTS

The master's program in Management in the Arts, leading to the MBA degree, is offered in cooperation with the College of Fine Arts. It is designed primarily for students who are interested in management careers in opera companies, theaters, symphony orchestras, dance companies, museums, public television, arts councils, and other community arts organizations. The management core offered by the Graduate School of Management is complemented by studies in the College of Fine Arts.

Applicants must specifically indicate that they wish to be considered for the Management in the Arts Program. In addition to meeting the requirements for admission to the Graduate School of Management, they must demonstrate comprehensive knowledge of an art form, either through completion of a bachelor's degree in an art field or on the basis of experience with an organization devoted to artistic or cultural purposes.

The program requires full-time commitment for two years. Half-year field studies (internships) with appropriate arts organizations are part of the program. When feasible, the internships are funded.

## PUBLIC HEALTH

The Graduate School of Management and the School of Public Health offer a program which enables students to complete requirements for the MBA degree and the Master of Public Health degree in three academic years of full-time study. The MBA-MPH program is designed for individuals seeking careers in health care and allied fields who also desire a firm foundation in the theory and practice of management. Applicants must qualify to enter both the MBA program and the MPH program to be admitted to the dual degree program. For further information, contact the Assistant Dean, Student Affairs, Graduate School of Management, and Dr. Paul Torrens, School of Public Health.

## Doctoral Program

The Doctoral Program in Management is an advanced curriculum which aspires to train students at the highest level of scholarly competence and leads to the Doctor of Philosophy (Ph.D.) degree in Management. The program includes intensive training in research methods applicable to problems of organizations in the public and private sectors. It prepares students for careers in university teaching and research or as staff specialists in business firms and other organizations. The program offers each student substantial opportunities to discover his or her own, unique scholarly focus and competence in a supportive community of doctoral scholars. Special opportunities for gaining teaching and consulting skills are also available.

A minimum of six quarters of academic residence in graduate status at the University of California is required for the doctoral degree, including one year in continuous residence at UCLA. Graduate students are in academic residence if they complete at least eight units in graduate or upper division work during a quarter. Doctoral students are expected to be on campus full-time during the early phases of their studies.

## PLAN OF STUDY

An essential component of successful graduate study in the Doctoral Program is close work with faculty members of the Graduate School of Management and/or other departments at UCLA. Incoming doctoral students are expected to have a close working relationship with at least

one faculty advisor by the end of their first year in the program. Study toward the doctoral degree in management includes preparation for a first-year diagnostic review, research and breadth requirements, a major field, a formal seminar presentation, the oral qualifying examination, and a doctoral dissertation. Emphasis within each major field of study is placed on understanding fundamental problems and areas of inquiry, on familiarity with state-of-the-art methods of conducting research peculiar to that field, and on relating the major field to the broader context of management and other disciplines. In meeting these requirements, the student will typically engage in both formal courses and individual study with faculty members.

The following fields of study are currently offered for the major field requirement within the Doctoral Program:

- Accounting Information Systems
- Business Economics
- Computers and Information Systems
- Finance
- Human Systems Studies
- Industrial Relations
- International and Comparative Management
- Management Science
- Management Theory
- Marketing
- Operations Management
- Urban Land Economics

## Admission

A candidate for admission to the Graduate School of Management must hold a bachelor's degree from a college or university of fully recognized standing. Although no specific undergraduate major or series of courses is required for entrance, students must complete elementary algebra and differential calculus prior to entering the MBA program. These may be taken on a noncredit, programmed instruction, regular course, or some other equivalent basis. Detailed information about preparation for graduate programs in management may be obtained from the Student Affairs Office, GSM 3371.

## MBA ADMISSION

For admission to the Professional Master's Program (MBA), consideration is given to the applicant's academic record; score on the Graduate Management Admission Test (GMAT) and, for applicants whose native language is not English, the Test of English as a Foreign Language (TOEFL); potential for management as evidenced by work experience and community, extracurricular, or other leadership experience; and recommendations.

The admissions decision is based on each applicant's total application, and, therefore, minimum required undergraduate academic averages and GMAT scores have not been established. Preference is given to applicants who have had full-time work experience related to the field of management since completing their bachelor's degrees. Students admitted directly from baccalaureate programs who choose to work before entering graduate school will have their admission honored for three full years.

## M.S. AND PH.D. ADMISSION

The Academic Master's Program (M.S.) is intended for mature students who have a strong desire to pursue research in business economics or management science, and who can devote full time to academic work. Applicants must hold a bachelor's degree from an accredited institution, with a scholastic average of at least B. Although no specific undergraduate major is required, it is recommended that students entering the Academic Master's Program have prior training in mathematics, statistics, and the social sciences. The Graduate Management Admission Test (GMAT), or the Graduate Record Examination (GRE), and recommendations are required of all candidates. Only a limited number of applicants are admitted to the program each year.

The Doctoral Program (Ph.D.) is intended for mature students with demonstrated intellectual capacity who can devote full time to academic work. Applications are welcomed from persons with prior work in the social, behavioral, and technological sciences, or other academic fields, as well as from those who have done their prior work in schools of management. To be considered for admission, an applicant must hold a bachelor's degree from an accredited institution, with a scholastic average of

at least B; an average of B+ in any prior graduate work is required. A master's degree is desirable but not necessary for admission. The Graduate Management Admission Test (GMAT) or the Graduate Record Examination (GRE) is required of all candidates to the program. Only a limited number of applicants are admitted to the Doctoral Program each year. Admission is based on a scholastic record of distinction both in undergraduate and in any completed graduate work, score on the GMAT or GRE, recommendations, and expressed interest in conducting individual research.

## Application Procedures

Write for information and application forms to the Assistant Dean, Student Affairs, Graduate School of Management, UCLA, Los Angeles, California 90024. To make application to the MBA program, follow the instructions given in the "Application for Admission to the MBA Program." To make application to the M.S. or Ph.D. program, follow the instructions given in the "Application for Admission to the M.S. and Ph.D. Programs."

You are advised to make early application with complete documentation as specified in the appropriate application form. Admission is in the fall quarter only. Completed applications must be filed with UCLA by:

<b>MBA</b>	<b>M.S. and Ph.D.</b>
March 15	January 31

## SCHOOL OF MEDICINE

The School of Medicine on the Los Angeles campus admits 144 freshman students each fall. Application cards and medical school catalogues for the class entering September 1979 are available from the Office of Student Affairs, UCLA School of Medicine, Los Angeles, California 90024, June 1-October 15, 1978. Applications are available from the American Medical College Application Service (AMCAS). The \$30 fee charged by AMCAS for application to any five participating medical schools covers UCLA's initial screening of applications. If an applicant is granted an interview, a non-refundable fee of \$20 is required.

## THE CURRICULUM

The School of Medicine operates on a quarter system with a four-year curriculum. The freshman year consists of three quarters of courses in basic medical sciences, social medicine and behavioral sciences, followed by a summer quarter of vacation. The sophomore year, also three quarters, includes further study in basic medical sciences, clinical fundamentals, and pathophysiology of disease. The junior and senior years are a continuum of education of 94 weeks total: 48 weeks of required clinical clerkships, 30 weeks of electives which stress the scientific basis of diseases of specific organ systems; advanced clinical clerkships and clerkships in primary medicine. Schedule choices are submitted by students and computer system is employed to arrange students' programs as equitably as possible.

## BASIS OF SELECTION

Candidates will be selected on the basis of the following considerations:

1. Undergraduate and, where applicable, graduate academic achievement.
2. Score on the Medical College Admission Test, which is administered for the Association of American Medical Colleges by the Psychological Corporation.
3. Interview by a member or members of the Admissions Committee.
4. Evaluation of the applicant's accomplishments and character in letters of recommendation.

The Committee on Admissions selects candidates who present the best evidence of broad training and strong achievements in college, a capacity for mature interpersonal relationships, and the traits of personality and character conducive to success in medicine. Preference is not given to students who major in natural science, since study in the social sciences and humanities is considered equally valuable.

## REQUIREMENTS FOR ADMISSION

Ordinarily a baccalaureate degree is required for admission; but in certain instances outstanding students who have completed three full academic years at an accredited college or university are accepted. College years should be devoted to obtaining as broad an education as possible. The major objectives should be the following: (1) competence in English, written and spoken; (2) capacity for quantitative thinking represented by mastery of mathematics; (3) such training in physical and biological science as will facilitate comprehension of medical science and the scientific methods; and (4) insight into human behavior, thought and aspiration from study in the social sciences and humanities.

These objectives will ordinarily require completion of the following studies:

	Quarter Units	Semester Units
English .....	12	6
Physics .....	12	8
Chemistry		
Inorganic chemistry .....	12	8
Organic and quantitative chemistry .....	12	8
(Physical chemistry is highly recommended)		
Biology		
Biology .....	12-14	8-10
Genetics .....	4.5	3
Mathematics (including college algebra) .....	6	4
(Introductory calculus is highly recommended)		

Courses (e.g., human anatomy) which overlap in subject matter with those in the School of Medicine are not advised. However, advanced or specialized courses in biological science (e.g., cellular physiology) are desirable.

## COMPLETION OF REQUIREMENTS

The student must complete the premedical requirements before beginning the first year of medical studies, although these requirements need not be completed at the time the application for admission is filed.

## PHYSICAL EXAMINATION

Accepted candidates must pass a physical examination before registering.

## FEES

For residents of California the total fee for each quarter is \$252.00. For non-residents the total fee for each quarter is \$887.00. These fees are subject to change without notice.

## ADMISSION TO ADVANCED STANDING

Transfer students are accepted into the junior year only. Transfer applications may be submitted November 1-February 1 to the Office of Student Affairs.

## INDIVIDUAL PROGRAMS OF STUDY IN THE MEDICAL CURRICULUM

Special programs of study for individual students may be arranged within the framework of the medical school curriculum. Normally these programs are available only after the student has completed his first year and with the approval of the Dean's Office and the chairman of the department responsible for the additional course work. Every effort is made to maintain flexibility within the medical school curriculum, although extensive changes in the course of study can be arranged for only a limited number of students.

Graduate work leading to the M.S. and/or Ph.D. degrees is offered, either separately or in conjunction with the M.D. program, in anatomy, biological chemistry, biomathematics, microbiology and immunology, pathology, pharmacology, physiology, psychiatry, and radiology. Students in graduate divisions who have completed courses in the School of Medicine must apply to the first year class in order to be considered by the Admissions Committee. See the departmental announcements elsewhere in this catalog for further information. For details concerning the medical curriculum, consult the UCLA ANNOUNCEMENT OF THE SCHOOL OF MEDICINE.

## SCHOOL OF NURSING

The School of Nursing was authorized by the Regents of the University in 1949 as one of the Professional Schools of the Center for the Health Sciences at UCLA. This action paved the way for the development of an undergraduate basic program in nursing and made possible the establishment of a graduate program leading to the Master of Nursing degree. The baccalaureate program has been continuously approved by the California Board of Registered Nursing since 1949. The School of Nursing became an agency member of the Department of Baccalaureate and Higher Degree Programs of the National League for Nursing in 1952. The Accrediting Service of the National League for Nursing has granted full accreditation to both programs since 1954.

Schools of nursing differ in their professional focus on education and research. It is therefore pertinent to state this School's view of the profession which serves as a basis for its undergraduate and graduate programs. Basic to the philosophy of the School is the belief that it is the right of all individuals to receive optimal health care. Nursing shares with other health sciences the goal of promoting health for individuals and communities as well as the responsibility for the care, comfort, and dignity of patients in acute, chronic, and terminal illness. To accomplish this goal, nurses function as independent practitioners, in collaboration with other members of the health team and in a medical supportive role. Based on scientific knowledge and technical skill, the practice of nursing focuses on promotion of health, prevention of illness, and support of the resources of the person who is ill. Nursing concerns include expansion of knowledge essential to the nursing process, new methods of care, and improvement of health care delivery systems. In implementing the philosophy of nursing, the curriculum concentrates on the behavior of man as he moves through the health-illness continuum. The programs provide for an understanding of the social and cultural systems in which living and care giving take place and for an understanding of man's psychology and physiology under normal and pathological conditions. Nursing research is stressed throughout the programs as the means for the development of new knowledge.

## Curricula

### THE BACCALAUREATE PROGRAM

The baccalaureate program leading to the Bachelor of Science degree provides for a close interweaving of general and professional education. The physical, social, and emotional health aspects of nursing are emphasized throughout the curriculum. Clinical nursing experience under the guidance of faculty members is provided in hospitals, outpatient clinics, homes, and community health centers. Students who are licensed nurses will complete the same curriculum as other students in the baccalaureate program. However, registered nurses and licensed vocational nurses may challenge upper division nursing courses.

The School of Nursing offers a curriculum sequence which affords students the opportunity to sit for the California Registered Nurse licensing examination at the conclusion of the junior year. Interested students must maintain each quarter a minimum GPA of 3.0 and petition the Dean to enroll beyond the four quarter courses usually permitted. Students are reminded that many states do not reciprocally honor California nursing licenses obtained prior to completion of a baccalaureate degree. Students who plan to follow this sequence should contact the Assistant Dean for Student Affairs before the beginning of the freshman year to receive more complete details.

*Requirements for acceptance.* (1) Admission to the University; (2) completion of 21 courses of college work, including courses required by the School of Nursing. Eligibility for the study of nursing as determined by demonstrated aptitude, recommendations and scholastic achievement. (See the UCLA ANNOUNCEMENT OF THE SCHOOL OF NURSING.) In addition for registered nurses: graduation from an NLN accredited school of nursing and evidence of the fulfillment of the legal requirements for the practice of nursing.

## GRADUATE PROGRAM

Under the jurisdiction of the Graduate Division, the School of Nursing administers a program leading to the Master of Nursing degree. Courses provide the opportunity for advanced study in several areas of nursing and research training for increased professional competence. Students specialize in a clinical field and may elect courses which prepare for functional preparation in teaching and administration. The Thesis Plan or the Comprehensive Examination Plan is followed in the Master of Nursing program. For further information about the graduate program in nursing, consult the UCLA ANNOUNCEMENT OF THE GRADUATE DIVISION and the UCLA ANNOUNCEMENT OF THE SCHOOL OF NURSING.

*Requirements for acceptance.* Graduation from a recognized college or university having an NLN accredited baccalaureate nursing program equivalent to that of the School of Nursing, University of California, Los Angeles and satisfactory to the Graduate Division, Los Angeles. Students who have completed other curricula may be required to enroll in certain undergraduate nursing courses which generally will not be accepted in fulfillment of the requirements for advanced degrees; (2) Status as a registered nurse. Prior to entry into any clinical practicum, evidence of status as a registered nurse in the State of California is mandatory; (3) An upper-division statistics course or a lower division statistics course with content equivalent to Public Health 160A is a prerequisite and must be completed prior to entrance into the School of Nursing; (4) Professional and academic competence in nursing attested through letters of recommendation; (5) A scholarship record satisfactory to the Graduate Division, Los Angeles and to the School of Nursing, University of California; and (6) GRE test results must be submitted to the Graduate Admissions Office and the School of Nursing.

## ADMISSION

Application for acceptance to the baccalaureate program in the School of Nursing should be filed not later than November 30 for the fall quarter. Applications to the graduate program should be filed not later than February 15 for the fall quarter, and December 30 for the spring quarter. The School of Nursing reserves the right to accept students on the basis of scholarship, recommendations and demonstrated aptitude.

Applications for admission to the University in undergraduate status (accompanied by a \$20 application fee) should be filed with the Office of Undergraduate Admission, University of California, Los Angeles, California 90024.

Applications for admission to the graduate program (accompanied by a \$20 application fee) should be filed with Graduate Admissions Office, Graduate Division, University of California, Los Angeles, California 90024.

Application for Acceptance to the School of Nursing: A supplemental application is required for both undergraduate and graduate programs. The application may be obtained from the School of Nursing, 12-139 CHS, University of California, Los Angeles, California 90024.

## Requirements for the Degree of Bachelor of Science

The Bachelor of Science degree will be granted upon fulfillment of the following requirements:

1. The candidate shall have completed at least 45 courses of college work and shall have satisfied the general University requirements.
2. The candidate shall include, in the required 45 courses, at least 21 courses in general education.
3. The candidate shall have completed at least 25 upper division courses toward the degree.
4. The candidate shall have maintained at least a C (2.0) average in all courses taken.
5. The candidate shall have completed all required nursing courses in the School of Nursing and shall have maintained an average grade of C in all clinical nursing courses.
6. The candidate is required to have been enrolled in the School of Nursing during the final three quarters of residence; the last nine courses must be completed while so enrolled.

## HONORS

The faculty of the School of Nursing, or a duly authorized committee thereof, shall recommend bachelor's degree candidates for honors or awards who meet the criteria determined by the faculty of the School of Nursing and the University.

## Requirements for the Degree of Master of Nursing

The Master of Nursing degree will be granted upon fulfillment of the following requirements:

1. The candidate shall have met the general requirements of the Graduate Division.
2. The candidate shall have completed in graduate status at least ten courses (40 credits) in upper division and graduate level courses (100, 200, 400, and 500 series); eight courses must be in nursing, with five courses (20 credits) in the 200 and 400 series. The candidate must successfully complete a minimum of one course from each of the following areas: Research in Nursing (N 204); Selected Problems in Nursing Care (N 210, 211, 221, 222, 223, 224, 225); Supervised Practice in Nursing Care (N 402, 421A, 422A, 423A, 424A, 425A); and Clinical Nursing Specialization (N 421B, 422B, 423B, 424B, 425B, 429A). Completion of requirements for certain special program sequences may require more than 40 credits. The additional courses may be distributed among courses in the 100, 200, 400 or 500 series subject to approval of the student's faculty adviser.
3. A comprehensive examination or a thesis is required.

For further information concerning graduate work consult ANNOUNCEMENT OF THE GRADUATE DIVISION.

## SCHOOL OF PUBLIC HEALTH

### General Information

Public Health is a broad, multidisciplinary field of study directed toward understanding and controlling factors affecting the health of populations. The mission of the School of Public Health is to develop and teach the application of the sciences to the solution of community health problems. One feature of the field of public health is a reliance on research methods to identify important health relationships. Another feature is a community or social approach to the problems of health and disease in their preventive or therapeutic aspects. The concerns of public health cut across national boundaries and include the functions of both voluntary and governmental agencies, of research and teaching institutions, and of health care facilities.

There are many areas of emphasis in the field, and five may be singled out as follows: (1) nature, extent and distribution of disease; (2) quantitative methods of description and analysis; (3) environmental hazards, their identification and control; (4) the organization and delivery of community health services — emphasis is on the development of strategies for optimal provision of health care of high quality for all members of society; (5) basic biological and psychosocial processes that affect the health and well-being of populations.

The purpose of programs of instruction in the field of public health is to provide opportunity to develop understanding of the theoretical foundations and philosophy of the field, and to permit specialization in fields of professional service or research. This is achieved through required and elective courses that stress broad exposure to basic issues as well as intensive study in selected specialties.

Because of multidisciplinary concerns, programs of study are available to students whose academic preparation has been in one of various physical, biological or social science areas: for example, bacteriology, medicine, nursing, dentistry, veterinary medicine, optometry, pharmacy, engineering, mathematics, statistics, sociology, psychology, economics, political science, etc.

Through organized programs in the School of Public Health, students entering the field may thus prepare themselves for careers in such basic specialties as epidemiology, biostatistics, nutritional science, and environmental health sciences. They may also prepare

themselves for the challenges of community well-being such as the operation of hospitals, health maintenance in industry, the health education of the public, organization of medical care, behavioral sciences in public health, and community health administration.

The School of Public Health offers the following degrees: Bachelor of Science in Public Health, Master of Public Health, Doctor of Public Health, Master of Science in Public Health, Doctor of Philosophy in Public Health, Master of Science in Biostatistics, and Doctor of Philosophy in Biostatistics. In addition, joint MPH degrees are available with Latin American Articulated Degree Programs, Graduate School of Management, School of Law, School of Medicine, and School of Dentistry.

## Bachelor of Science Degree

Admission is limited to undergraduate students in good standing within the University of California, Los Angeles, who have satisfactorily completed at least 84 quarter units of work in one of the colleges of the University, or who have transfer credits evaluated as equivalent. A student wishing to major in Public Health selects an area of concentration from one of the following areas: biostatistics, health education, or nutritional sciences.

## PREPARATION FOR THE MAJOR

Preparation for the major consists of: (1) Subject A; (2) American History and Institutions; (3) Foreign language: two years of one language in high school; (4) two years of high school mathematics; (5) one course from English 3 or 4, Humanities 2A or 2B; (6) Physical Science: Chemistry 11A, 11B, 11BL, 11C, 11CL (or Chemistry 11A, 11N, and an elective course in a physical science for students who plan to specialize in health education); (7) Mathematics 1B or 3A; (8) Life Sciences: Biology 4A-4B; (9) Social Sciences: three courses; (10) Humanities: three courses; (11) additional courses in chemistry, mathematics, natural sciences, or physics as recommended by the student's adviser.

## REQUIREMENTS FOR THE BACHELOR'S DEGREE

- 1) The candidate shall have completed at least 45 courses (180 quarter units) of college work, of which at least the last 9 courses (36 quarter units) must have been completed while enrolled in the School of Public Health. Not more than 18 of the above 36 quarter units may be completed in summer session on the campus of residence.
- 2) The candidate shall have completed at least 13 courses (52 quarter units) in upper division (numbers 100 through 199). At least 6 courses must have been completed while enrolled in the School of Public Health, 4 of which must have been in the major.
- 3) The candidate shall have maintained a C (2.0) average in all courses taken and shall have satisfied all of the course requirements in preparation for the major as well as those required in the major.
- 4) The candidate is not normally expected to take more than 180 quarter units to obtain the bachelor's degree. Except in rare cases, approved by the Dean, the candidate will not be permitted to continue after completing 208 quarter units.
- 5) Credit limitations
  - a) Prior approval by the adviser and the Dean is required before a student may enroll in a course for Passed/Not Passed credit; however, courses in the major may not be taken on a Passed/Not Passed basis.
  - b) Only 4 quarter units of physical education courses may be counted toward degree credit.
  - c) Public Health 199: Open to seniors who must petition before enrolling; limited to 4 units each quarter; no more than 16 units may be counted toward degree credit.
  - d) Courses in the 200 or 400 series: Candidates must secure approval from their adviser and the Dean before enrolling in these courses, unless the course is a requirement of the major.
  - e) Concurrent enrollment: Concurrent enrollment in University Extension or at another institution is permitted only under extraordinary circumstances and with prior approval from the adviser and the Dean.

f) After completing 105 quarter units toward the degree (in all institutions attended), the student will be allowed no further unit credit for courses completed at a community college.

g) Enrollment limitations: The candidate must enroll in no less than 12 or more than 16½ quarter units each quarter. Exception requires approval of the adviser and Dean. A student on probation may be given other limitations.

## THE MAJOR

1. The following courses are required: Public Health 100, 101 (or equivalent), 110 (not required for nutritional science students), 147, 160A; Public Health 153 or Bacteriology 101 required for nutritional science students; Bacteriology 10 recommended for Health Education.

2. In addition to the above requirements, those of one of the following areas of concentration must be met.

**Biostatistics:** The biostatistics program prepares students in the application of biostatistics to the broad field of public health and the evaluation of health programs. Mathematics 31A, 31B, 31C, 32A, 32B, 32C, 152A, 152B (or 150A, 150B, 150C); Public Health 163A, 163B, 160C (or 160A-160D), 161. Every student will be required to take courses and study in depth at upper division level in an additional subject area as a basis for application of statistical methods and theories.

**Health Education:** The program provides an undergraduate major for health education. The program is currently under review and the Head of the Division of Behavioral Sciences and Health Education should be contacted.

**Nutritional Science:** In this program students become acquainted with the basic nutritional factors and components of health. Mathematics 3B, 3C; Chemistry 21, 22, 24; Physics 3A, 3B, 3C (or 6A, 6B, 6C); Public Health 108, 114A, 114B, 114D. Electives will be chosen in consultation with academic adviser.

## COUNSELING

Students should call the Office of Student Affairs in the School of Public Health for assistance with academic regulations and procedures as well as for counseling appointments regarding overall degree requirements.

## Fields of Concentration

The School of Public Health offers the Master of Public Health degree in the following areas of concentration: Behavioral Sciences and Health Education, Biostatistics, Environmental Health Sciences, Epidemiology, Health Planning and Policy Analysis, Health Services Management, Nutritional Sciences and Population, Family and International Health.

The Master of Science in Public Health degree is offered in Behavioral Sciences and Health Education, Environmental Health Sciences, Epidemiology, Health Planning and Policy Analysis, and Nutritional Sciences.

## Master of Science in Public Health

The Master of Science program provides research orientation within the general field of public health. It is intended to prepare the student in depth within a specialty, culminating in research activity and a thesis or a comprehensive examination. If the student's undergraduate course has been deficient in breadth of fundamental training and fails to provide a proper foundation for advanced work in the special area of his choice, it will be necessary for him to take specified undergraduate courses.

A student seeking admission to the Master of Science program at UCLA should hold a bachelor's degree from an accredited institution, and have demonstrated competence by satisfactory performance on the Graduate Record Examination Aptitude Test. His academic work must be substantially equivalent, in distribution of subject matter and in scholastic achievement to the requirements for a comparable degree at the University of California.

## GENERAL REQUIREMENTS FOR THE DEGREE

Only courses in which the student is assigned grades A, B, or C are counted in satisfaction of the requirements for a

master's degree, and the student must maintain a B average to remain in graduate status.

The Master of Science in Public Health requires one to two years and must include at least three quarters in academic residence. The program will be planned on an individual basis, according to the student's need, and will include formal courses and research leading to a thesis or a comprehensive examination and written report.

The M.S. degree requires a minimum of 9 graduate and upper division quarter courses of which at least 5 are graduate courses (200 and 500 series). A comprehensive examination in the area of specialization and the preparation of a written report are also required. With the consent of the adviser, the student may substitute a thesis for this requirement. Copies of thesis are submitted by the student to the Graduate Division for approval.

Unless previously taken, mandatory courses for the M.S. degree are (at least 3 courses, 12 units of credit): (1) Principles of Epidemiology (Public Health 147); (2) Introduction to Biostatistics (Public Health 160A); (3) Introduction to Biostatistics (Public Health 160B). The remaining courses (at least 6 courses, 24 units of credit) are determined by the student's choice of an area of specialization, and include the requirement of two research methods courses.

The upper time limit for completion of all requirements is 7 quarters of enrollment.

## Master of Science in Biostatistics

For admission to the Master of Science program in Biostatistics the student must have completed the bachelor's degree with a major in statistics, mathematics, or in a field of application of biostatistics, and have demonstrated competence by satisfactory performance on the Graduate Record Examination Aptitude Test. Undergraduate preparation for the program should include Mathematics 31C, 32A-32B-32C, 152A, 152B (or 150A, 150B, 150C) or equivalent (second-year calculus).

## GENERAL REQUIREMENTS FOR THE DEGREE

Only courses in which the student is assigned grades A, B, or C are counted in satisfaction of the requirements for a master's degree, and the student must maintain a B average to remain in graduate status.

The M.S. degree in Biostatistics requires a minimum of 9 graduate and upper division courses, of which at least 5 are graduate courses (200 and 500 series), and a comprehensive examination. The five required graduate courses must be in biostatistics or mathematical statistics, including at least three courses in biostatistics. Unless previously taken the following courses must be included in the degree program:

1. Public Health 163A, 163B (Basic Biostatistics), 160C (Introduction to Biostatistics)
2. Public Health 240A, 240B, 240C (Biostatistics)
3. Public Health 268A, 268B, 268C, 268D (Special Topics) (Any two courses from this group)
4. Public Health 269 (Seminar in Biostatistics)
5. Mathematics 152A, 152B (Applied Mathematical Statistics) or Mathematics 150A, 150B, 150C (Probability and Statistics)

Other courses in biostatistics or mathematical statistics, or in related areas such as biology, physiology, public health, sampling theory, or mathematics are selected with the adviser's consent.

The upper time limit for the completion of all degree requirements is 7 quarters of enrollment.

## Master of Public Health

Candidates to be admitted to the degree of Master of Public Health must demonstrate competence by satisfactory performance on the Graduate Record Examination Aptitude Test and may be:

1. Holders of professional doctoral degrees in medicine, dentistry, optometry, pharmacy, or veterinary medicine (with or without a prior bachelor's degree) from an accredited school.
2. Holders of a bachelor's degree from an accredited institution, with adequate preparation in sciences basic to

public health. Such sciences basic to public health include various combinations of: (a) Life sciences; (b) Physical sciences and mathematics; (c) Social sciences; (d) Behavioral sciences. (Applicants are not expected to be prepared in all four of these fields, but a background in a suitable combination of these sciences is required.)

3. Physicians at UCLA in the General Preventive Medicine Residency in either Epidemiology or Health Planning and Policy Analysis.

4. Qualified students in the Latin American Studies articulated degree program, Graduate School of Management, School of Law, School of Medicine, and School of Dentistry. Admission is not automatic.

No field experience is required as a condition of admission although a background of public health experience may be considered as a factor in evaluation of eligibility for admission.

Upper time limit for completion of all requirements is 7 quarters of enrollment.

## GENERAL REQUIREMENTS FOR THE DEGREE

Only courses in which the student is assigned grades A, B, or C are counted in satisfaction of the requirements for a master's degree, and the student must maintain a B average to remain in graduate status.

Award of the M.P.H. degree requires: (1) A minimum of 11 courses (44 quarter units) at least five of which must be graduate level (200, 400, or 500 series). Students majoring in health services management are required to take an administrative residency of one year in addition to three quarters in academic residence. Other special programs may also require two years to complete. (2) Mandatory core courses of at least one quarter in each of the following subjects: (a) biostatistics (usually Public Health 160A); (b) epidemiology (Public Health 147); (c) health services organization (Public Health 450A). (3) The remaining courses (at least 8 courses, 32 units of credit) are determined by the student's choice of an area of specialization and include the requirement of one course in the 400 series. (4) A comprehensive final examination. (5) Field training in an approved public health program of up to 10 weeks is required of candidates who have not had prior field experience.

## Doctor of Public Health

The Dr.P.H. program is offered to primarily provide education for a higher level of professional service in public health than is attainable through the master's level programs.

In addition to the University minimum requirements, the department requires (1) satisfactory performance on the GRE. (2) completion of the M.P.H. degree in Public Health or an appropriately related field (if the master's degree is in a field other than Public Health, the applicant must have taken the equivalent of three mandatory M.P.H. core courses or include them in his course of study after admission). (3) at least a 3.0 Junior-Senior GPA, at least a 3.5 in graduate studies or demonstrated superiority in graduate work, and at least a B in the mandatory CORE courses, (4) a positive recommendation by a Division of the Department of Public Health, (5) approval by the Doctoral Admissions Committee, (6) and approval by the Department Chairman.

## GENERAL REQUIREMENTS FOR THE DEGREE

A student must select a major — or area of specialization — and a minor area. The major area may be selected from Behavioral Sciences and Health Education, Biostatistics, Environmental Health Sciences, Epidemiology, Health Planning and Policy Analysis, and Nutritional Sciences.

In general, two or more years of study are required beyond the master's degree. In the first of these years, a full program of formal courses is ordinarily required. For persons with a previous doctoral degree in medicine or a related field, the total period of study may be reduced.

Academic preparation for the Dr.P.H. is directed toward general competence and depth of understanding in the major and minor areas as well as general understanding of the scope and aims of the broad field of public health.

An academic adviser is assigned to each new student by the Division Head of the Division one enters. The student

and the adviser together agree upon a study list for each academic quarter. After the student is enrolled for one quarter a three member guidance committee is established, which includes an adviser in the major field and an adviser in the minor field.

The course requirements needed to pass the written examination in the major field depend upon the Division which the student enters. Before admission to candidacy, the student must pass written examinations in the major and minor fields and the oral qualifying examination. The written examination in the major field is prepared and administered by the Guidance Committee or by the faculty of the Division. The written examination in the minor field is prepared and administered by the representative from the minor field or the Guidance Committee. One re-examination after failure is allowable but more than one would be granted only in unusual circumstances.

When the student is ready to take the oral qualifying examination, a Doctoral Committee is nominated by the Chairman of the Department after consultation with the student and appointed by the Dean of the Graduate Division. This normally takes place after the student has made a tentative decision on a dissertation topic. The Doctoral Committee consists of at least 5 faculty members who hold regular professional appointments. Three of the 5 must hold appointments in Public Health, 2 must be "outside" members who hold no appointment in Public Health, and 1 must be from the minor field.

The minor field is usually from inside Public Health but could be from outside the department. A minimum of 4 graduate courses in the minor field is recommended.

The Doctoral Committee administers the oral qualifying examination after the student has successfully completed the written examination.

It normally takes 4 to 5 years from graduate admission to completion of the doctoral degree.

## FIELD TRAINING

Field study in the major field may be required for a period up to 10 weeks dependent on the student's previous work and future objectives.

## DISSERTATION

The Dr.P.H. program culminates in a dissertation based on original research leading to a final examination. The subject of the dissertation should bear on some aspect of the student's field of major concentration and should demonstrate ability to plan and carry out independent investigation. From completion of the oral qualifying examination to final oral defense should take no more than 3 quarters.

Copies of the dissertation are submitted to the Graduate Division for approval.

## Doctor of Philosophy

### BIOSTATISTICS

A program of study leading to the degree of Ph.D. in Biostatistics is offered. Reference should be made to the UCLA ANNOUNCEMENT OF THE GRADUATE DIVISION for general University requirements. The student's program of study must be approved by the Division of Biostatistics and it must include at the graduate course level three areas of knowledge: biostatistics, mathematical statistics, and a biomedical field such as biology, epidemiology, infectious diseases, medicine, microbiology, pharmacology, physiology, psychology, zoology or public health. Recommendation for the degree is based on the attainments of the candidate rather than on the completion of specified courses.

Qualifications for admission to the program of graduate studies in Biostatistics for the Ph.D. degree are the currently specified requirements of the Graduate Division, including satisfactory performance on the Graduate Record Examination Aptitude Test. Normally students receive an M.S. in Biostatistics at UCLA before admission to the Ph.D. program. Students who enter the Ph.D. program from other Master's programs are required to pass a written comprehensive examination within one year of their admission. This examination is comparable to the M.S. comprehensive examination. Within three years after this examination, the student must be advanced to candidacy; before advancement to candidacy the student must pass three written

examinations (Biostatistics, Mathematical Statistics, and the selected biomedical field) and then a qualifying oral examination. Completion of the dissertation and the final oral examination must take place within three years from the date of advancement to candidacy.

Copies of the dissertation are submitted to the Graduate Division for approval.

### PUBLIC HEALTH

A program of study leading to the degree of Ph.D. in public health is available in Behavioral Sciences and Health Education, Environmental Health Sciences, Epidemiology, Health Planning and Policy Analysis, and Nutritional Sciences. This program provides preparation for careers in teaching and research.

In addition to the University minimum requirements, the department requires (1) satisfactory performance on the GRE, (2) completion of the M.S. in Public Health or an appropriately related field (students with an M.P.H. will need to satisfy the requirements of the M.S.P.H. before admission), (3) at least a 3.0 Junior-Senior GPA and at least a 3.5 in graduate studies or demonstrated superiority in graduate work, (4) a positive recommendation by a Division of the Department of Public Health, (5) approval by the Doctoral Admission Committee, and (6) approval by the Department Chairman.

An academic adviser is assigned to each new student by the Division Head of the Division one enters. The student and the adviser together agree upon a study list for each academic quarter. After the student is enrolled for one quarter a three member guidance committee is established which includes an adviser in the major field and an adviser in the minor field.

The course requirements needed to pass the written examination in the major field depend upon the Division which the student enters. Before admission to candidacy, the student must pass written examinations in the major and minor fields, foreign language examination, and the oral qualifying examination. The written examination in the major field is prepared and administered by the Guidance Committee or by the faculty of the Division. The written examination in the minor field is prepared and administered by the representative from the minor field or the Guidance Committee.

One foreign language relevant to the student's major area is required and approved by the Guidance Committee, using a method acceptable to the Graduate Division (usually ETS examination given on campus with a minimum score of 500). It must be taken before the oral qualifying examination. If a student's native language is not English, English may be used.

When the student is ready to take the oral qualifying examination, a Doctoral Committee is nominated by the Chairman of the Department, after consultation with the student, and appointed by the Dean of the Graduate Division. This normally takes place after the student has made a tentative decision on a dissertation topic. The Doctoral Committee consists of at least 5 faculty members who hold regular professional appointments. Three of the 5 must hold appointments in Public Health, 2 must be "outside" members who hold no appointment in Public Health, and 1 must be from the minor field. The Doctoral Committee chairman should hold a Ph.D. (but not mandatory) and at least 2 (1 inside, 1 outside) members of the Doctoral Committee must hold the Ph.D.

The minor field must be in a field cognate to the major field in Public Health. A strong minor is required with a minimum of 4 full graduate courses or equivalent from a department that grants a Ph.D. Biostatistics may be considered cognate to a major in Public Health.

The Doctoral Committee administers the oral qualifying examination after the student has successfully completed the written examinations and the foreign language examination.

From graduate admission to the written and oral qualifying examinations, advancement to candidacy, and approval of the dissertation prospectus normally takes 9 quarters. From advancement to candidacy to the final oral examination normally requires 3 quarters. Usually 12 quarters are required from graduate admission to award of the degree.

Copies of the dissertation are submitted to the Graduate Division for approval.

## SCHOOL OF SOCIAL WELFARE

The School of Social Welfare offers a two-year graduate program leading to the Master of Social Welfare degree. The curriculum deals with four major areas of study: Human Behavior, Social Welfare Services and Policy, Social Work Methods Theory and Social Work Research. In addition to academic courses in the above subjects, the curriculum provides for field instruction in selected social agency programs under tutorial direction. The School offers curriculum concentrations in Social Casework and Community Organization. Students are expected to enroll in the same concentration for two years of study.

### ADMISSION REQUIREMENTS

The School of Social Welfare offers courses on the graduate level only. *Admission to the School is scheduled in the Fall Quarter only, and applications for admission should be filed by February 15 for the following Fall Quarter.* Applicants must file an Application for Admission to Graduate Status with Graduate Admissions, and, in addition, must file an application with the School of Social Welfare and submit other specified information.

Candidates are expected to meet the general requirements of the Graduate Division for admission to graduate status.

The Graduate Record Examination is required by all applicants to the School of Social Welfare. Results from this Exam must be submitted to the School prior to any evaluation of your application for admission. The Graduate Record Examination is given several times a year in various locations in the United States and foreign countries. Applications and information may be secured either from the Graduate Admissions Office of UCLA or a geographically convenient school, or from the Educational Testing Service. The Southern California Regional Office of the Educational Testing Service is located at 2200 Merton Ave., Los Angeles, California 90041.

The School requires a minimum of five courses in the social sciences or a combination of social science and social welfare subjects as prerequisite undergraduate preparation for graduate study in the field of social work. Completion of courses in psychology, sociology and statistics is ordinarily expected.

In addition to an acceptable academic record and completion of the above preparatory courses, the School of Social Welfare applies the following criteria in the selection of candidates: personal suitability for professional education and potential for successful social work practice, as defined by the School; a satisfactory state of health, as determined by a physical evaluation prior to the date instruction begins; assessment on an individual basis of the candidate's previous education and work experience; and an adequate financial and personal plan to permit completion of requirements for the degree.

### APPLICATIONS FOR TRANSFER

Opportunities for transfer from other schools of social work into the second-year program of study will be extremely limited in number and will be determined by the credentials and potentialities of the individual candidate.

Such applicants must have successfully completed the first year of the master's program in an accredited school of social work within five years immediately preceding request for admission to the School. In addition, candidates must meet all other admission requirements to the School.

The School will prescribe the program required to qualify for the Master of Social Welfare degree. Candidates may be required to make up courses lacking for fulfillment of the degree requirements or to audit courses for up-dating of knowledge even though credit may have been granted for a similar course in another school.

A written evaluation of the candidate's first year of study will be requested from the institution in which the student completed his first year's work.

### APPLICATIONS FOR READMISSION

Applications for candidates who have completed the first-year program in the UCLA School of Social Welfare at some prior time and wish to return for completion of work toward the master's degree in social welfare will be considered on an individual basis. If more than five years have



elapsed since completion of the first year's work, candidates may be required to enroll for the full two-year program.

### PART-TIME STUDY

Because of the continuing high demand for admission to full-time study for the M.S.W. degree program, enrollment on a part-time study basis has been suspended for the present.

### FINANCIAL AID

A number of federal, state, and local agencies make available scholarships and traineeships to graduate students in social welfare. Applications are for the most part made directly to the School. Additional information regarding these resources may be obtained from the Admissions Office of the School.

Financial aid offered by UCLA includes scholarships, loans, grants and work-study. One basic application suffices for all available financial aid. When the student applies for aid, a suitable combination of available funds for which he qualifies may be offered. Awards are based on financial need as determined by national financial aid criteria. University Financial Aid Forms will be sent to applicants who have indicated need and who are offered admission. Forms are to be completed after student "Statement of Intent to Register" has been submitted.

### MASTER OF SOCIAL WELFARE

The degree of Master of Social Welfare will be granted upon fulfillment of the following requirements:

1. The candidate shall have fulfilled the general requirements of the Graduate Division and the University.
2. The candidate shall have satisfactorily completed the School's prescribed program of classroom and field instruction, in either the Social Casework or Community Organization curriculum concentration. This includes satisfactory completion of the required courses in the Research sequence and of a research project to be undertaken during the second year of study.
3. The candidate shall have achieved a minimum grade average of B in academic courses and in field instruction.
4. The candidate shall have spent a minimum of one year (three quarters) of study in residence at UCLA.
5. The candidate shall have satisfactorily passed a comprehensive final examination in the field of social welfare.

Graduate Adviser: Consult the departmental Office of Admissions, 238 Dodd Hall.

### DOCTOR OF SOCIAL WELFARE DEGREE

The School of Social Welfare offers a doctoral program leading to the degree of D.S.W. (Doctor of Social Welfare). The program is designed to prepare students for careers in policy development; administrative positions related to social welfare; practice; research; and teaching. The curriculum is organized into the following major areas: social welfare policy and planning; research; social work practice theory; and the integration of social and behavioral science content for social work use. Programs of study are planned in relation to the special interests of students.

Admission requirements include meeting the general admission standards of the Graduate Division, an M.S.W. from an accredited School of Social Work, and the Graduate Record Examination Aptitude Test. Students possessing a master's degree in social science may also be admitted under a plan which involves a period of study in the M.S.W. program to provide the necessary foundation in the distinctive subject matter of the profession. *The School of Social Welfare must receive your GRE scores by April 15.* The application will be facilitated by an early receipt of the GRE scores. Applicants from foreign countries are also required to take the Test of English as a Foreign Language (see section on "Admission of Foreign Students"). The length and nature of the program is to be determined by the Doctoral Committee of the School in relation to the special needs of students; however, the total time from entrance into the program to award of the D.S.W. degree is not to exceed five years. Enrollment in the doctoral program is limited, and it may not be possible to accept all applicants who meet the formal qualifications for admission.

Additional information may be obtained by writing to: Chairman, Doctoral Program Committee, School of Social Welfare, UCLA.

For information concerning courses and curricula, see the UCLA ANNOUNCEMENT OF THE SCHOOL OF SOCIAL WELFARE and Social Welfare in this bulletin.

## THE GRADUATE DIVISION

UCLA offers graduate programs, departmental and interdepartmental, leading to the Master of Arts and Master of Science degrees in a wide range of fields; to the intermediate degree, Candidate in Philosophy; to the Doctor of Philosophy degree; to professional master's degrees in Architecture, Education, Engineering, Fine Arts (in Art, Music, and in Theater Arts), Library and Information Science, Management, Nursing, Public Health, and Social Welfare; to the Engineer Degree; to professional doctorates in Education, Environmental Science and Engineering, Public Health, and Social Welfare; to certificates in Engineering and Applied Science, Library and Information Science, Medicine, and Teaching English as a Second Language; to certificates of residence for foreign students; and to certificates of completion for the elementary, secondary, and junior college teaching credentials and other advanced credentials for public school service. For more detailed information on requirements, consult the school and departmental sections of this catalog, and the Graduate Division publication, STANDARDS AND PROCEDURES FOR GRADUATE STUDY AT UCLA.

### Requirements for Graduate Degrees

#### PREPARATION

An applicant for any advanced degree must possess a bachelor's degree from an institution of acceptable standing and must have completed the prerequisites for graduate study in his field at UCLA. He should consult the department in which he wishes to study concerning special departmental requirements or other aspects of graduate study in addition to those common to all UCLA graduate programs.

#### Full-Time Graduate Program

Graduate students (except Teaching and Research Assistants) are considered in full-time enrollment if they take at least two full courses in graduate and/or upper division work per quarter, or the equivalent of eight quarter units. Whenever possible, students are encouraged to expedite progress toward their degrees by taking the optimal program of three courses per quarter.

Teaching and Research Assistants are required to take at least one course per quarter, or the equivalent of four quarter units, throughout their appointments, and are considered in full-time enrollment with this minimum. During the first quarter of their appointment they may not take more than two courses or the equivalent of eight quarter units. A student is required to be registered throughout his appointment. If a Teaching or Research Assistant finds it necessary to request a leave of absence or to withdraw, his appointment is terminated.

Graduate students holding fellowships administered by the University are required to take at least two courses per quarter or the equivalent of eight quarter units, both before and after advancement to candidacy. These courses may be in the 500 series of individual study or research.

#### Master's Degrees

The **Master of Arts** is offered in the following fields:

\*African Area Studies  
Anthropology  
\*Archaeology  
Architecture and Urban Planning  
Art  
Art History  
\*Asian American Studies  
Astronomy  
Astronomy (M.A.T.)  
Biology  
Classics

\*Comparative Literature  
Dance  
Economics  
Education  
English  
\*Folklore and Mythology  
French  
Geography  
German  
Greek  
History  
\*Islamic Studies  
Italian  
Latin  
\*Latin American Studies  
Linguistics  
Luso-Brazilian Language and Literatures  
Mathematics  
†Mathematics (M.A.T.)  
Microbiology  
Music  
Near Eastern Languages and Cultures  
Oriental Languages  
Philosophy  
†Physics (M.A.T.)  
Political Science  
Psychology  
\*Romance Linguistics and Literature  
Scandinavian  
Slavic Languages and Literatures  
Sociology  
Spanish  
Teaching English as a Second Language  
Theater Arts

\*Interdepartmental Programs.  
†Master of Arts in Teaching.

The **Master of Science** is offered in the following fields:

Anatomy  
Atmospheric Sciences  
Biochemistry  
Biological Chemistry  
Biomathematics  
Biostatistics  
Chemistry  
Computer Science  
Engineering  
Geochemistry  
Geology  
Geophysics and Space Physics  
Kinesiology  
Management  
Medical Physics  
Microbiology and Immunology  
Oral Biology  
Pharmacology  
Physics  
Physiology  
Preventive Medicine and Public Health  
Public Health

\*Interdepartmental Programs.

**Other master's degrees offered:**

Architecture (M.Arch.)  
Art (M.F.A.)  
Education (M.Ed.)  
Engineering (M.Eng.)  
Library and Information Science (M.L.S.)  
Management (M.B.A.)  
Music (Performance Practices) (M.F.A.)  
Nursing (M.N.)  
Public Health (M.P.H.)  
Social Welfare (M.S.W.)  
Theater Arts (M.F.A.)

#### PLAN

At the option of his major department, the student follows either the Thesis Plan or the Comprehensive Examination Plan. The University minimum standards are the same under either plan. A department, however, may require a higher scholarship average and courses and examinations in addition to the minimum requirements of the Graduate Division.

#### UNIVERSITY MINIMUM STANDARDS

*Courses.* \* The program of courses consists of at least nine graduate and upper division courses completed in graduate status, including at least five graduate courses. For the Master of Arts, Master of Science, and Master of Arts in Teaching, the five graduate courses may be in the 200 series (graduate courses and seminars) and the 500 series (directed individual study or research for graduate students). For the other master's degrees, they may be in the

400 series (graduate professional courses) as well as in the 200 and 500 series. The application of 500-series courses to master's degrees is subject to limitations approved by the Graduate Council. Courses numbered in the 300 series are professional courses or preprofessional experience and are not applicable to University minimum requirements for graduate degrees.

\*Under the Quarter System at UCLA, the term "course" refers to a full course (4 quarter units). With this as a standard, departments may offer a half course (2 quarter units), a course and a half (6 quarter units) or a double course (8 quarter units). The requisite nine-course minimum for a master's degree may be fulfilled through combination of such courses.

**Standard of Scholarship.** UCLA requires at least a B (3.00) average in all courses taken in graduate status on any campus of the University of California and in all courses for the master's degree.

**Transfer of Credit.** Units and grade points for courses completed in graduate status on other University of California campuses, may, upon petition, apply to master's programs at UCLA. If approved, such courses may fulfill up to one-half the total course requirement, one-half the graduate course requirement, and one-third the academic residence requirement.

Also by petition, courses completed with a minimum grade of B in graduate status at institutions of acceptable standing other than the University of California may apply to UCLA master's programs. A maximum of two such courses (the equivalent of eight quarter units or five semester units) may apply, but these courses may not be used to fulfill either the five-graduate-course requirements or the academic residence requirement.

Courses in University Extension (100 series) taken before July 1, 1969 (identified with an asterisk in the University Extension bulletin of the appropriate year), may apply on approval by the department and the Dean of the Graduate Division. No more than two such courses (8 units) may apply, and they must have been completed after the student received his bachelor's degree. University extension courses taken after July 1, 1969 may not apply to the University minimum of 9 courses required for master's degrees, with the following exception: By petition to the Dean of the Graduate Division and with the recommendation of the major department, a maximum of two concurrent\*\* courses (100, 200, or 400 series) completed through the University Extension, (with a grade of B or better, after the student has received his bachelor's degree) may be counted toward the nine-course University minimum requirement and toward the five-graduate-course requirement for the master's degree. However, the program for the master's degree shall include at least two graduate courses in the 200 or 400 series completed after admission to regular graduate status. Any program which requires more than nine courses for the master's degree may accept concurrent courses completed through Extension, (with a grade of B or better, after the student has received his bachelor's degree) to meet one-half the course requirements over and above the University minimum of nine. Grades earned in University Extension are not included in computing grade averages for graduate students nor for the removal of graduate scholarship deficiencies. Correspondence courses are not applicable to graduate degrees.

\*\*Concurrent courses are courses which are offered by the University for regularly registered students in degree programs, and in which Extension students also enroll.

See also Enrollment in Summer Session courses.

**Academic Residence.** The student completes at least three quarters of academic residence in graduate status at the University of California, including at least two quarters at UCLA. He is in academic residence if he completes at least one course (4 units) in graduate or upper-division work during a quarter. †

**Foreign Language.** If the degree program includes a foreign language requirement, every effort should be made to fulfill this before the beginning of graduate study or as early as possible thereafter so that the language skill will be of maximum benefit. The student normally meets these requirements by completing one or more examinations. In French, German, Russian and Spanish he takes examinations which the Educational Testing Service (ETS) offers at UCLA and at other locations throughout the United States several times a year. In other languages, examinations are administered by foreign language departments at UCLA. When language requirements are to be fulfilled by ETS examinations, prospective graduate students are normally encouraged to take these examinations, while still juniors and seniors if possible, and their scores, if sufficiently high, may be used to satisfy foreign language requirements for their graduate degrees. UCLA requires a minimum ETS score of 500 for passing.

Questions on foreign language requirements should be addressed to departments; questions about the examinations should be directed to the Language Examination Coordinator, Student and Academic Affairs Section, Graduate Division, or to the Educational Testing Service, Princeton, New Jersey 08540. See also the ANNOUNCEMENT OF THE GRADUATE DIVISION for a chart summarizing departmental foreign language requirements.

**Advancement to Candidacy.** Advancement to candidacy takes place after formal approval of the student's program, which may include work in progress. He files for advancement to candidacy no later than the second week of the quarter in which he expects to receive the degree. However, advancement to candidacy may not occur until all requirements, including the foreign language requirement, have been satisfied. In case of unexpected delay in completing work in progress during the final quarter, he may have up to one additional year in which to complete all requirements.

## THESIS OR COMPREHENSIVE EXAMINATION

Under the Thesis Plan, the student's thesis is a report of the result of his original investigation. Before beginning work on the thesis, the student obtains approval of the subject and general plan from the faculty members concerned and from his Thesis Committee. This Committee, consisting of three members appointed by the Dean of the Graduate Division, is responsible for final approval of the thesis. The Manuscript Adviser for Theses and Dissertations and the Graduate Division publication, STANDARDS AND PROCEDURES FOR ADVANCED DEGREE MANUSCRIPT PREPARATION, provide guidance in the final preparation of the manuscript.

Under the Comprehensive Examination Plan, the examination is administered by a committee, consisting of at least three faculty members, appointed by the department. In certain fields this examination may also serve as a screening or qualifying examination for a doctoral program.

## DEPARTMENTAL SCHOLAR PROGRAM

Departments may nominate exceptionally promising undergraduates (junior and seniors) as Departmental Scholars to pursue bachelor's and master's degree programs simultaneously.

Qualifications include the completion of 24 courses (96 quarter units) at UCLA — or the equivalent at a similar institution — and the requirements in preparation for the major. To obtain both the bachelor's and master's degrees the Departmental Scholar must be provisionally admitted to the Graduate Division. He will fulfill requirements for each program and maintain a minimum average of B. He may not use any course to fulfill requirements for both degrees.

Departmental nominations are submitted to the Student and Academic Affairs Section of the Graduate Division, for approval by the Dean, on or before the application dates for admission to graduate standing. Interested students should consult their departments well in advance of these dates.

Under provisional admission to the Graduate Division, Departmental Scholars are not eligible for leaves of absence or participation in the Intercampus Exchange Program.

## MASTER'S DEGREES OTHER THAN THE M.A. AND M.S.

For master's degrees other than the M.A. and M.S. there may be specific University minimum requirements in addition to the foregoing. Information on these may be obtained from the departmental graduate adviser.

## Candidate in Philosophy Degree

In those departments for which the Graduate Council has approved formal proposals for its award, the intermediate degree Candidate in Philosophy (C.Phil.) may be awarded qualified students upon advancement to candidacy in Ph.D. programs. Requirements for the C.Phil. are identical with those for advancement to candidacy for the Ph.D., with the exception that the student must have completed four quarters of academic residence, including three quarters (ordinarily the last three) in continuous residence at UCLA. Applicants may obtain further information from the department in which they wish to study.

The Candidate in Philosophy is offered in the following fields:

- Anatomy
- Applied Linguistics
- Atmospheric Sciences
- Biochemistry
- Biology
- Chemistry
- Classics
- Economics
- English
- French
- Geography
- Geology
- Germanic Languages and Literatures
- Hispanic Languages and Literatures
- History
- \*Indo-European Studies
- \*Islamic Studies
- Italian
- Linguistics
- Management
- Mathematics
- Music
- Near Eastern Languages and Cultures
- Oriental Languages
- Philosophy
- Political Science
- Psychology
- \*Romance Linguistics and Literature
- Slavic Languages and Literatures
- Sociology
- Theater Arts

\*Interdepartmental Programs.

## Doctoral Degrees

The doctorate is awarded candidates who have displayed understanding in depth of the subject matter of their discipline as well as ability to make original contributions to knowledge in their field. The degree is an affidavit of critical aptitude in scholarship, imaginative enterprise in research, and proficiency and style in communication.

## The Individual Ph.D. Program

The Individual Ph.D. Program has been established to allow superior students to pursue well-defined, scholarly, coherent programs that cannot be carried out within any existing doctoral program on any campus of the University of California. To be approved for an Individual Ph.D. Program, a student submits a proposal to the Graduate Council after having been a full-time graduate student at UCLA for at least one year, having proved qualified to pursue a departmental Ph.D. program, and having gained the support of at least three sponsoring members of the faculty as the result of the special efficacy of his dissertation proposal. University minimum standards with regard to courses, standards of scholarship, residence, and the dissertation apply.

Students should be aware of the fact that individual doctoral degrees may be of less value in the marketplace than standard departmental degrees. As a rule, departments in universities and colleges prefer to appoint individuals

†Enrollment in two six-week Summer Sessions (must be consecutive for doctoral candidates) counts as one quarter of residence provided the candidate is enrolled in each session for the equivalent of at least two units of upper division and/or graduate work as given in a regular quarter. Enrollment in an eight-week Summer Session counts as one quarter of residence provided the candidate is enrolled for the equivalent of at least four units of upper division and/or graduate work as given in a regular quarter. Academic residence that is earned through enrollment in Summer Sessions is limited to one-third of the degree requirements.

whose training is in a traditional field. It is likely that the same preference holds in relation to other opportunities for employment.

Further information regarding this program and the requirements for approval are available from the Graduate Division, 1225 Murphy Hall, University of California, Los Angeles, California 90024.

The **Doctor of Philosophy** is offered in the following fields:

Anatomy  
 Anthropology  
 \*Applied Linguistics  
 \*Archaeology  
 Art History  
 Astronomy  
 Atmospheric Sciences  
 Biochemistry  
 Biological Chemistry  
 Biology  
 Biomathematics  
 Biostatistics  
 Chemistry  
 Classics  
 \*Comparative Literature  
 Computer Science  
 Economics  
 Education  
 Engineering  
 English  
 Experimental Pathology  
 French  
 Geochemistry  
 Geography  
 Geology  
 Geophysics and Space Physics  
 Germanic Languages  
 Hispanic Languages and Literatures  
 History  
 \*Indo-European Studies  
 \*Islamic Studies  
 Italian  
 Library and Information Science  
 Linguistics  
 Management  
 Mathematics  
 Medical Physics  
 Microbiology  
 Microbiology and Immunology  
 \*Molecular Biology  
 Music  
 Near Eastern Languages and Cultures  
 \*Neuroscience  
 Oriental Languages  
 Pharmacology  
 Philosophy  
 Physics  
 Physiology  
 Political Science  
 Psychology  
 Public Health  
 \*Romance Linguistics and Literature  
 Slavic Languages and Literatures  
 Sociology  
 †Special Education  
 Theater Arts  
 Urban Planning

\*Interdepartmental Programs.

†Joint program with California State College at Los Angeles.

#### Other doctoral degrees offered:

Education (Ed.D.); Environmental Science and Engineering (D.Env.); Public Health (Dr. P.H.); Social Welfare (D.S.W.).

### UNIVERSITY MINIMUM STANDARDS

**Courses.** The student takes whatever formal courses his department may require or recommend for knowledge in his field and preparation for qualifying examinations. The University has no formal course requirements for doctoral degrees other than the academic residence requirement. The 500 series of directed individual study or research courses is designed for graduate research, preparation for examinations, and preparation of the thesis or dissertation.

**Standard of Scholarship.** UCLA requires at least a B 3.00 average in all courses taken on any campus of the University of California for the entire time the student has been in graduate status.

**Academic Residence.** The student completes at least two years of academic residence in graduate status at the University of California, including one year, ordinarily the second, in continuous residence at UCLA. In most cases a longer period of academic residence is necessary, however, and from three to five years is generally considered

optimal. A graduate student is in academic residence if he completes at least one course (4 units) in graduate or upper-division work during a quarter. †

†Enrollment in two six-week Summer Sessions (must be *consecutive* for doctoral candidates) counts as one quarter of residence provided the candidate is enrolled in each session for the equivalent of at least two units of upper division and/or graduate work as given in a regular quarter. Enrollment in an eight-week Summer Session counts as one quarter of residence provided the candidate is enrolled for the equivalent of at least four units of upper division and/or graduate work as given in a regular quarter. Academic residence that is earned through enrollment in Summer Sessions is limited to one-third of the degree requirements.

**Foreign Language.** Every effort should be made to complete foreign language requirements before the beginning of graduate study or as early as possible thereafter so that the language skill will be of maximum benefit. In any case, students in doctoral programs requiring one or more languages must complete at least one language before the oral qualifying examination. The student normally meets these requirements by completing one or more examinations. In French, German, Russian and Spanish he takes examinations which the Educational Testing Service (ETS) offers at UCLA and at other locations throughout the United States several times a year. In other languages, examinations are administered by foreign language departments at UCLA. When language requirements are to be fulfilled by ETS examinations, prospective graduate students are normally encouraged to take these examinations while still juniors and seniors if possible, and their scores, if sufficiently high, will satisfy foreign language requirements for their graduate degrees. UCLA requires a minimum ETS score of 500 for passing.

Questions on foreign language requirements should be addressed to departments; questions about the examinations should be directed to the Language Examination Coordinator, Student and Academic Affairs Section, Graduate Division, or to the Educational Testing Service, Princeton, New Jersey 08540. See also the ANNOUNCEMENT OF THE GRADUATE DIVISION for a chart summarizing departmental foreign language requirements.

**Qualifying Examinations.** At an appropriate time in the doctoral program, written qualifying examinations are administered by a departmental guidance committee. After successful completion of these examinations and of part or all of the foreign language requirement, a doctoral committee is formally appointed by the Dean of the Graduate Division to conduct the oral qualifying examination and supervise the research and writing of the dissertation.

**Advancement to Candidacy.** After the student has successfully completed the oral qualifying examination, he is eligible for advancement to candidacy.

**Dissertation.** The candidate demonstrates his ability for independent investigation by completing a dissertation in his principal field of study. His choice of subject must be approved by his doctoral committee, which also reviews and approves the dissertation prospectus and guides him in the research and writing. The Manuscript Adviser for Theses and Dissertations and the UCLA publication, STANDARDS AND PROCEDURES FOR ADVANCED DEGREE MANUSCRIPT PREPARATION, provide guidance in the final preparation of the manuscript. Members of the Doctoral Committee and the Dean of the Graduate Division approve the completed dissertation.

**Final Oral Examination.** A final oral examination may be required at the option of the members of the Doctoral Committee who are to approve the dissertation, and in some departments it may be required of all candidates. Students should consult their Doctoral Committee chairman or departmental graduate adviser for further information.

Other doctoral degrees are offered in the following fields:

Education (Ed.D.)

\*Environmental Science and Engineering (D.Env.)

Public Health (Dr.P.H.)

Social Welfare (D.S.W.)

\*Interdepartmental Programs

### Doctoral Degrees Other Than the Ph.D.

For doctoral degrees other than the Ph.D. there may be specific University minimum requirements in addition to the foregoing. Requirements for these degrees are de-

scribed in the sections of this catalog devoted to the appropriate schools, and further information may be obtained from the announcements of these schools and from the graduate advisers.

### Concurrent Degree Programs

Concurrent degree programs have been established in the disciplines listed below. Concurrent programs have the advantage of allowing the student to acquire the two degrees in less time than normally required if the courses of instruction are taken in sequence. The aim of these programs is to provide an integrated curriculum of greater breadth between the two disciplines. Inquiries should be directed to the departments or schools involved.

Economics, M.A. — Law, J.D.

Latin American Studies, Interdepartmental M.A. — Management, M.B.A.

Law, J.D. — Architecture and Urban Planning, M.A.

Management, M.B.A. — Law, J.D.

Management, M.B.A. — Public Health, M.P.H.

### Interdepartmental Degree Programs

In addition to graduate degree programs offered in Schools and Departments, interdisciplinary graduate programs, involving two or more participating departments, are also offered. These programs are administered by interdepartmental faculty committees appointed by the Dean of the Graduate Division, acting for the Graduate Council.

African Area Studies (M.A.)

Applied Linguistics (Ph.D.)

Archaeology (M.A., Ph.D.)

Asian American Studies (M.A.)

Comparative Literature (M.A., Ph.D.)

Environmental Science and Engineering (D.Env.)

Folklore and Mythology (M.A.)

Indo-European Studies (Ph.D.)

Islamic Studies (M.A., Ph.D.)

Latin American Studies (M.A.)

Molecular Biology (Ph.D.)

Neuroscience (Ph.D.)

Romance Linguistics and Literature (M.A., Ph.D.)

# Courses of Instruction

## CLASSIFICATION AND NUMBERING

A capital "M" before the initial number of a course indicates multiple course listings in two or more different departments.

The classification and numbering of courses are described below.

### Undergraduate Courses

Undergraduate courses are classified as lower division and upper division. Lower division courses (numbered 1-99) are open to freshmen and sophomores, and are also open to upper division students but without upper division credit. Upper division courses (numbered 100-199) are ordinarily open to students who have completed at least one lower division course in the given subject, or two years of college work. Courses in the 100 series may be offered in partial satisfaction of the requirements for the master's degree by a student registered in graduate status, if taken with the approval of the major department.

Courses numbered 198 are structured special studies courses for groups. They are not listed in the catalog because they vary in content and are offered irregularly.

### Graduate Courses

Graduate courses (numbered 200-299) are ordinarily open to students admitted in graduate status. As a condition for enrollment in a graduate course the student must submit to the instructor in charge of the course evidence of satisfactory preparation for the work proposed.

Individual study or research graduate courses (numbered 500-599) may be used to satisfy minimum higher degree requirements within the limitations prescribed by the major department and approved by the Graduate Council.

### Professional Courses

Teacher-training courses (numbered 300-399) are highly specialized courses dealing with methods of teaching, and are acceptable toward the bachelor's degrees only within the limitations prescribed by the various colleges or schools. Courses in this series do not yield credit toward a higher degree.

Courses numbered 400-499 are professional courses other than teacher-training courses. They are acceptable toward academic degrees only within the limitations prescribed by the various colleges, schools, or Graduate Division, Los Angeles.

### University Extension Courses

University of California Extension courses bearing numbers 1-199, prefixed by X, B, XD, XI, XL, XR, XSB, XSC, XSD yield credit toward the bachelor's degree. They are rated, with respect to the general and specific requirements for the degree, on the same basis as courses taken in residence at collegiate institutions of approved standing. Concurrent enrollment in resident courses and in University Extension courses (or courses at another institution) taken with a view to credit toward a degree is permitted only when the entire program has been approved in advance by the dean of the student's college.

### Course Listings

Each course in the following listings by departments, as in the samples that follow, has the credit value of a full course unless otherwise noted. Thus a listing, **Mathematics 11A-11B-11C**, **Calculus and Analytic Geometry**, indicates three full courses, 11A, 11B, and 11C; while a listing, **Dance, 114A-114F**, **Advanced Contemporary Dance**, ( $\frac{1}{2}$  course each), indicates six half courses, 114A, 114B, 114C, 114D, 114E, and 114F. Some courses have a variable value; for example, **Management 596A-596N**, **Research in Management**, ( $\frac{1}{4}$  to 2 courses), where within the limits indicated, the exact value of the course is fixed for each individual student when he enrolls.

Where noted, credit for a specific course is dependent upon completion of a subsequent course.

### Credit for Courses

The normal undergraduate program is four courses each quarter and a minimum of 45 courses is required for the bachelor's degree. At least nine courses are required for the master's degree. The credit value of a course is equivalent to 4.0 quarter units. Fractional or multiple courses are equivalent to proportionate numbers of quarter units.

## KEY TO SYMBOLS

The following symbols are used in the departmental faculty rosters and course listings.

### FACULTY ROSTER

- <sup>1</sup>In Residence summer only.
- <sup>2</sup>In Residence fall only.
- <sup>3</sup>In Residence winter only.
- <sup>4</sup>In Residence spring only.
- <sup>5</sup>On leave summer.
- <sup>6</sup>On leave fall.
- <sup>7</sup>On leave winter.
- <sup>8</sup>On leave spring.
- <sup>9</sup>On leave summer and fall.
- <sup>10</sup>On leave fall and winter.
- <sup>11</sup>On leave fall and spring.
- <sup>12</sup>On leave winter and spring.
- <sup>13</sup>On leave spring and summer.
- <sup>14</sup>On leave.
- <sup>15</sup>Recalled to active service.
- <sup>16</sup>Member of Brain Research Institute.
- <sup>17</sup>Member of the Institute of Geophysics and Planetary Physics.
- <sup>18</sup>Joint Appointment

### COURSE LISTINGS

- <sup>1</sup>Not offered 1978-1979.
- <sup>2</sup>Given in alternate years, not offered 1978-1979.
- <sup>3</sup>Offered as schedule and staff allow
- <sup>4</sup>Not offered every year.
- <sup>5</sup>Given alternate years; offered 1978-1979.
- <sup>6</sup>Offered Fall 1978 only.
- <sup>7</sup>Offered Winter 1979 only.
- <sup>8</sup>Offered Spring 1979 only.
- <sup>9</sup>Offered on request depending upon enrollment.
- <sup>10</sup>Consult department for details.
- <sup>11</sup>Not applicable to M.A. degree.
- <sup>12</sup>Native speakers not normally eligible.
- <sup>13</sup>A and B offered in alternate years.
- <sup>14</sup>Enrollment is limited. Consult Office of Undergraduate Affairs.
- <sup>15</sup>Determined on basis of change in course content.
- <sup>16</sup>Only course C to be offered.
- <sup>17</sup>Courses A and B to be offered.
- <sup>18</sup>Open only to Engineering Executive Program students.
- <sup>19</sup>Not offered Fall, 1978.
- <sup>20</sup>Not offered Winter, 1979.
- <sup>21</sup>Not offered Spring, 1979.

## AEROSPACE STUDIES

(Department Office, 251 Dodd Hall)

Ronald E. Hagler, M.B.A., Lt. Colonel, U.S. Air Force Professor of Aerospace Studies (Chairman of the Department).

Richard T. Dineen, M.Ed., Captain, Assistant Professor of Aerospace Studies.

Lawrence Pace, M.S., Captain, Assistant Professor of Aerospace Studies.  
Assistant Professor of Aerospace Studies.

### Air Force Reserve Officers Training Corps (Air Force ROTC)

Air Force ROTC provides selected students the opportunity to develop those attributes essential to their progressive advancement to positions of high responsibility as commissioned officers in the U.S. Air Force. This includes understanding Air Force history, doctrine, and operating principles, demonstrating ability to apply modern principles of management and human relations in the Air Force environment, and mastery of leadership theory and techniques.

### Scholarship Program

Scholarships are available to qualified cadets in both the four-year and two-year programs. Scholarships cover full tuition, laboratory expenses, incidental fees, allowances for books, and a stipend of \$100.00 per month.

### Four-Year Program

The four-year program is open to beginning freshmen. It consists of an initial two-year General Military Course (GMC), described below, followed by a two-year Professional Officer Course (POC), described under "Two-Year Program."

### Leadership Laboratory

All Air Force ROTC students must enroll each quarter in the Leadership Laboratory as published in the UCLA Schedule of Classes.

### Freshman Year

**1A-1B-1C. U.S. Military Forces in the Contemporary World.** (4 course each) Prerequisite: 1A is prerequisite to 1B and 1B is prerequisite to 1C. This sequence of course examines the role of the Air Force in the contemporary world by studying the total force structure, strategic offensive and defensive forces, general purpose forces, and aerospace support forces. Lt. Col. Hagler

### Sophomore Year

**20A-20B-20C. The Developmental Growth of Air Power.** (4 course each) Lecture-seminar, one hour. Prerequisite: courses 1A, 1B, 1C. These courses examine the development of air power over the past sixty years. They trace the development of various concepts of employment of air power and focus upon factors which have prompted research and technological change. Key events and elements in the history of air power are stressed, especially where these provide significant examples of the impact of air power on strategic thought. Capt. Pace

### Two-Year Program

The two-year Air Force ROTC program is offered to accommodate those students who have attained at least junior standing and have two years remaining in the University, either as an undergraduate or graduate student. A prerequisite for students entering this program is successful completion of a six-week field training course on an Air Force base during the summer preceding their enrollment in the program.

Students interested in this program must make application to the Professor of Aerospace Studies during the fall quarter preceding the six-week summer field training course. Students attending the six-week summer field training are provided meals, quarters, travel expenses, and are paid approximately \$490.00. Students enrolled in the POC receive \$100.00 per month retainer fee for 20 consecutive months.

Data concerning physical and age qualifications for flying and navigator training and for nonflying applicants is the same as for four-year program.

### Four-Week Field Training Course

Students who complete GMC, and wish to enter POC, attend a four-week field training course, the summer following GMC completion. At field training, students are provided meals, quarters, clothing, travel expenses, and are paid about \$375.00 to cover incidental expenses. Subjects covered at field training, include junior officer training, aircraft and aircrew orientation, career orientation, survival training, base functions, Air Force environment, and physical training.

### Field Training Course Staff

**130A-130B-130C. Concepts of Air Force Management and Leadership.** (4 course each) Lecture-seminar, three hours. Prerequisite: 130A is prerequisite to 130B and 130B is prerequisite to 130C. This is a three part course. An analysis of the principles and functions of management, leadership and organizational behavior with special reference to the Air Force as a model. The course includes problem solving, information systems and models,

quantitative methods and computer systems. Group discussions, case studies, films and role-playing will be used as teaching devices. Communicative skills will be strengthened through preparation of written reports and oral presentations. The Staff

**140A. Military Judicial System.** (3/4 course) Seminar, three hours. Prerequisite: course 130C. An introduction to the foundation of the military profession, and the Military Judicial System. Oral and written student reports will be expected. Capt. Dineen

**140B. The Military in American Society.** (3/4 course) Seminar, three hours. Prerequisite: course 140A. Examines forces and issues in the social context that affect the functioning of the U.S. military. Influence of social norms, societal pressures and cultural factors on the functioning of the military profession in the United States is analyzed. Communication techniques are strengthened and communicative abilities are oriented to Air Force requirements through preparation of papers, classroom presentations and discussion. Capt. Dineen

**140C. American Defense Policy.** (3/4 course) Seminar, three hours. Prerequisite: course 140B. Examines U.S. security policy with respect to factors that influence its formulation, the bureaucracy that formulates and implements it, and the forms it has taken and may take in the future. Communication techniques are strengthened, and communication abilities are oriented to Air Force requirements through preparation of papers and classroom presentation and discussion. Capt. Dineen

## AFRICAN AREA STUDIES (INTERDEPARTMENTAL)

### Special Program in African Studies

For details of the program in African Studies taken in conjunction with a bachelor's degree, see Interdisciplinary Majors in Area Studies.

### Master of Arts in African Area Studies

The Master of Arts in African Studies is administered by an Interdepartmental Committee. Members of this Committee are: Michael F. Lofchie (Political Science) Chairman; Jacques Maquet (Anthropology); D.S. Hobbs (Political Science); Frederick Kintzer (Education); Christopher Ehret (History); Derrick Jelliffe (Public Health); Gerry Hale (Geography); Richard L. Sklar (Political Science); Thomas Hinnebusch (Linguistics).

The program for the Master of Arts in African Area Studies is designed to provide interdisciplinary training in the African area. It thus provides the student an opportunity to concentrate his work on the African area through a variety of disciplinary perspectives. The M.A. program also furnishes an approach to doctoral work related to Africa. Students gain exposure to several disciplines before deciding on the one most closely suited to their interests and capabilities. The degree is intended to (a) allow entering graduate students interested in Africa to gain an in-depth knowledge of this world area and (b) give an African area dimension to the studies of students within specific academic disciplines. The Center gives new emphasis to the arts and humanities in relation to Africa, and it is now possible to concentrate on these subjects within the framework of the Master of Arts in African Studies. For example, such subjects as African Literature in French or English, Ethnomusicology and traditional African Art may be combined with background studies in one or more social sciences to produce an intellectual synthesis. Students may also choose as one of their areas of specialization courses in Education, Public Health and Urban Planning.

A doctor's degree in African Area Studies is not offered. Students interested in pursuing doctoral programs with an emphasis on Africa should write directly to the department in which they are interested.

### Admission to the M.A. Program

In addition to meeting the requirements of the Graduate Division, the student must have adequate preparation in undergraduate fields related to the program. Required preparation for the Master's degree in African Area Studies is a degree of Bachelor of Arts in the social sciences or arts and humanities. The program requires between one and two years to complete, depending upon the student's preparation and the courses selected.

### Requirements for the Master's Degree

*General Requirements:* See the Graduate Division.

The student must demonstrate linguistic capacity in a language other than English in one of the following ways. (a) Pass the Educational Testing Service language examination in a European language with a score of 500 or higher. (b) Take three quarter-length courses (12 units) in an African language. These courses will not count toward the nine courses required for the degree. (c) Pass a departmental examination in a language not offered through the Educational Testing Service. (d) Prove that the student is a native speaker of an African or European language. (e) Prove the student majored in a foreign language or that he completed five courses in a foreign language with a B average as an undergraduate, and (f) Prove that the student has a Foreign Service Institute rating of 3 or better in an African or European language.

Students whose first language is other than English may petition the Graduate Advisor for a waiver of the language requirement.

*Course of Study:* A minimum of nine courses dealing with Africa in at least three disciplines. Of these, five or more must be at the graduate level (200 series). A student in the Master's Program must offer a major and a minor field. Major field concentration is defined as a minimum of four courses, of which two must be at the graduate level; minor field concentration is defined as a minimum of two courses, at least one of which must be at the graduate level. A student may, with the consent of the graduate adviser, offer methodology courses or contrastive courses for purposes of completing his major or minor fields of concentration. The student will be held responsible for both the major and minor fields in his final examination sequence for the M.A. degree. As a third discipline, a student will be expected to take African Languages 190 (Survey of African Languages) or a survey course on Africa in a field outside his major and minor areas of concentration.

All students will be required to take at least one course in the History 125 series. This course may not be used to satisfy the minimum course requirements for the Major, Minor, or Third Area disciplines, but may count amongst the nine courses required by the University for the Master of Arts degree.

*Course Limitations:* (1) No more than one independent graduate study course (596) may apply toward the minimum of nine courses required for the M.A. degree, except by permission of the Graduate Adviser; a second 596, when permitted, may not be applied toward the minimum of five graduate courses required for the degree; (2) No more than one course graded on an S/U basis may be counted toward the minimum of nine courses required for the M.A. degree, except by permission of the Graduate Adviser.

*Qualifying Examination:* Students must pass a written comprehensive qualifying examination in the major and minor disciplines. This examination must be prepared and graded by a committee consisting of at least three faculty members at least two of whom are in the student's major department. It is the student's responsibility to make arrangements for this examination with faculty members in the appropriate department. Students should have these arrangements completed by the middle of their second quarter in residence. Any student who fails the written examination will be allowed to retake it only with the written consent of the graduate adviser and major field examiners.

*Oral Examination:* The normal presumption is that an oral examination will be held. This oral examination may be waived if, in the view of the qualifying examination committee, it would be unnecessary.

The following courses pertaining to Africa are offered by the departments listed. With the approval of the Committee, other related courses may be included in a student's program.

**Anthropology** 107A-107B. Introduction to African Societies and Modes of Thought.

113. Civilizations of Sub-Saharan Africa.

141. Social and Psychological Aspects of Myth and Ritual.

143. The Individual in Culture.

148. Personality and Social Systems.

152. Traditional Political Systems.

208. African Cultures.

258. Selected Topics in African Cultures.

261. Selected Topics in Ethnology.

262. Special Topics in Social Anthropology.

263. Selected Topics in Cultural Anthropology.

269. Selected Topics in Economic Anthropology.

M294A. Seminar in Ethnographic Film.

M294B-294C. Ethnographic Film Direction.

**Art** 118C. The Arts of Sub-Saharan Africa.

119A. Advanced Studies in African Art: The Western Sudan.

119B. Advanced Studies in African Art: The Guinea Coast.

119C. Advanced Studies in African Art: The Congo.

220. The Arts of Africa, Oceania and Pre-Columbian America.

**Dance** 140A. Dance of Africa.

171B. Dance of Ghana.

226A-226B-226C. Dance Expressions in Selected Cultures.

**Economics** 110. Economic Problems of Underdeveloped Countries.

111. Theories of Economic Growth and Development.

112. Policies for Economic Development.

211. Economic Growth: Measurement and Theory.

212. Economic Development of Underdeveloped Areas: Theory and Policy.

596. Individual Study (Africa).

**Education** 204A. Schooling in Comparative Perspective.

204B. Introduction to Comparative Education.

253A. Current Problems in Comparative Education.

253B. Seminar: African Education.

- English** 114. World Literatures in English.  
250K. Contrasting Analysis of English and Other Languages (Seminar).  
271. Studies in African Literature in English.
- French** 121A. Franco-African Literature.  
221A. Introduction to the Study of French African Literature.  
221B. French-African Literature of Madagascar and Bantu Africa.  
221C. French-African Literature of Berber-Sudanese and Arabo-Islamic Africa.  
257A-257B. Studies in the French-African Literature.
- Geography** 188. North Africa.  
189. Middle and Southern Africa.  
288. Seminars in Regional Geography: Northern Africa.  
289. Middle and Southern Africa.
- History** 125A-125B-125C. History of Africa.  
126A-126B. History of West Africa.  
127A-127B. History of East and Central Africa.  
128A-128B. History of Southern Africa.  
129. History of Northeast Africa.  
133A-133B. History of North Africa from The Moslem Conquest.  
135A. Introduction to Islamic Culture.  
158A-158B. The British Empire Since 1783.  
199. Special Studies in History (Africa).  
230N. Advanced Historiography (Africa).  
240N. Topics in History (Africa).  
264A-264B. Seminar in British Empire History.  
265A-265B. Seminar in African History.  
267A-267B. Seminar in Near Eastern History.  
596. Directed Studies.
- Linguistics** 220. Linguistic Areas (Africa).  
225. Linguistic Structures.  
*African Languages* 101A-101B-101C. Elementary Swahili.  
102A-102B-102C. Intermediate Swahili.  
103A-103B-103C. Advanced Swahili.  
104A-104B-104C. Elementary Luganda.  
105A-105B-105C. Elementary Sotho.  
106A-106B-106C. Intermediate Sotho.  
107A-107B-107C. Elementary Zulu.  
108A-108B-108C. Intermediate Zulu.  
109A-109B-109C. Elementary Xhosa.  
110A-110B-110C. Intermediate Xhosa.  
111A-111B-111C. Elementary Yoruba.  
112A-112B-112C. Intermediate Yoruba.  
113A-113B-113C. Elementary Igbo.  
114A-114B-114C. Intermediate Igbo.  
115A-115B-115C. Elementary Twi.  
121A-121B-121C. Elementary Fula.  
131A-131B-131C. Elementary Bambara.  
132A-132B-132C. Intermediate Bambara.  
133A-133B-133C. Advanced Bambara.  
141A-141B-141C. Elementary Hausa.  
142A-142B-142C. Intermediate Hausa.  
143A-143B-143C. Advanced Hausa.  
150A-150B-150C. African Literature in English Translation.  
190. Survey of African Languages.  
192. Comparative Studies in African Languages.  
199. Special Studies in African Languages.  
201A-201B. Comparative Niger-Congo.  
202A-202B-202C. Comparative Bantu.  
270. Seminar in African Literature.  
596. Directed Studies.
- Music** 140A-140B-140C. Musical Cultures of the World.  
143A-143B. Music of Africa.  
190A-190B-190C. Proseminar in Ethnomusicology.  
255. Seminar in Musical Instruments of the Non-Western World.  
280. Seminar in Ethnomusicology.  
287. Seminar in African Music.
- Near Eastern Languages**  
*Arabic* 1A-1B-1C. Elementary Arabic.  
102A-102B-102C. Intermediate Arabic.  
103A-103B-103C. Advanced Arabic.  
111A-111B-111C. Spoken Arabic.  
130A-130B-130C. Classical Arabic Texts.  
140A-140B-140C. Modern Arabic Texts.  
150A-150B. Survey of Arabic Literature in English.  
199. Special Studies in Arabic.  
*Berber Languages* 101A-101B-101C. Elementary Berber.  
102A-102B-102C. Advanced Berber.  
120A-120B-120C. Introduction to Berber Literature.  
130. The Berbers.  
199. Special Studies in Berber Languages.  
*Semitics* 101A-101B-101C. Elementary Amharic (Modern Ethiopic).  
102A-102B-102C. Advanced Amharic (Modern Ethiopic).  
201A-201B-201C. Old Ethiopic.  
202A-202B-202C. Reading in Old Ethiopic Literature.  
209A-209B-209C. Comparative Study of the Ethiopian Languages.  
280A-280B-280C. Seminar in Comparative Semitics.  
290A-290B-290C. Comparative Morphology of the Semitic Languages.  
**Political Science** 139A-139Z. Special Studies in International Relations.  
165. Government and Politics in North Africa.  
166A-166B-166C. Government and Politics in Sub-Saharan Africa.  
167. Ideology and Development in World Politics.  
250E. African Studies.  
250K. North African Studies.  
271. Seminar in Political Change.  
596. Directed Individual Study or Research (Africa).
- Public Health** 104. Human Disease and Public Health.  
150. Infectious Diseases and Public Health.  
193. Nutrition and Health.  
198. Health Problems and Programs in Africa.  
214. Infectious and Tropical Disease Epidemiology.  
216A. Introduction to the Ecology of Exotic Diseases.  
216B. Viral Diseases of Man.  
218A-218B. Protozoal Diseases of Man.  
272. Child Health in Disadvantaged Areas.  
290F. Special Group Studies in Maternal and Child Health.  
290Q. Special Group Studies in Infectious and Tropical Diseases.
- Sociology** 130. Social Processes in Africa.  
140. Political Sociology.  
235. Social Structure and Social Movements.  
255A-255B. Systematic Sociological Theory.  
258. Sociology of Religion.  
272. Topics in Political Sociology.  
596. Directed Individual Study and Research in Sociology (Africa).
- Theater Arts** 102E. Theater of Non-European World.  
106C. History of African, Asian and Latin American Film.  
M209C. Seminar in Ethnographic Film.
- Urban Planning** 233A-233B. Spatial Organization and Planning.  
234. Seminar in Spatial Development Policy.  
235A-235B. Urbanization and National Development.  
M265A-M265B. Ethnographic Film Direction.
- 16** John D. Schlag, M.D., *Professor of Anatomy*.  
**16** José P. Segundo, M.D., *Professor of Anatomy*.  
G. Douglas Silva, F.D.S., M.R.C.S., *Professor of Dentistry and Medicine*.  
Reidar F. Sognnaes, Ph.D., D.M.D., *Professor of Oral Biology and Anatomy*.  
William K. Stell, M.D., Ph.D., *Professor of Ophthalmology and Anatomy*.  
**16** M.B. Sterman, Ph.D., *Professor of Anatomy and Physiological Psychology in Residence*.  
Bernard Towers, M.B., Ch.B., (Liv.), M.R.C.S., L.R.C.P., *Professor of Pediatrics and Anatomy*.  
Jaime R. Villablanca, M.D., *Professor of Biobehavioral Sciences and Anatomy in Residence*.  
Charles D. Woody, M.D., *Professor of Psychiatry and Anatomy in Residence*.  
Richard W. Young, Ph.D., *Professor of Anatomy*.  
**16** Mary A.B. Brazier, Ph.D., *Emeritus Professor of Anatomy and Physiology in Residence*.  
**16** H.W. Magoun, Ph.D., *Emeritus Professor of Anatomy*.  
Richard E. Ottoman, M.D., *Emeritus Professor of Radiology and Anatomy*.  
Anthony M. Adinolfi, Ph.D., *Associate Professor of Anatomy and Psychiatry*.  
George W. Bernard, D.D.S., Ph.D., *Associate Professor of Dentistry (Oral Biology) and Anatomy*.  
John H. Campbell, Ph.D., *Associate Professor of Anatomy*.  
**16** Emilio E. Decima, M.D., *Associate Professor of Anatomy*.  
Jean S. de Vellis, Ph.D., *Associate Professor of Anatomy*.  
**16** Rafael Elul, M.D., *Associate Professor of Anatomy*.  
Jerome Engel, M.D., Ph.D., *Associate Professor of Neurology and Anatomy*.  
Ronald M. Harper, Ph.D., *Associate Professor of Anatomy in Residence*.  
**16** Anna N. Taylor, Ph.D., *Associate Professor of Anatomy in Residence*.  
**16** Emery G. Zimmermann, M.D., Ph.D., *Associate Professor of Anatomy (Vice Chairman for Graduate Affairs)*.  
Suzanne M. Bawin, Ph.D., *Assistant Research Anatomist*.  
**16** Michael Chase, Ph.D., *Professor of Physiology in Residence, and Research Anatomist*.  
Earle E. Crandall, M.D., Ph.D., F.A.C.S., *Assistant Clinical Professor of Anatomy*.  
Ejlen R. Dirksen, Ph.D., *Acting Associate Professor of Anatomy*.  
**16** Thelma Estrin, Ph.D., E.E., *Research Engineer in Anatomy and Senior Lecturer*.  
Deborah B. Farber, Ph.D., *Associate Research Anatomist*.  
Vladimir Golovchinsky, M.D., *Assistant Research Anesthesiologist*.  
Stanley J. Gross, M.D., *Adjunct Professor of Anatomy*.  
Frances S. Grover, Ph.D., *Adjunct Professor of Anatomy*.  
Raymond J. Last, M.D., F.R.C.S., *Visiting Professor of Anatomy*.  
Barbara D. Leake, Ph.D., *Assistant Research Anatomist*.  
Carlos A.E. Lemmi, Ph.D., *Adjunct Assistant Professor of Anatomy*.  
**16** Robert D. Lindsay, Ph.D., *Associate Research Anatomist*.  
**16** Rafael Lorente de Nó, M.D., *Visiting Professor of Anatomy and Surgery*.  
James F. McGinnis, Ph.D., *Adjunct Assistant Professor of Anatomy and Assistant Research Biologist*.  
Dennis J. McGinty, Ph.D., *Adjunct Associate Professor of Psychology and Associate Research Anatomist*.  
Rochelle J. Gavalas Medici, Ph.D., *Associate Research Anatomist*.  
Samuel L. Moise, Ph.D., *Associate Research Anatomist*.  
Tetsu Nagata, Ph.D., *Assistant Research Anatomist*.  
**16** Hiroharu Noda, M.D., Ph.D., *Adjunct Professor of Physiology and Anatomy*.  
William T. O'Day, Ph.D., *Assistant Research Anatomist*.  
Anselmo R. Pineda, M.D., *Associate Clinical Professor of Anatomy*.  
Madeleine L.H. Schlag-Rey, Ph.D., *Associate Research Anatomist*.  
Sant S. Sekhon, Ph.D., *Associate Research Anatomist*.  
James R. Soares, Ph.D., *Assistant Research Anatomist*.  
Michael Stevenson, Ph.D., *Assistant Research Anatomist*.  
**16** Donald O. Walter, Ph.D., *Adjunct Associate Professor of Psychiatry and Associate Research Anatomist*.  
Alfred Weinstock, D.D.S., Ph.D., *Clinical Professor of Dentistry and Anatomy*.  
Richard K. Wright, Ph.D., *Assistant Research Anatomist*.  
**16** Wanda Wyrwicka, Ph.D., *Research Anatomist*.
- Admission to Graduate Status**  
Students intending to take advanced degrees in the Department of Anatomy must have a bachelor's degree in physical or biological science or in the premedical curriculum. Introductory courses in zoology and vertebrate embryology are required, as well as one year of general and organic chemistry and one year of college physics. Deficiencies in these courses must be made up before the student is admitted. Strongly recommended are courses in comparative anatomy, microscopic technique, elementary statistics, philosophy of science, and scientific German and French.
- Requirements for the Master of Science Degree**  
The student seeking to enter the profession of anatomy must apply himself directly to attaining the Ph.D. degree. The Department offers the Master of Science degree only for the restricted purposes of individuals whose major interest lies in allied fields (paramedical subjects, postgraduate medicine or dentistry).  
Candidates may elect either the thesis or examination plan. If the latter, the candidate must demonstrate a knowledge of general principles of anatomy, as well as competence in a restricted area of science. The following courses are required of all master's candidates: two of the major anatomy courses chosen from Anatomy 101, 206A-206B and 207A-207B; one departmental seminar; other courses as necessary to the candidate's particular program. No foreign language is required.

**Requirements for the Doctor of Philosophy Degree**

The following courses are required: Anatomy 101, 206A-206B, 207A-207B; Biochemistry; Mammalian Physiology; at least two different departmental seminars; additional courses selected by the student and his adviser as necessary to his program.

The student must demonstrate the ability to read two foreign languages. The first should be selected from a choice of German or French, but Russian and Spanish may be accepted upon departmental approval. The second language may be any modern language, provided the student can demonstrate its particular value to his area of study. An individual course of study may be substituted for the second language upon departmental approval. The student must complete successfully both written and oral qualifying examinations; gain teaching experience in gross anatomy and one other major anatomy course; present and defend his dissertation on his research. His total program should not require more than four years to complete.

**Upper Division Courses**

**101. Microscopic Anatomy. (2 courses)** Four three-hour sessions per week in the fall quarter. Prerequisite: enrollment in School of Medicine or consent of the instructor. Microscopic study of the tissues and organs of the human body.

Ms. Dirksen and the Staff

**102A-102B. Gross Anatomy of the Human Body. (½ course, 2 courses)** (Formerly numbered 100 and 102.) One hour of lecture and four of lab per week in the winter quarter; four hours of lecture and twelve of lab per week in the spring. Prerequisite: enrollment in School of Dentistry or consent of the instructor. Course 102A is prerequisite to 102B. This course is offered on an In Progress basis, which requires students to complete the full two-quarter sequence, at the end of which time a grade is given for all quarters of work. Systemic and topographical human anatomy with dissection of the human cadaver. Emphasis on head and neck.

Mr. Adinolfi and the Staff

**M103A-103B. Basic Neurology. (½ course, ¾ course)** (Same as Physiology M103A-103B.) Two four-hour sessions and one three-hour session per week in the winter quarter; two two-hour sessions and two three-hour sessions per week in the spring quarter. Prerequisite: Medical school status or consent of instructor. Lectures, conferences, demonstrations and laboratory procedures necessary to an understanding of the function of the human nervous system. This course will be "In Progress" grading. 103A will be given the last three weeks of the Winter quarter; 103B will be given the entire Spring quarter.

Mr. Schlag and the Staff

**104. Mammalian Histology. (1½ courses)** Three three-hour sessions per week in the fall quarter. Prerequisite: enrollment in School of Dentistry or consent of the instructor. Lectures, demonstrations and laboratories dealing with the structural organization of tissues and organs at the microscopic level.

Mr. Campbell and the Staff

**105A-105B. Gross Anatomy.** See 207A-207B. *Gross Anatomy.*

**106. Mammalian Neurology.** One one-hour session and one four-hour session per week in the winter quarter. Prerequisite: enrollment in School of Dentistry or consent of the instructor. Lectures, demonstrations and laboratories dealing with the fundamental structure and functional organization of the nervous system.

Mr. Kruger and the Staff

**Graduate Courses**

**201. Structure and Function of Cells and Tissues. (½ course)** One hour of lecture and one of discussion per week in the fall quarter. Prerequisite: course 101 (which may be taken concurrently) and consent of instructor. Current topics on structural and functional aspects of microscopic anatomy. Graded on an S/U basis. May be repeated for credit. The Staff

**M206A-206B. Neurosciences: The Introductory Course for Graduate Students. (1½ courses, 1¾ courses)** (Same as Neurosciences M206A-206B.) Two hours of lecture and two of lab per week in the winter quarter; five hours of lecture and two of lab per week in the spring quarter. Prerequisite: a course (or equivalent) in basic and/or general physiology such as Biology 171 or Physiology 101 or consent of instructor. This course is offered on an In Progress basis, which requires students to complete the full two-quarter sequence, at the end of which time a grade is given for all quarters of work. Introductory course in the basic principles of the nervous system for graduate students as a prerequisite to more advanced courses. Fundamental approaches to neuroanatomy (winter quarter), neurophysiology and the brain mechanisms for behavior (spring quarter) will be stressed.

Mr. Decima, Mr. Scheibel and the Staff

**207A-207B. Gross Anatomy. (2 courses, 1 course)** Four four-hour sessions per week in the fall quarter; one three-hour, one four-hour and one five-hour session per week in the winter quarter (first seven weeks). Prerequisite: consent of the instructor. This course is offered on an In Progress basis, which requires students to complete the full two-quarter sequence, at the end of which time a grade is given for all quarters of work. Lectures and dissection of the human body. Medical students must enroll for Anatomy 105A-105B.

Mr. Sawyer and the Staff

**208A-208B. Electronics for Neuroscientists.** Two hours of lecture and four of lab per week in the fall and winter quarters. Prerequisite: consent of instructor. To develop an understanding of electronic methods used in neuroscience. Basic principles of passive networks, operational amplifiers, semiconductor theory, digital logic, waveform generation, signal conditioning, data acquisition methods and neurophysiological instrumentation systems will be treated. S/U grading only.

Ms. Estrin and the Staff

**209. Fine Structure and Function in the Central Nervous System. (½ course)** Two one-hour sessions per week in the fall quarter of even-numbered calendar years. Prerequisite: Basic Neurology. Lectures and discussion of the fine structure of selected areas of the central nervous system, together with related electrical and biochemical patterns of activity.

Mr. Scheibel

**210A-210B. Inflammatory Components in Neoplasia and Immunity. (½ course)** One two-hour session per week in the Fall and Winter quarters. Prerequisite: consent of the instructor(s). Fall quarter sessions will consist of one hour lectures on the various components of inflammation and other non-specific systems and their interrelation with neoplasia and specific immune phenomena. Current research literature will be discussed during the second hour. The Winter quarter sessions will consist of presentations by invited guests involved in research in the specialty areas covered in the Fall quarter. Organized discussions will follow these presentations.

Mr. Lemmi and the Staff

**211. Anatomical and Physiological Substrates of Behavior. (½ course)** One two-hour session per week in the fall quarter. Prerequisite: Anatomy 101, Physiology 101, Physiology 102. This course is aimed at meeting the needs of graduate students in anatomy and physiology by presentation of material on behavioral neurophysiology not currently available in such courses as Basic Neurology 103. It includes detailed neuroanatomy and neurophysiology of cerebral systems primarily involved in processes of alerting, focusing attention, learning and recall.

The Staff

**212. Neural Mechanisms of Inhibition. (½ course)** Two hours per week in the fall quarter of even-numbered calendar years. Prerequisite: Basic Neurology. A systematic consideration of inhibitory processes in the nervous system from the synapse to integrated behavior. Special attention is given to the recent concepts of inhibition at the behavioral level and their implications for learning, emotion and mental health.

Mr. Sterman

**213. Evolution and the Structure of Biomolecules. (½ course)** One two-hour session per week in the spring quarter. Prerequisite: consent of instructor and upper level courses in two of the following subjects: genetics, evolution, biochemistry. Interpretation of pattern in molecular organization of living organisms in terms of evolution, and considerations of the impact of such pattern on evolutionary theory.

Mr. Campbell

**214. Data Acquisition in Behavioral Neurophysiology.** Two hours per week in the winter quarter of odd-numbered calendar years. Prerequisite: course 211. Neurophysiological techniques in behavioral studies; data acquisition systems and computer analysis of neurophysiological data.

Mr. Harper

**215. Biopotentials in Volume Conductor. (1/2 course)** Two hours of lecture per week in the winter quarter of even-numbered calendar years. This course will provide medical and graduate students with the theoretical background for interpretation of biopotentials recorded through volume conductor, such as EEG, ERG, EMG, and ECG.

Mr. Elul

**216. Microphysiology of EEG and Evoked Potentials. (½ course)** Two hours of lecture per week in the winter quarter of odd-numbered calendar years. Prerequisite: course 215 or consent of the instructor. The cellular processes underlying generation of spontaneous brain activity (EEG) and evoked potentials will be studied, as well as the statistical laws controlling summation of individual cellular activities which form the potentials recorded by gross electrodes.

Mr. Elul

**221. Gross Anatomy of the Head and Neck.** Prerequisite: course 102A-102B or 105A-105B or 207A-207B. Two hours of lecture, one of discussion and six of lab per week. Intensive and advanced study of the head and neck with relevant study of the thorax and axilla. Special emphasis is placed on applied anatomy and on understanding basic organizational concepts. This course is intended for those who anticipate research or professional school teaching. Enrollment limited to 12. Offered in the spring quarter only of even-numbered years.

Mr. Maxwell

**M224. Structure and Chemistry of Connective Tissue. (½ course)** (Same as Oral Biology M224.) Prerequisite: Histology, Biochemistry. This seminar course is designed for graduate students in dentistry or basic science. The objective of the course is to provide students with fundamental information on the fine structure and the chemical composition of bone, dentin, cementum, cartilage, cells of connective tissue in general, as well as enamel. Emphasis will be placed on the biosynthesis of collagen, non-collagenous proteins and glycoproteins, and glycosaminoglycans (mucopolysaccharides). The possible roles of the cellular and non-cellular elements in the process of biological mineralization will also be discussed. Correlation of biological processes to periodontal pathology will be stressed when possible.

Mr. Weinstock and the Staff

**M232. Vertebrate Visual System. I: The Retina.** (Same as Ophthalmology M232.) Two hours of lecture and two of discussion per week. Prerequisite: microscopic anatomy and neurophysiology

and consent of instructor. The functional organization of the retina is considered, with emphasis on cellular structure and electrophysiology. Topics will be selected from: light absorption and generation of photoreceptor response; synaptic mechanisms and pathways for analysis of form, color, etc.; coding in optic nerve fibers. May be repeated for credit with departmental approval.

Mr. Stell and the Staff (Yr.)

**251. Problems in Developmental and Comparative Immunology. (½ course)** One two-hour session per week in the winter quarter. Prerequisite: consent of the instructor. Review of current literature emphasizing early development and evolution of immune competence.

Mr. Cooper

**252. Seminar on Basic and Quantitated Neurophysiology. (½ course)** Prerequisite: consent of the instructor. One 90-minute session of lecture and one of discussion per week. Lecture series on basic neurophysiology. Early lectures by invited specialists on their specific fields. Later lectures one per student and on a topic chosen and prepared in collaboration with the instructor. Offered in the spring quarter only of even-numbered years.

Mr. Segundo

**253. Communication and Coding in Nervous Systems.** Two 90-minute and one two-hour sessions per week. Prerequisite: consent of the instructor. Presentation, discussion and critique of efforts to quantify neuronal function, where the essence of the mathematics is expressed in qualitative and physiologically meaningful terms. For example, stability, neurons as analyzers of spike trains, identification of synaptic operators. Offered in the spring quarter only of odd-numbered years.

Mr. Segundo

**255A-255D. Seminar in Endocrinology. (½ course each)** One two-hour lecture per week in the winter and spring quarters. Prerequisite: consent of the instructor.

Mr. Sawyer and the Staff

**256. Seminar in Cell Structure and Function. (½ course)** One hour of lecture and one of discussion per week in the winter and spring quarters. Prerequisite: consent of instructor. Selected topics in cell biology will be reviewed, emphasizing those areas which are of current interest. This will include an analysis of the various techniques being used to study the cell.

Ms. Dirksen and the Staff

**257. Journal Reviews in Experimental Anatomy. (½ course)** One two-hour session per week. Research frontiers in various fields of experimental anatomy are reviewed and mutually discussed by graduate students and professors.

The Staff (Yr.)

**258. Seminars in Neuroscience. (½ course)** Two hours per week in the fall quarter of odd-numbered, and winter quarter of even-numbered calendar years. Prerequisite: a course in basic neurology and course 209. Topics of current interest or ongoing research projects are presented, and both content and method of presentation are examined. May be repeated for credit.

Mr. Scheibel

**265. Evolution of Cancer. (½ course)** Two hours of lecture or discussion per week during the winter quarter. Prerequisite: consent of the instructor. Review of current literature emphasizing the appearance of tumors and neoplasms in representative invertebrates, fishes, amphibians and reptiles. Theories of cancer development will be treated from the evolutionary viewpoint.

Mr. Cooper

**495. Communicating Scientific Information. (½ course)** Two hours of lecture per week in the winter quarter. Prerequisite: approval of UCLA Graduate Adviser and Graduate Dean. Student papers and lectures serve as the basis for group discussions of the art and science of effective written and oral communication of scientific information. May be repeated for credit. The Staff

**501. Cooperative Program. (½ to 2 courses)** Prerequisite: approval of UCLA Graduate Adviser and Graduate Dean. Approval of host campus Instructor, Department Chairman and Graduate Dean. The course is used to record enrollment of UCLA students in courses taken under cooperative arrangements with neighboring institutions. To be graded S/U.

**Individual Study and Research**

**596. Directed Individual Study or Research. (½ course to 3 courses)** The Staff

**597. Preparation for the Master's Comprehensive Examination or the Doctoral Qualifying Examination. (½ course to 3 courses)** The Staff

**598. Thesis Research for Master's Candidates. (½ course to 3 courses)** The Staff

**599. Dissertation Research for Ph.D. Candidates. (½ course to 3 courses)** The Staff

**MEDICAL HISTORY DIVISION**

Franklin D. Murphy, M.D., Sc.D., *Professor of Medical History.*  
Mary A.B. Brazier, Ph.D., *Emeritus Professor of Anatomy and Physiology in Residence.*  
John Field, II, Ph.D., *Emeritus Professor of Medical History and Physiology.*  
L.R.C. Agnew, M.D., *Associate Professor of Medical History.*  
Robert G. Frank, Jr., Ph.D., *Assistant Professor of Medical History and History.*  
Ynez V. O'Neill, Ph.D., *Assistant Professor of Medical History in Residence.*

Louise M. Darling, M.A., *Lecturer in Medical History and Library and Information Science and Associate University Librarian.*  
 Elizabeth R. Lomax, M.D., Ph.D., *Assistant Research Medical Historian.*  
 Frances Keddie O'Malley, M.D., *Research Medical Historian.*

### Upper Division Courses

**107B. Historical Development of Medical Sciences.** Three hours per week in the spring quarter. The major contributions of medicine and medical personalities from the 5th century B.C. to the 19th century A.D. Illustrated lectures and required readings from selected texts. Mr. Agnew, Ms. O'Neill

**M108A-108B. History of Biological Sciences.** (Same as History M106E-106F.) Three hours per week in the fall and winter quarters. Prerequisite: upper division standing. M108A: Biological sciences from ancient times to the early nineteenth century. M108B: Biological sciences from the early nineteenth century to the mid-twentieth century. Mr. Frank

**110. Medicine and Society in 20th Century America.** Three hours per week in the spring quarter. Prerequisite: consent of instructor. Preference given to Health Sciences students. Reading and conference course on social aspects of the growth of medical care, education, and research in the United States since the late nineteenth century. Mr. Frank

**M197. The Biomedical Sciences in the 19th Century.** (Same as History M106G.) Three hours per week in the spring quarter. Readings and discussions. Prerequisite: consent of instructor. Topics in the growth of the biomedical sciences and their institutions in Europe and America, from the French Revolution to approximately 1900. Mr. Frank

### Graduate Courses

**240A-240B. History of Medical Sciences.** (½ course each) One hour per week in the fall and winter quarters. Survey of the development of scientific and medical thought from ancient times to the present. The Staff

**241A-241B. History of Clinical Sciences.** (½ course each) One hour per week in the fall and winter quarters. Survey of the development of the clinical specialties and comparison of medical practice in western civilization with that developed in other parts of the world. Mr. Agnew

**242. History of Pathology.** (¼ course) One hour per week in the fall quarter. Survey of the history of pathology and related sciences from antiquity to the 20th century, tracing the development of pathological theory, practice, organization and education and comparing them to current practice. Mr. Agnew

**243. History of Surgery.** (¼ course) One hour per week in the winter quarter. Survey of the history of surgery and related sciences from antiquity to the 20th century, tracing the development of surgical theory, practice, organization and education and comparing them to current practice. Mr. Agnew

**244. History of American Medicine.** (¼ course) One hour per week in the spring quarter. Survey of the history of medicine in the United States from the colonial period to the present. Mr. Agnew

**246. History of Neurophysiology.** (½ course) Eight one-hour lectures in the winter quarter, covering the development of experimental neurophysiology from its scientific roots in the 17th century, through the recognition in the 18th century of the excitability of the nervous system, to the use of this characteristic for revealing the functions of spinal cord and brain. Ms. Brazier, Ms. Lomax

**250. History of Medical Psychology.** (½ course) One hour per week in the winter quarter. An examination of the themes underlying modern mental health theories. Beginning with a review of contemporary thinking, the lectures focus upon the various factors shaping present concepts of mental disorders, and provide a framework for the understanding of current issues. Ms. Lomax, Ms. O'Neill

### Individual Study and Research

**596. Directed Individual Studies in Medical History.** Investigation of subjects in medical history selected by students with the advice and direction of the instructor in the fall, winter and spring quarters. Individual reports and conferences. The Staff

**599. Research for and preparation of the Doctoral Dissertation.** (1 to 2 courses) Investigation of materials relative to the doctoral dissertation, their evaluation and written presentation. The Staff

Henry B. Nicholson, Ph.D., *Professor of Anthropology.*  
 Wendell H. Oswalt, Ph.D., *Professor of Anthropology.*  
 Hiroshi Wagatsuma, Ph.D., *Professor of Anthropology.*  
 Johannes Wilbert, Ph.D., *Professor of Anthropology.*  
 Bobby J. Williams, Ph.D., *Professor of Anthropology.*  
 Ralph L. Beals, Ph.D., *Emeritus Professor of Anthropology.*  
 Joseph B. Birdsell, Ph.D., *Emeritus Professor of Anthropology.*  
 Hilda Kuper, Ph.D., *Emeritus Professor of Anthropology.*  
 William A. Lessa, Ph.D., *Emeritus Professor of Anthropology.*  
 Christopher Donnan, Ph.D., *Associate Professor of Anthropology.*  
 Allen W. Johnson, Ph.D., *Associate Professor of Anthropology.*  
 Donald G. Lindburg, Ph.D., *Associate Professor of Anthropology.*  
 Claudia Mitchell-Kernan, Ph.D., *Associate Professor of Anthropology.*  
 Philip L. Newman, Ph.D., *Associate Professor of Anthropology.*  
 Dwight Read, Ph.D., *Associate Professor of Anthropology.*  
 James R. Sackett, Ph.D., *Associate Professor of Anthropology (Chairman of the Department).*  
 Robert Byles, Ph.D., *Assistant Professor of Anthropology.*  
 Timothy Earle, Ph.D., *Assistant Professor of Anthropology.*  
 Fadwa El Guindi, Ph.D., *Assistant Professor of Anthropology.*  
 Gail E. Kennedy, Ph.D., *Assistant Professor of Anthropology.*  
 Eugene L. Mendonsa, Ph.D., *Assistant Professor of Anthropology.*  
 Carlos G. Velez, Ph.D., *Assistant Professor of Anthropology.*

C. Rainer Berger, Ph.D., *Professor of Anthropology, Geography and Geophysics.*

William O. Bright, Ph.D., *Professor of Linguistics and Anthropology.*  
 Pamela J. Brink, Ph.D., *Associate Professor, School of Nursing and Anthropology.*

Bernard G. Campbell, Ph.D., *Adjunct Professor of Anthropology.*  
 Carl William Clewlow, Jr., Ph.D., *Lecturer in Anthropology.*

Robert B. Edgerton, Ph.D., *Professor of Anthropology and Psychiatry.*  
 Marija Gimbutas, Ph.D., *Professor of European Archaeology.*  
 John G. Kennedy, Ph.D., *Associate Professor of Psychiatry and Anthropology in Residence.*

Lewis Langness, Ph.D., *Professor of Anthropology and Psychiatry in Residence.*

Douglas Price-Williams, Ph.D., *Professor of Anthropology and Psychiatry in Residence.*

Ralph H. Turner, Ph.D., *Professor of Sociology and Anthropology.*  
 Thomas S. Weisner, Ph.D., *Assistant Professor of Anthropology and Psychiatry.*

### Undergraduate Program

The undergraduate program in anthropology is intended to convey an informed appreciation of the varieties of human culture, development and experience.

The faculty represents interests in archaeology, physical anthropology and sociocultural anthropology, and these traditional divisions are crossedcut by interests in ecology and social adaptation, individual behavior, and social organization in relation to cognition and communication.

In order to take full advantage of the departmental program, the student is urged to plan his program around his own interests with the help of a counselor, to include not only required courses, but also independent studies and challenging and useful courses in related fields.

The department has a regular staff counselor to aid students in dealing with routine requirements. In addition, undergraduates are encouraged to make the personal acquaintance of any faculty members whose work is of interest to them for specialized guidance. Undergraduate students may also consult representatives of the Anthropology Undergraduate Student Association for additional guidance.

The undergraduate and graduate student associations are integral to the departmental program and organization. Through them students have the opportunity to take a direct part in departmental administration, select speakers and programs, and produce publications including student evaluations of all courses taught in the department. Undergraduate and graduate students are encouraged to acquaint themselves with their respective organizations and with the departmental library, museum, reading and typing rooms, and the Archaeological Survey program.

### Preparation for the Major

*Required:* Anthropology 1A-1B, 5A, 5C. All courses taken in preparation for the major must be taken on a letter grade basis.

### Foreign Language

The department requires a demonstration of proficiency in one foreign language to insure that its graduates have the communication skills and cultural insights offered by such proficiency. Any spoken language is acceptable as is any extinct language with a substantial body of literature. Proficiency is equated with the skill level to be attained through course five in a language. Specifically, this requirement may be met in one of two ways. (1) By completion of the fifth quarter of one foreign language or (2) by a demonstration of foreign language proficiency at level 5. Courses taken to satisfy the foreign language requirement may be taken on a Pass/Not Pass basis and may be applied toward satisfaction of the College of Letters and Science breadth requirements. For additional information, consult the department counselor.

### The Major

*Required:* (1) ten upper division courses or their equivalent including at least one course from 6 of the 8 groups listed in the catalog under Anthropology; and (2) four upper division courses from one or more of the following departments: economics, geography, history, linguistics, political science, psychology, sociology. Two of the four courses required outside of the department may be upper division CED courses. (Courses from other departments related to the student's specialization may be applied by petition.) All of the courses taken to satisfy major requirements must be taken on a letter grade basis.

Students intending to continue for a graduate degree are advised to take Anthropology 182A-182B, at least one course in field training (Group VII) and Anthropology 173A-173B or its equivalent.

Students must also meet the requirements of the University and the College of Letters and Science for graduation.

### Graduate Requirements

All students should obtain a detailed statement of the graduate program from the graduate secretary, Department of Anthropology, 341 Haines Hall.

The department offers the M.A. and Ph.D. degrees. For the Ph.D. degree, all students are required to obtain research experience and a thorough background in both substantive and methodological areas. The department offers specialized training in archaeology, ethnology, linguistics and physical anthropology, and encourages the definition of interests which combine various aspects of these subfields with each other or with areas outside anthropology.

### Admission

In addition to meeting the general graduate requirements listed elsewhere in this catalog, students are admitted to the department by an Admissions Committee. Graduate enrollment is limited and candidates will be chosen on the following bases: (1) prior scholastic performance; (2) ratings and recommendations by professors and other individuals; (3) a term paper or other research paper; and (4) scores on the Graduate Record Examination. Students may enter the program only in the Fall Quarter. Candidates are normally admitted for the Ph.D. only.

### Graduate Program and Advising

On entering the graduate program, each student will be assigned an adviser. His function will be to acquaint the student with the department and to assist him in devising an initial plan of study. By the beginning of the second quarter, the student will have formed a two-man advisory committee. This committee will assist the student in formulating a long-term plan of study developed around the student's interests which provides for those courses, seminars and research experiences that will best prepare him to implement and develop his interests. When it has been determined that the student is prepared for the Ph.D. qualifying examinations, his advisory committee will be extended to a five-man Ph.D. committee including two members from outside the department. This committee will administer the Ph.D. qualifying examinations, supervise the student's doctoral research, and administer the final oral examination after completion of the thesis.

### Requirements for the M.A. and Ph.D. degrees

**General.** A dossier developed for each student will contain materials relevant to deciding whether a student is prepared to take his qualifying examination. This material will consist of a study plan and stated objectives, all term papers, written evaluations of course and seminar work by the student's instructors, annual written evaluations by the advisory committee of progress toward stated objectives, and a research paper on a topic developed by the student in consultation with his committee. The research paper, and all other materials, will be reviewed by a third member appointed to the advisory committee in the quarter when the research paper is completed. The student's file will then be presented for full faculty review, such review normally taking place not later than the sixth quarter of residence. Students admitted to the department with an advanced degree from another department may prepare for the qualifying examinations, but may not take them until three quarters of residence have been completed.

**Language Requirement.** The student must pass the Graduate Language Examination (ETS) in one foreign language before the oral qualifying examination. Also, before taking the qualifying examination, he must pass an examination administered by his Ph.D. committee testing his knowledge of a corpus of substantive or theoretical literature relevant to his area of specialization in the same language.

**M.A. Degree.** The department does not admit candidates for the M.A. only; the M.A. degree is not required of candidates for the Ph.D. degree. However, graduate students preparing for the Ph.D. normally qualify and apply for the M.A. after satisfactory completion of a research paper and after faculty review. The research paper and the oral examination constitute a comprehensive examination.

**Ph.D. Degree.** Advancement to candidacy for the Ph.D. is dependent on passing qualifying examinations. In accordance with university regulations, the Ph.D. committee conducts both a written and an oral examination. The written examination, conducted by the departmental representatives on the committee, will be considered to be in the nature of a preparation for the oral examination. The character of the written examination will be determined by the committee, in consultation with the student, and need not consist of a closed book examination. The content of the oral examination, conducted by both departmental and non-departmental representatives on the committee, will also be determined by the committee.

## ANTHROPOLOGY

(Department Office, 341 Haines Hall)

Walter R. Goldschmidt, Ph.D., *Professor of Anthropology.*  
 James N. Hill, Ph.D., *Professor of Anthropology.*  
 Jacques Maquet, Ph.D., *Professor of Anthropology.*  
 Clement W. Meighan, Ph.D., *Professor of Anthropology.*  
 Michael Moerman, Ph.D., *Professor of Anthropology.*  
 Sally F. Moore, Ph.D., *Professor of Anthropology.*



Upon successful completion of the Qualifying Examinations and Advancement to Candidacy, the student will proceed with dissertation research. The dissertation will be an original contribution to anthropology literature, normally, but not necessarily, based upon field work. Award of the Ph.D. degree is based on the dissertation and a final oral examination.

### Lower Division Courses

**1A-1B. The Principles of Human Evolution.** Lecture, three hours; discussion, one hour. Course 1A is prerequisite to course 1B. Students cannot receive credit for both Anthropology 1A-1B and Anthropology 11. Human population biology in the conceptual framework of evolutionary processes. 1A emphasizes the genetic basis of evolution, population biology and diversity among living populations. 1B emphasizes comparative primate behavior, structural anatomy and the fossil record. These courses are required as preparation for the major. The Staff

### 5A-5C. Introduction to Cultural Anthropology.

**5A. Principles of Cultural Anthropology.** Lecture, three hours; discussion section, one hour. Course 5A is prerequisite to course 5C. Students cannot receive credit for both Anthropology 5A and Anthropology 22. The character of culture and nature of social behavior as developed through anthropological study of contemporary peoples. The Staff

**5C. Culture History.** Lecture, three hours; discussion section, one hour. The development of culture from its first beginnings to the advent of writing as developed through archaeological investigation. Courses 5A, 5C are required as preparation for the major. The Staff

**11. The Evolution of Man.** Lecture, three hours; discussion, one hour. Students cannot receive credit for 11 and 1A-1B. This course does not satisfy major requirements. A one-quarter course on the evolution of man. Emphasis is on evolutionary processes and the evolutionary past of the human species. The Staff

**M12. Human Genetics and Reproduction.** (Same as Public Health M12.) A survey for the general student considering normal and abnormal development as well as basic principles. Topics will include human genetics, human reproduction, problems of pregnancy and its outcome, birth defects, prenatal diagnosis, and genetic counseling. Emphasis is on introducing the student to facts which the informed public needs for current discussions of the "New Genetics" and scientific and ethical questions regarding reproduction and development. Mr. Sever

**22. General Cultural Anthropology.** Lecture, three hours; discussion section, one hour. This course does not satisfy major requirements. Students cannot receive credit both for Anthropology 22 and 5A, or 100. An introduction to the cultural understanding of human behavior designed for students who do not plan further work in anthropology. Stress is placed on those concepts and theories that are applicable to the everyday life and professional activities in the modern world. Examples of institutions and individual behavior of modern America are counterpointed against studies of primitive life. The Staff

### Upper Division Courses

Courses 1A-1B, 5A, 5C or upper division standing are prerequisite to all upper division courses, except as otherwise stated. All upper division courses with letter designations (A, B, etc.) may be taken independently except as otherwise stated.

## GROUP I. ETHNOGRAPHY

This group contains courses of a descriptive nature where the intent is to survey the cultural patterns of an ethnic group either diachronically or synchronically.

**102. World Ethnography.** Diversity of cultural types and commonalities of cultural systems documented through print and film. The course will also be concerned with criteria of ethnographic adequacy in each medium. The Staff

*Area Courses.* (Anthropology 103A-Anthropology 110.) Prerequisite: courses 5A, 5C, 22 or 102. Each course is a survey of native peoples and cultures in designated areas of the world. The survey will include discussions of technological, social and ideational patterns among the ethnic groups of the area. Special ethnological and theoretical problems will be covered as appropriate. Outside reading and papers may be required.

### 103A-103C. Peoples of Asia.

**103A. South Asia: Buddhist Civilization.** A study of Buddhism as basis of one of the main cultural streams of South Asia; its evolution from a system of wisdom to a religion, a way of life, and a national polity; historical background including early antecedents in India. Mr. Maquet

**103B. Southeast Asia.** Mr. Moerman

**103C. Japan.** Prerequisite: course 5A-5C or consent of instructor. An introduction into contemporary Japanese culture: its brief history, language, social organizations, values, various aspects of social changes and some psychological characteristics of the people. Mr. Wagatsuma

### 105A-105C. Peoples of Latin America.

**105A. Peoples of South America.** Mr. Wilbert

**105B. Peoples of Middle America.** The Staff

**105C. Latin American Societies.** The Staff

### 106A-106F. Peoples of North America.

**106A. Peoples of California: Ethnography.** Mr. Meighan

**106B. Peoples of California: Prehistory.** Mr. Meighan

**106C. Peoples of North America.** Mr. Oswalt

**106D-106E. Archaeology of North America.** Prerequisite: courses 5A-5C or course 22 or consent of the instructor. Course 106D is prerequisite to 106E. Prehistory of the North American Indians; the evolution of Indian societies from earliest times to (and including) contemporary Indians; approaches and methods of American Archaeology. Mr. Hill

**106F. Eskimos.** Prerequisites: upper division standing. This is a survey on historical, ethnographic, and contemporary Eskimo life stressing their importance in anthropological theory and practice. Particular emphasis is placed in Eskimo origins, technology, and modern administration. Mr. Oswalt

**106G. The Comparative Ethnography of the Hispanic Peoples in North America.** Prerequisites: course 5A or 22 or consent of instructor—primarily for upper division students. A comparative ethnography of the social and cultural adaptations of the Hispanic Peoples in North America including Mexican/Chicanos, Cubans, and Puerto Ricans, their respective social organization, economic and political institutions, sacred and secular belief systems, and expressive cultures. Each group is presented as adapting within culture complexes closely related to historical developments in the United States and thus considered as areal cultures. Linkages for each cultural group transcend national boundaries and national space so that direct and indirect historical interaction links all groups, making events in any part relevant to the Hispanic areal culture as a whole. Mr. Velez

### 107A-107B. Introduction to African Societies and Modes of Thought.

**107A. Simple Societies of Africa.** Prerequisite: upper division standing or consent of instructor. A comparative analysis of African societies and systems of thought. Social, economic, kinship, political, religious and medical institutions in societies which, in the past, lacked centralized political institutions. Students will be introduced to the classic ethnographies and current research among these African peoples in the modern world. Mr. Mendonsa, Ms. Moore

**107B. Complex Societies of Africa.** Prerequisite: upper division standing or consent of instructor. A comparative analysis of African societies and systems of thought. Social, economic, kinship, political, religious and medical institutions in societies which had indigenous centralized political institutions e.g., chiefdoms, kingdoms, states. Students will be introduced to the classic ethnographies and current research among these peoples in modern Africa, including urban centers. Mr. Mendonsa, Ms. Moore

### 108. Peoples of the Pacific.

Mr. Newman

**109. Old Stone Age Archaeology.** (Formerly numbered 109A-109B.) Prerequisite: course 5C or consent of the instructor. The development of Palcolithic and Mesolithic cultures of Europe, Africa, and Asia, emphasizing the ordering and interpretation of archaeological data. Pleistocene geology and chronology, the relationship between human, cultural and biological evolution. Mr. Sackett

**110. Peoples of the Middle East: Arab Culture.** Prerequisite: course 5A, consent of instructor. This course will delineate the area of "Arab Peoples" through an examination of their historical background, their language, and their belief system. It will attempt to uncover the structural principles shared by the Arab people of North Africa and Southwest Asia which underlie Arab culture. Ms. El Guindi

## GROUP II. DEVELOPMENT OF MAN AND CULTURE

This group contains two kinds of courses in terms of method: Those courses primarily historical in orientation where the concern is to present sequences of change in the development of man and culture, and those courses concerned with general theories of change.

**111A-111B. Fossil Man and His Culture.** Course 111A is prerequisite to 111B. No credit will be allowed for courses 111A without course 111B. An introduction to paleoanthropology; the morphology, ecology and culture of fossil man in the light of the synthetic theory of evolution. Mrs. Kennedy, Mr. Sackett

**112. Hunting and Gathering Societies.** Prerequisite: course 5A. A survey will be made of hunting and gathering societies. Their distinctive features will be examined from both an ecological and cultural viewpoint. The possibility of developing a general framework for synthesizing these two viewpoints will be discussed. This synthesis will be used as a basis for illustrating the relevance of hunting and gathering societies to an understanding of complex societies. Mr. Read

**113. Civilizations of Sub-Saharan Africa.** Prerequisite: upper division standing or consent of instructor. A comprehensive overview of the socio-cultural world of sub-Saharan Africa. This world is interpreted as a broad cultural unit with its specific African

configurations, and as a plurality of civilizations, each based on a particular association of an environment (dry savanna, grass-land, equatorial forest, highlands) with a dominant technique of acquisition/production (hunting/gathering, cereals growing, cattle-herding, commercial crops, industry).

**119. Culture Stability and Culture Change.** Problems of cultural and social change, including the impact of western civilization on native societies. Mr. Mendonsa

**122A. Comparative Society.** Prerequisite: courses 5A-5C, or Sociology 1 or consent of the instructor. The general principles of the organization of society; the relation of these to the technological complexity and ecological conditions of the culture; the principles of evolutionary development of social systems. The Staff

**122C. Technology and Environment.** Significance of material culture in archaeology and ethnology; problems of invention and the acceptance of innovations; the ecological and sociological concomitants of technological systems; selected problems in material culture. Mr. Donnan

**123. Origins of Old World Civilization.** Prerequisite: course 5C or course 22. A survey of the prehistoric foundations and cultural development of primary civilizations in the Near East, Europe and Asia as revealed by archaeology; theories of cultural evolution and diffusion based upon archaeological discovery. Mr. Sackett

**123C. Ancient Civilizations of Western Middle America (Nahuatl Sphere).** Prerequisite: course 5A-5C or course 22. Pre-Hispanic and Conquest period native cultures of Western Middle America as revealed by archaeology and early colonial writings in Spanish and Indian languages. Toltec-Aztec and Mixteca civilizations and their predecessors, with emphasis on socio-political systems, economic patterns, religion, and esthetic and intellectual achievements. Mr. Nicholson

**123D. Ancient Civilizations of Eastern Middle America (Maya Sphere).** Prerequisite: courses 5A-5C or course 22. Pre-Hispanic and Conquest period native cultures of eastern Middle America as revealed by archaeology and early colonial writings in Spanish and Indian languages. Lowland and Highland Maya civilizations and their predecessors with emphasis on socio-political systems, economic patterns, religion, and esthetic and intellectual achievements. Mr. Nicholson

**123E. Ancient Civilizations of Andean South America.** Prerequisite: courses 5A-5C or course 22. Pre-Hispanic and Conquest period native cultures of Andean South America as revealed by archaeology and early Spanish writings. The Inca and their predecessors in Peru, with emphasis on socio-political systems, economic patterns, religion, and esthetic and intellectual achievements. Mr. Donnan

## GROUP III. BIOLOGY AND CULTURE

An examination of the biological factors in human variability, both behavioral and physical, and the operation of biological factors within a cultural setting.

**130A-130B. The Genetics of Human Diversity.** Course 130A is prerequisite to 130B. No credit will be allowed for course 130A without course 130B. A general survey of the techniques and problems of racial classification. Emphasis is on the genetic approach. The methods of modern classical genetics and population genetics are applied to human evolution. The Staff

**131. Evolution and Biology of Human Behavior.** A comparative survey of the behavior patterns of preliterary and Paleolithic peoples and those of non-human primates. The biological variables fundamental to human and prehuman behavior will be assessed with regard to theories on the evolution of human culture. The Staff

**132. Comparative Morpho-Physiology of the Higher Primates.** Lecture, two hours; laboratory, three hours. The comparative anatomy of monkeys, apes and man will be surveyed. The methods and data prerequisite to the interpretation of the primate fossil records will be discussed. The Staff

**133A-133B. Primate Behavior Non-Human to Human. (2 courses)** Prerequisites: upper division standing. Course 133A is prerequisite to 133B. Review of primate behavior as known from laboratory and field studies. Stresses theoretical issues and the evolution of causal processes, structure, and function of animal behavior with special reference to nonhuman primates. Human behavior will be discussed as the product of such evolutionary processes. This course is offered on an In Progress basis. Credit is given only after completion of the full 2-quarter sequence. The Staff

**134. Biology, Society and Culture.** Prerequisite: course 1B. An investigation of the interaction between human biology and human behavior. Particularly emphasized are the influences of human biological evolution on human cultural evolution and human cultural evolution on human biological evolution. Mr. Byles

**GROUP IV. SOCIAL SYSTEMATICS**

Courses which focus on the interpretation or explanation of some type of code, symbol system, or behavior pattern and where the central analytic constructs are symbols, personality processes or interactional dynamics, and where theory is concerned with the relationship between the individual and his interactional setting. Anthropology students may also fulfill Group IV requirements by taking Linguistics 100.

**138. Symbolic Systems.** Prerequisite: upper division standing or consent of instructor. An analysis of the anthropological research and theory on the cultural systems of thought, behavior, and communication expressed in a symbolic mode (as distinguished from the discursive, instrumental, and casual modes). Methods for the study of symbolic meanings, including the experiential approach.

**139. Comparative Minority Relations.** Prerequisites: courses 5A-5C. Comparative study of minority relations, social discrimination and prejudice. The emphasis will be both on cross-cultural perspectives and on psycho-cultural analysis. The cases will be taken from the U.S., Japan, India, and other areas. The factors responsible for discrimination and the cultural-psychological consequences of class, caste or minority status of the individuals will be discussed. Mr. Velez

**140. Comparative Religion.** A survey of various methodologies in the comparative study of religious ideologies and action systems. These include the understanding of particular religions through descriptive and structural approaches, and the identification of social and psychological factors which may account for variation in religious systems cross-culturally. Mr. Newman

**141. Social and Psychological Aspects of Myth and Ritual.** This course is aimed at understanding the social and psychological significance of myth, ritual and symbolism, with particular attention given to rituals concerned with folk psychotherapies, possession and trace phenomena. Mr. Mendonsa

**142. Comparative Study of Socialization.** Introduction to ethnographic data on socialization and child training. Theories explaining cross-cultural variability in socialization practices. Current methods and research topics in the field. Mr. Weisner

**143. The Individual in Culture.** Prerequisite: upper division anthropology, sociology, or psychology students. The course considers the balance for freedom and determinism for individuals and societies in the interrelation of personality, social structure and culture. It surveys the nature and limits of human plasticity; the variability and uniformity of personality within and between cultures; the relation of normal and abnormal, conformity and deviance. Mr. Edgerton

**144. Aesthetic Anthropology.** Lecture, three hours. Prerequisite: upper division standing. Elaboration of a crosscultural notion of visual aesthetic phenomena that meets the requirements of anthropological research. Aesthetic phenomena as cultural: their integration in a cultural system; their relationships with other elements in the interplay of social forces. Mr. Maquet

**145A. Introduction to Psychological Anthropology.** Prerequisites: upper division standing or consent of instructor. 145A is prerequisite to 145B. An historical approach to culture and personality studies and psychological anthropology. These sub-disciplines will be described and analyzed as they relate to the broader history of anthropology and to developments in other fields, especially sociology, psychology, and psychoanalysis. The work of Durkheim, Benedict, Mead, Sapir, Malinowski, Roheim, Freud, Kardiner, Whiting, and Bateson will be discussed. The Staff

**145B. Introduction to Psychological Anthropology.** Prerequisites: course 145A. A survey and critical analysis of the theories of methods in use in contemporary psychological anthropology. These methods and theories are examined as they are employed in the crosscultural study of the following topics: socialization and development, pathology and deviance, fantasy, religion and altered states of consciousness, cognition, perception and motivation, communication and language, psychobiology and evolution. Finally, theories and methods in psychological anthropology are compared with developments in socio-cultural anthropology as a whole. The Staff

**M146. Language in Culture.** (Same as Linguistics M146.) Prerequisites: Linguistics 1 or Anthropology 177A-177B. The study of language as an aspect of culture; the relation of habitual thought and behavior to language; the problem of meaning. For course M146, graduate students in anthropology who propose to specialize in linguistics must take Linguistics 100 plus graduate courses in linguistics chosen from Linguistics 200A-205B and 210A-210B in consultation with an adviser; or they may take the M.A. in linguistics together with the Ph.D. in anthropology. The Staff

**148. Personality and Social Systems.** Prerequisite: upper division standing or consent of instructor. The course explores the relationships between individual and social-cultural systems. Major topics: (the study of personality in culture); cultural influences on motor behavior and psychological reaction patterns; cultural influences on cognition, perception, and thought process; socialization in Culture I (child rearing); socialization in Culture II (moral development and values); expressive symbolic behavior

(ritual, myth, art, folklore, dreams, projective tests); social deviance (anti-social behavior, mental illness, suicide).

Mr. Wagatsuma

**149A-149B. Human Social Ethology.** Prerequisite: Permission (consent of instructor). Two quarter course. Grade of IP for first quarter. Each student will videotape a scene of naturally occurring human interaction to be analyzed (in lab. sessions) by the class and instructor for the interactive tasks, resources, and accomplishments displayed. Students will be able to set individual hours of laboratory participation within the time-block set for the class. Mr. Moerman

**GROUP V. SOCIAL SYSTEMATICS II**

Courses which focus on the explanation of some type of institution or social system, where the central analytic constructs are groups, roles, norms, and societies, and where theory is concerned with the development and maintenance of human groups or networks.

**150A-150B. Social Anthropology.**

**150A. History of Social Anthropology.** Prerequisites: course 5A-5C or course 22 or Sociology 1 or 101 and upper division standing in Anthropology or Sociology. A systematic survey of the development of social anthropology in France and Britain from the Enlightenment to the present. Reviews major early concepts of French Sociology and British structuralist-functionalism and current concerns in social theory. Mr. Mendonsa, Ms. Moore

**150B. Social Organization.** Prerequisites: course 5A-5C or course 22 or Sociology 1 or 101 and upper division standing in Anthropology and Sociology. 150A would also be advisable. Formal presentation of the methods, aims and conceptual framework of social anthropology. Analysis of thought and behavior within systems of social relationships. Emphasis on structural-functional approach and the process of social change. Mr. Mendonsa, Ms. Moore

**151. Kinship and Social Organization.** Prerequisite: Anthropology major, upper division. Kinship is surveyed as a systematic study in anthropology with a focus on the basic theoretical issues. Kinship analysis is presented as a tool in research. Ms. El Guindi

**152. Traditional Political Systems.** Prerequisite: course 122A or Sociology 101 or consent of the instructor. Political organization in pre-industrial societies of varying degrees of complexity. Law and the maintenance of order; corporate groups; ideology. The relations of political to other institutions of society. The Staff

**153. Economic Anthropology.** A survey of the ethnology and ethnography of economic life, principally in non-Western societies, with an emphasis on the operation of systems of production and distribution within diverse cultural contexts. The Staff

**155. Illness in Non-Western Societies.** Prerequisites: course 5A-5C or course 22 or Sociology 1 or 101 and upper division standing, or consent of instructor. An analysis of the cultural modes of thought and social structures associated with illness in non-western societies. The emphasis will be upon the social roles involved in the diagnosis and curing. Mr. Mendonsa

**156. Cultural Ecology.** Prerequisites: Biology 119 or Biology 122 or consent of instructor. Survey of ecological theory and methodology in Cultural Anthropology. Articulation between cultural, biological, and environmental components in a systemic approach towards understanding the dynamic processes of culture maintenance and change. Mr. Earle

**157. Intentional Communities.** Prerequisite: upper division standing or consent of instructor. Communes and monasteries, ashram and kibbutz are voluntarily joined societal units, offering complete life-styles perceived as alternatives to the mainstream cultures, and stressing the affective involvement of the members. Questions such as the following will be discussed in a comparative perspective: institutional goals stated in the community's "charter"; system of acquisition or production; internal organization; ideological configurations; individual experience; sociological and psychological functions; criteria of success and failure; subculture and counterculture. Mr. Maquet

**M158. Health in Culture and Society.** (Same as Nursing M158.) Prerequisite: upper division standing. An examination of the theories and methods of medical anthropology in relation to cross-cultural health systems, role networks, attitude and belief systems of the participants. Emphasis will be placed upon interaction networks in health care systems. Ms. Brink

**M159. Social Networks and Corporate Groups.** (Same as Law M151.) Prerequisite: upper division standing or consent of instructor. Two approaches to the analysis of social organization are examined; their uses and limitations in the study of modern societies, in the interpretation of ethnographic materials, and in analyzing processual sequences. Social, political, economic implications explored. Uses in field work discussed. Students will have an opportunity to complete small field projects, and will reanalyze library materials.

**GROUP VI. CONTEMPORARY PROBLEMS**

This group includes those courses (taught from any point of view and with any subject matter) which are concerned with application of anthropological techniques and methods to problems of contemporary interest in our own society or which arise as a product of the contact between our society and others.

**160. Urban Anthropology.** Prerequisites: Open to upper-division majors in social sciences, and others by consent of the instructor. A survey of urbanization throughout the world, with emphasis on urban adaptation of rural migrants. Special focus on the problems of rural-urban migration of ethnic minority groups and subsequent adaptation of them within the United States explored in terms of the methods and perspectives of anthropology. The Staff

**161. Development Anthropology.** Prerequisites: courses 5A-5C and upper division standing or consent of the instructor. Comparative study of the peasantization of tribal peoples, the proletarianization of peasants, and the urbanization of ruralities. Particular emphasis on the relation between national and international, and localized sociocultural systems; the theory of social movements. Alternative theoretical constructs will be critically discussed. Mr. Mendonsa

**162. Contemporary American Indian Problems.** Contemporary problems of the American Indian both on and off the reservation. Topics will include self-determination, land claims, activism, urban Indians, and role of the Bureau of Indian Affairs. The Staff

**163. Women in Culture and Society.** Prerequisite: course 5A or 22. A systematic approach to the study of sex roles from an anthropological perspective. A critical review of relevant theoretical issues supported by ethnographic material from traditional cultures and contemporary American culture. Ms. El Guindi

**164. The Afro-American Experience in the United States.** Prerequisite: consent of instructor. This course aims to promote understanding of contemporary sociocultural forms among Afro-Americans in the United States by presenting a comparative and diachronic perspective on the Afro-American experience in the new world. We will be concerned with the utilization of Anthropological concepts and methods in understanding the origins and maintenance of particular patterns of adaptation among Black Americans. Ms. Mitchell-Kernan

**GROUP VII. TECHNIQUES AND METHODS**

Techniques are thought of as procedures in gathering or manipulating data; methods are thought of as concerned with problems of inference and validation. The following courses deal with one or both concerns. They are intended for majors and graduate students in anthropology. Anthropology students may also fulfill Group VII requirements by taking Linguistics 110 and Indo-European Studies 149.

**170A-170B-170C. Field Training.** Prerequisite: consent of instructor.

**170A. Archaeology.** Introduction to archaeological problems, theories, methods, and data analysis.

**170B. Ethnology.** Training in ethnographic field methods. Execution of individual and group ethnographic field research projects.

**170C. Physical Anthropology.** Training in basic field methods; anthropometry, taxonomy, laboratory methods, and bio-statistics. The Staff

**171A-171B-171C. Laboratory Methods in Physical Anthropology.** Prerequisite: courses 1A-1B, restriction to majors only and graduate students; consent of instructor. Laboratory methodology and analysis of human variation on skeletal material (171A) and on living populations (171B) and bio-chemical methods (171C). The Staff

**172. Methods and Techniques of Ethnohistory.** Introduction to the problems and procedures of extracting cultural data from documentary sources and their interpretation and analysis. The relevant documentary sources of various New World regions will be selected as case histories to illustrate more concretely the problems and challenges in this major area of anthropological concern. Mr. Nicholson

**173A-173B. Research Design and Quantitative Procedures.** Prerequisites: upper division standing. Course 173A is prerequisite to 173B. Course 173A may be taken without 173B. A two quarter course on research design and quantitative data analysis in anthropology. The first quarter focuses on the application of the scientific method to anthropology, on the techniques of quantitative field research, and on the conceptual framework underlying statistical analysis of quantified data. The second quarter emphasizes research design and statistical hypothesis testing and will include student data collection and processing. Mr. Johnson, Mr. Read

**174. Laboratory Methods in Technology and Invention.** Prerequisite: course 122C and consent of the instructor. Intensive experimentation in the technology of nonliterate people. Mr. Donnan

**175A. Strategy of Archaeology.** Prerequisite: course 5C or consent of instructor. An introduction to problem formulation,

theory and method in archaeology, with an emphasis on the development of research designs. The focus is on how archaeological research is conceived and planned, with consideration of differing viewpoints and their usefulness. A scientific approach is taken and consideration is given to the relevance of archaeology to explaining variability and change in the adaptations of human populations. Mr. Hill

**175B. Archaeological Research Techniques.** Prerequisite: course 5C or consent of instructor. An introduction to the techniques of discovery and analysis that archaeologists have found useful in research. Special attention is given to sampling techniques in survey and excavation, the techniques of survey and excavation, classification and typology, problems in dating, locational analysis, the description of settlement systems, and the techniques for measuring parameters of prehistoric demography, diet, specialization, exchange and warfare. Attention is also given to techniques for describing and explaining change. Mr. Hill

**M175C. Dating Techniques in Environmental Sciences and Archaeology.** (Same as Geography M178.) Prerequisite: consent of the instructor. Introduction to scientific dating methods such as radiocarbon dating, radiation damage methods, biological dating techniques and magnetic dating, and applications in environmental sciences, archaeology, and physical anthropology. Mr. Berger

**175E. Laboratory Analysis in Archaeology.** Lecture, two hours; laboratory, four hours. Prerequisite: consent of the instructor. Description and classification of archaeological collections cataloging, typology, documentation. Preparation of archaeological reports for publication. Mr. Meighan

**M176. A Laboratory for Naturalistic Observations: Developing Skills and Techniques.** (Same as Psychiatry M112 and Psychology M155.) Prerequisite: consent of instructor. The skill of observing and recording behavior in natural settings will be taught, emphasizing field training and practice in observing behavior. Group and individual projects will be included. Some of the uses of observations and their implications for research in the social sciences will also be discussed. Mr. Gallimore, Mr. Weisner

**177A. Field Methods in Linguistic Anthropology: Practical Phonetics.** Practice in elicitation from informants for the purposes of analysis of phonological systems and development of practical transcription, as a preliminary to learning to speak the native language and to the recording of ethnographic materials in native language. No previous experience in linguistics is assumed. The Staff

**177B. Field Methods in Linguistics Anthropology: Descriptive Semantics.** Prerequisite: course 177A, or equivalent experience. The acquisition of techniques for conducting queries in the target language. The query techniques are intended to facilitate insight into semantic structure through examination of lexical and morphological classes. Morphological, syntactic, and lexical phenomena that occur in languages in relation to meaning. Use of eliciting procedures as supplemental, to other investigative techniques. Practice with informants. The Staff

**178A. Museum Studies.** Prerequisite: consent of instructor. Method and theory of museum operation. Acquisition, accession, storage, photography, conservation and exhibition are discussed and demonstrated. Museum research, publication, and teaching as well as museum administration and funding are analyzed. Lectures and demonstrations are structured to illustrate how the various aspects of museum operation are interrelated. Mr. Donnan and the Museum Staff

**178B. Museum Studies.** Prerequisites: course 178A and consent of instructor. Two areas of museum operation are selected by the students from those discussed and demonstrated in Anthropology 178A. The student is then required to develop expertise in these areas through a combination of library research and a series of assignments carried out in the museum. Mr. Donnan and the Museum Staff

**178C. Museum Studies.** Prerequisites: course 178A-178B and consent of instructor. One area of museum operation is selected by the student from those demonstrated in Anthropology 178A. The student is then required to develop expertise in this area through a combination of library research and a series of assignments carried out in the museum. Mr. Donnan and the Museum Staff

**179. Ethnography on Film.** Intensive examination of filmed and written ethnographies of a wide range of the world's peoples with the purposes of: a) comparing visual with written data and evidences and b) developing criteria for adequate written and film ethnography. Mr. Moerman

## GROUP VIII. ANTHROPOLOGY AS A PROFESSION

This group contains historical surveys of anthropology or its subfields and courses concerned with professional preparation.

**182A-182B. History of Anthropology.** Prerequisite: upper division or Graduate Status. Permission of the instructor is required to take 182B without 182A. A systematic survey of the development of anthropology within the western academic tradition. Reviews major early concepts relevant to current anthropological issues and reviews institutional growth and development of the field. Mr. Langness

**183. History of Archaeology.** The intellectual history of archaeology from the ancient world to the present. Although each of its major traditions is reviewed, particular emphasis is given to those branches of archaeology that have evolved during the last century within the discipline of anthropology. Mr. Sackett

**184. History of Human Evolutionary Theory.** The men, the events, and the spirit of the time which mark man's attempts to understand his origins and diversity. Mr. Williams

## SPECIAL COURSES

**199. Special Studies in Anthropology.** (¼ to 2 courses) Prerequisite: consent of the instructor. Two courses of 199 may be applied to the ten courses required for the major. The Staff

## Graduate Courses

Graduate students may take Linguistics 200F and 200G and receive credit towards the 36 units required for the M.A. degree. ANY COURSE WITHIN A GROUP LABELED "SELECTED TOPICS" ARE NONREPETITIVE IN CONTENT AND MAY BE REPEATED FOR CREDIT ON RECOMMENDATION OF THE GRADUATE ADVISER.

## 200-202. SEMINARS IN ANTHROPOLOGICAL LINGUISTICS

**200. Anthropological Linguistics.** (Formerly numbered 212.) Prerequisites: Linguistics 100 or its equivalent. The development of anthropological linguistics, modern linguistic theory and its application to the study of non-linguistic aspects of culture, including relationship of language to world view; comparative historical linguistics to pre-history, lexico-statistics, semantic analysis, linguistic acculturation, and socio- and ethno-linguistics. The Staff

**M201A. Linguistic Anthropology I.** (Formerly numbered M276A; same as Linguistics M246A.) Prerequisite: consent of instructor. Research in verbal interaction, emphasizing the use of conversational structures. Mr. Moerman

**M201B. Linguistic Anthropology II.** (Formerly numbered M276B; same as Linguistics M246B.) Prerequisite: consent of instructor. This seminar aims to provide interested students basic information on Black American English, an important minority dialect in the United States. The social implications of minority dialects will be examined from the perspectives of their genesis, maintenance and social functions. The seminar also aims to acquaint students with problems and issues in the field of sociolinguistics through a case study approach. Ms. Mitchell—Kernan

**M201C. Linguistic Anthropology III.** (Formerly numbered M276C; same as Linguistics M246C.) Prerequisite: consent of instructor. Problems in the relations of language to culture. The Staff

**202. Language Socialization.** (Formerly numbered 249.) Prerequisite: consent of instructor. This seminar will examine language socialization, specifically the child's growing ability to produce situationally appropriate speech. The development of sociolinguistic selection rules in phonology, grammar and syntax will be examined and the child's mastery of discourse types and discourse rules will also be considered. Ms. Mitchell—Kernan

## 205-210. SEMINARS IN ARCHAEOLOGY

**205. Problems in Southwestern Archaeology.** (Formerly numbered 290.) A consideration of prehistoric cultural systems in the American Southwest, with emphasis on the description and explanation of organizational variability and change. Examination of the historical development of major theories, problems and methodologies. Mr. Hill

**M206A-206B. European Archaeology.** (Formerly numbered M285A-285B; same as Indo-European Studies M250A-250B.) Prerequisite: consent of instructor. Credit is given only upon completion of both quarters. The full sequence may be repeated for credit. Studies in ancient European archaeological materials, and their relationship to the Near East, Western Siberia, and Central Asia. Ms. Gimbutas

**210A. Analytical Methods in Archaeological Studies.** (Formerly numbered 230A.) Prerequisites: One quarter of statistics and consent of instructor. This course will cover data analysis procedures in archaeology. The emphasis will be on the conceptual framework for the analysis of archaeological data. It will begin at the level of the attribute and end at the level of the region. Mr. Read

**210B. Analytical Methods in Archaeological Studies.** (Formerly numbered 230B.) Prerequisite: consent of instructor. Anthropology 210A is not a prerequisite for this course. This course surveys the analytical methods used in archaeology to study prehistoric settlement systems using survey data. Specific issues addressed include settlement distribution with respect to natural resources, settlement hierarchy patterns of exchange, warfare, and population movements. Mr. Earle

## 214E-214J. SELECTED TOPICS IN ARCHAEOLOGY

**214E. Prehistoric Nonagricultural Societies.** (Formerly numbered 287.) Prerequisite: consent of instructor. Regional studies in the development of early human culture. Mr. Meighan

**214F. Problems in Old World Archaeology.** (Formerly numbered 288.) Prerequisite: consent of instructor. Mr. Sackett

**214G. Prehistoric Civilizations of the New World.** (Formerly numbered 289.) Prerequisite: consent of instructor. Mr. Donnan, Mr. Nicholson

**214H. Historical Reconstruction and Archaeology.** (Formerly numbered 286.) Prerequisite: consent of instructor. Interpretation of historical development through archaeological research. Application of ethnohistory to archaeological problems. Mr. Meighan, Mr. Nicholson

**M214I. Dating Techniques in Environmental Sciences and Archaeology.** (Formerly numbered M296; same as Geography M278.) Prerequisite: consent of instructor. A colloquium devoted to topics in dating techniques in environmental sciences, archaeology, and physical anthropology as well as laboratory instruction and experimental work. May be repeated for credit. Mr. Berger

**214J. Field Training in Archaeology.** (Formerly numbered S297.) Prerequisite: Previous experience in archaeology. Advanced training in archaeological excavation techniques, including organization of projects, supervision of field crews, methodology of field recording and preliminary analysis of field data. The Staff

## 220-222C. SEMINARS IN PHYSICAL ANTHROPOLOGY

**220. Current Problems in Physical Anthropology.** (Formerly numbered 240.) A detailed examination of present, on-going research by physical anthropologists in order to determine the direction and place of physical anthropology in the general discipline of anthropology.

**221A-221B. The Fossil Evidence for Human Evolution.** (Formerly numbered 251A-251B.) Prerequisite: consent of instructor. Course 221A is prerequisite to 221B. No credit will be allowed for course 221A without course 221B. An examination and analysis of the fossil evidence for man's evolution. Ms. Kennedy

**222A. Population Genetics of Man.** (Formerly numbered 246A.) An introductory course in statistics. The study of population concepts, probability, the conditions of gene frequency equilibria and factors causing gene frequency change. Mr. Williams

**222B. Probability Models and Statistical Methods in Genetics.** (Formerly numbered M246B; same as Biomathematics M246.) Prerequisites: graduate standing, two quarters of statistics, Mathematics 3A, Anthropology 222A. An introduction to probability models and statistical methods in genetics. Maximum likelihood methods for estimating genetic parameters will be introduced and discussed in detail. This course is a prerequisite for Anthropology M222C. Mr. Read

**M222C. Modeling in Genetic Analysis.** (Formerly numbered M246C; same as Biomathematics M207.) Prerequisites: graduate standing, course M222B, or consent of instructor. Basic concepts of human genetics with emphasis on methods of computer-oriented genetic analysis. Topics include segregation analysis, genetic linkage, polygenic (quantitative) models, and population structure. Ms. Spence

## 229E-229F. SELECTED TOPICS IN PHYSICAL ANTHROPOLOGY

**229E. Population Genetics.** (Formerly numbered 281.) Prerequisite: consent of instructor. A consideration of some of the special methods of the genetics of human populations and their current application in research. Mr. Williams

**229F. Physical Anthropology Colloquium.** (Formerly numbered 284.) To be graded on an S/U basis only. Selected topics on the status of current research in biological anthropology. The Staff

## 230A-230B — M267C. SEMINARS IN SOCIO-CULTURAL ANTHROPOLOGY

**230A-230B. Anthropological Theory.** (Formerly numbered 219A-219B.) Prerequisite: Anthropology graduate students or consent of instructor. This course examines the range of theories that anthropologists have employed in describing and explaining variability in sociocultural phenomena. The organization of particular theories, as well as issues that separate divergent theories, will be explored. Emphasis will be placed on up-to-date examples of different theoretical perspectives. Major perspectives to be considered include the following: Evolutionism, Cultural Ecology, British Functionalism, French Functionalism, Structuralism, Cultural and Personality, Psychological Anthropology

(Freudian, Neo-Freudian, Non-Freudian). Behavioral Anthropology, Cognitive Anthropology and Ethnosemantics. Ms. Moore

**231. Social Anthropology.** (Formerly numbered 220.) Intensive examination of current theoretical views and literature. Ms. Moore, Mr. Mendonsa

**232. Structural Anthropology.** (Formerly numbered 210.) Prerequisite: consent of instructor. Background in theoretical linguistics. Critical examination of structuralism, its relationship to earlier anthropological approaches, its affinity with theoretical linguistics, its contribution to current anthropological theory, and its utility as a powerful analytic framework in the field situation. Ms. El Guindi

**234. Explanation of Societal Change.** (Formerly numbered 215.) Prerequisite: consent of instructor. Examination of the processes of societal evolution, emphasizing the usefulness of a variety of explanatory models drawn from General Systems Theory, Ecology, Anthropology, and other sources. The development and testing of appropriate evolutionary theory, including the use of simulation techniques. Mr. Hill

**235. Social Movements and Social Crisis.** (Formerly numbered 221.) Prerequisite: consent of instructor. The emergence of social movements of different types, whether millennial, nationalist, reformist, political, etc., particularly as in situations of social conflict and crisis. Movements of rebellion and revolution examined in the light of anthropological and sociological theory focusing on a broad range of problems. Mr. Mendonsa

**236. Urban Anthropology.** (Formerly numbered 271.) Prerequisite: course 160 or consent of instructor. The Staff

**237. Special Topics in Social Process.** (Formerly numbered 279.) Prerequisite: consent of instructor. Selected aspects of the literature on cultural and social process. The significance of repeated and/or cumulative sequences of events in a variety of social and cultural contexts. Processual approaches compared with normative concepts and ideal models. Ms. Moore

**241. The Cultural Context of Health Care.** (Formerly numbered 216.) Prerequisite: consent of instructor. Concepts and treatment of illness and disease in cross-cultural perspectives, with an emphasis on research problems and methods. The course introduces the anthropological approach to health-related research, then explores the intersections of anthropology and problem areas in public health and psychiatry (such as epidemiology, fertility regulation, socialization, and developmental disabilities). Mr. Johnson

**M243. Anthropological Approaches to Law.** (Formerly numbered M223; same as Law M152.) Prerequisite: consent of instructor only. Law and politics in non-industrial societies considered with an eye to analogous processes in industrial society. The articulation of local and larger scale organization. Formal organization and explicit rules compared with operating realities. Arenas of regulation, competition, dispute and negotiation examined. Works of law by anthropologists reviewed.

**M244. Transcultural Psychiatry.** (Formerly numbered M201; same as Psychiatry M222.) Prerequisite: consent of instructor. Consideration of psychiatric topics in cross-cultural perspective, such as studies of drug use, deviance, suicide, homicide, behavioral disorders, "culture specific" syndromes, non-Western psychiatries, and the question of "sick" societies. Mr. Kennedy

**245. Cultural Modes of Thought.** (Formerly numbered 248.) Prerequisite: consent of instructor. An examination of the influences of culture on learning, perception, thinking and intelligence. The course to cover the fields of cross-cultural psychology in addition to cognitive anthropology. The focus is on learning and thinking in non-Western cultures but would include problems of education in ethnic areas within the U.S. Mr. Price-Williams

**246. Comparative Studies of Socialization.** (Formerly numbered 278.) Selected topics in the cross-cultural study of socialization and child training. Methods, ethnographic data, and theoretical orientations. Emphasis on current research. Mr. Weisner

**M247A. Ethnographic Film.** (Formerly numbered M294A; same as Theater Arts M209C.) Prerequisites: graduate standing and consent of instructor. The ethnographic film as a form of realist cinema and its relations to cultural anthropology. Mr. Hawkins, Mr. Moerman

**250. Indians of South America.** (Formerly numbered 207.) Survey of the literature and problems of the Indians of South America. Mr. Wilbert

**251. Cultural Ecology of Lowland South America.** (Formerly numbered 253.) Prerequisite: consent of instructor. Seminar on traditional adaptations to the lowland environment, with special emphasis on the tropical forest. Explanatory principles accounting for cultural differences are explored and special attention is given to effects of modern change on the people and their environment. Mr. Johnson

**M252. South American Folklore and Mythology Studies.** (Formerly numbered M257.) Prerequisites: course 105A or consent of instructor. An examination of oral traditions and related ethnological data from various South American Indian societies against the background of the religious systems of these people. Mr. Wilbert

**253. Asian-Americans: Personality and Identity.** (Formerly numbered 209.) Prerequisite: graduate standing. This seminar will

examine the effects of class, caste and race on the Asian American personality within the framework of anthropological theories.

Mr. Wagatsuma

**254. African Cultures.** (Formerly numbered 208.) Survey of literature and problems of African culture. Mr. Mendonsa, Ms. Moore

**255. Cultures of the Middle East.** (Formerly numbered 214.) Prerequisite: course 110 or consent of instructor. Survey literature and problems of the various cultures of the Middle East. Ms. El Guindi

**M260. A Laboratory for Naturalistic Observations: Developing Skills and Techniques.** (Formerly numbered M213; same as Psychiatry M235.) Prerequisite: consent of instructor. The skill of observing and recording behavior in natural settings will be taught, emphasizing field training and practice in observing behavior. Some of the uses of observations and their implications for research in the social sciences will also be discussed. Students will be expected to integrate observational work into their current research interests. Mr. Gallimore, Mr. Weisner

**261A-261B. Research Methods and Procedures.** (Formerly numbered 222A-222B-222C.) An integrated review of the research methods in anthropological inquiry focusing on problem formulation, methods of setting up testable hypotheses, the kinds of data available for anthropological explanation, statistical and nonstatistical means of "explanation" in anthropology. Each part may be taken independently. Mr. Johnson

**262A. Methods in Psychological Anthropology.** (Formerly numbered 274A.) Prerequisite: consent of instructor. Methods for studying personality, motivation, socialization in field work. Includes naturalistic observation, interviewing, unobtrusive measures, participant observation, and excludes standardized testing procedures. Field exercises using various methods are integral to the seminar. Mr. Weisner

**262B. Methods in Psychological Anthropology.** (Formerly numbered 274B.) Prerequisite: consent of instructor. Adequate background in psychology in field of personality, clinical psychology and psychological testing. This course deals with diverse standardized tests applicable in cross-cultural research. It covers the methods of study of aspects of personality, perception, cognition, and mental health as applicable to non-Western and particularly primitive cultures. Mr. Edgerton

**263. Analysis of Field Data.** (Formerly numbered 291.) Prerequisite: course 265 or other field training course. Supervised analysis of ethnographic materials by students who have participated in a related field training course. Students will work with their own as well as general project data in the preparation of articles for professional journals. The Staff

**M264. Introduction to Social Research Methods in Health.** (Formerly numbered M292; same as Public Health M245A.) Prerequisite: consent of instructor. Introduction to the basic methods and techniques involved in designing and conducting health research. Focuses on defining problems for research critiquing existent research, and constructing research designs using a variety of research methods in health studies, including discussion of students own research plans. Emphasis is on the behavioral science of health research. Ms. Bourque

**265. Selected Topics in Field Training in Ethnography.** (Formerly numbered 293A.) Prerequisite: consent of instructor. Supervised collection of ethnographic information in the field. Students will spend full time in the field for most of the period. The Staff

**266. Practicum in a Field Language.** (Formerly numbered 293B.) Prerequisite: consent of instructor. Intensive training in an indigenous language as preparation for work in the field. The Staff

**M267B-267C. Ethnographic Film Direction.** (Formerly numbered M294B-294C; same as Theater Arts M265A-265B.) Prerequisite: course 209C, graduate standing and consent of instructor. Advanced study of problems in the production of ethnographic films. M267B is offered in the winter quarter and M267C is offered in the spring quarter. Mr. Hawkins, Mr. Moerman

## 269E-270E. SELECTED TOPICS IN SOCIO-CULTURAL ANTHROPOLOGY

**269E. Cultural Anthropology.** (Formerly numbered 263.) Prerequisite: consent of instructor. Mr. Goldschmidt

**269F. Ethnology.** (Formerly numbered 261.) Prerequisite: consent of instructor. Mr. Wilbert

**269G. Social Anthropology.** (Formerly numbered 262.) Prerequisite: consent of instructor. Mr. Mendonsa, Ms. Moore

**269H. Cultural Ecology.** (Formerly numbered 264.) Prerequisite: consent of instructor. The Staff

**269I-269J. The Individual in Culture.** (Formerly numbered 272A-272B.) Prerequisite: consent of instructor. Course 269I is prerequisite to 269J. Credit to be given only at the completion of 269J. Mr. Edgerton

**M269K. Culture and Personality.** (Formerly numbered 273; same as Psychiatry M272.) Prerequisite: consent of instructor. The course will deal with theories of the relationship of personality to

the context of cultural life; cultural aspects of individual growth and development and methodological problems in the study of cultural effects of individual character and personality. May be repeated for credit. The Staff

**269L. Economic Anthropology.** (Formerly numbered 269.) Prerequisite: consent of instructor. The Staff

**269M. Kinship.** (Formerly numbered 267.) Prerequisite: consent of instructor. Mr. Mendonsa

**M269N. Medical Anthropology.** (Formerly numbered M217; same as Nursing M217.) Prerequisites: course M158 or consent of instructor. Any of the topics covered in upper division course M158, will be selected each quarter, for intensive literature review and independent projects. The course may be repeated for credit. Ms. Brink

**269O. Comparative Minority Relations.** (Formerly numbered 211.) Prerequisite: consent of instructor. Comparative study of minority relations, social discrimination and prejudice. The emphasis will be on the psychological consequences of class, caste or minority status on the family patterns, individual personality and identity. The cases will be taken from U.S., Japan, India and other areas. Each student will be required to do his/her own library research on the selected subject, while consulting with the instructor and participating in group discussion. Mr. Velez

**269P. Symbolic Anthropology.** (Formerly numbered 260.) Prerequisite: consent of instructor or course 144. Nature of symbolic relations (as distinguished from other referential ones), significance of symbolic systems (in terms of action, cognition, affectivity, contemplation), symbolic and isomorphic logic (as opposed to the casual one) are among the questions to be selected for analysis and discussion in this course. Mr. Maquet

**269Q. Myth and Ritual.** (Formerly numbered 266.) Prerequisite: consent of instructor. The Staff

**269R. Aesthetic Anthropology.** (Formerly numbered 250.) Prerequisites: course 144 or consent of instructor. Selected questions concerning the visual aesthetic phenomena in their relationships with the socio-cultural context will be examined in depth. Mr. Maquet

**269S. Comparative Studies of Intentional Communities.** (Formerly numbered 277.) Prerequisite: course 157 or consent of instructor. Questions concerning the ideational, societal, and individual significance of intentional communities will be selected and discussed in depth with reference to particular collectivities. Mr. Maquet

**269T. Comparative Political Institutions.** (Formerly numbered 268.) Prerequisite: consent of instructor. Ms. Moore

**269U. African Cultures.** (Formerly numbered 258.) Prerequisite: consent of instructor. Mr. Mendonsa, Ms. Moore

**269V. Arctic Cultures.** (Formerly numbered 256.) Prerequisite: consent of instructor. Mr. Oswalt

**269W. Culture and Personality of Japan.** (Formerly numbered 206.) Prerequisites: course 103C or consent of the instructor. Specific topics pertaining to the study of socialization patterns, role behavior, psychological characteristics, social deviance or psychopathology of the Japanese will be selected and discussed. Each student will be required to select a topic and carry out the library research, while consulting with the instructor and participating in the group discussion. Mr. Wagatsuma

**269X. Cultures of the Middle East.** (Formerly numbered 265.) Prerequisites: course 110 or consent of instructor. Ms. El Guindi

**269Y. Cultures of the Pacific Islands.** (Formerly numbered 254.) Prerequisite: consent of instructor. Mr. Newman

**269Z. Ethnography of the Mexican/Chicano People in North America.** Prerequisites: graduate standing or consent of instructor. It is recommended that students have taken the Comparative Ethnography of the Hispanic Peoples in North America but it is not imperative. A graduate research course on topics in the ethnography of the Mexican/Chicano people in North America. Topics may include the following: Social organization, economic and political systems, belief and value systems, linguistic and expressive adaptations, and individuals and their cultural contexts. Topics will vary according to interest and the instructor will announce the topic(s) prior to the beginning of the quarter. Mr. Velez

**M270E. Legal Anthropology.** (Same as Law M352.) Prerequisites: Anthropology M223 (Law M152) Anthropological Approaches to Law or consent of instructor. An intensive examination of a particular aspect of law. Ms. Moore

## 290-294. SEMINARS IN GENERAL ANTHROPOLOGY

**290A-290B-290C. Departmental Faculty Seminar.** (Formerly numbered 200A-200B-200C.) Prerequisites: graduate status, or permission of instructor. Each weekly three hour meeting will be devoted to the current research of a different faculty member. The Staff

**291. The Roots of Human Behavior.** (Formerly numbered 299.) Prerequisite: consent of instructor. An examination of the behavior of living non-human primates and of the evolution and biological basis of human behavior. The Staff

**292. Mathematical Models in Anthropology.** (Formerly numbered 275.) Prerequisite: permission of the instructor. Several approaches to developing mathematical models and their use will be considered. In particular, Markovian chains will be introduced and models based on them will be used to test various hypotheses about social organization. Optimization theory will be considered as a basis for constructing theoretical models. Mr. Read

**293. Evolutionary Approaches in Anthropology.** (Formerly numbered 244.) Prerequisite: graduate standing. Evolutionary approaches to explanation in biological anthropology and cultural anthropology. Relations between materialist perspectives and evolutionary theory. The influence of evolutionary biology on anthropology. The status of evolutionary studies in cultural anthropology. Mr. Williams

**294. The Profession of Anthropology.** (Formerly numbered 283.) Prerequisite: consent of instructor. An examination of the discipline as a profession; its historic growth, its organization, changing patterns of employment, ethical problems peculiar to the discipline, special demands and requisites for professional performance. Senior majors admitted by special permission. Mr. Goldschmidt

**501. Cooperative Program. (1/2 to 2 courses)** Prerequisite: approval of UCLA Adviser and Graduate Dean. Approval of host campus Instructor, Department Chairman and Graduate Dean. The course is used to record the enrollment of UCLA students in courses taken under cooperative arrangements with neighboring institutions. To be graded S/U.

**596. Individual Studies for Graduate Students. (1/2 to 2 courses)**

**597. Preparation for the Doctoral Qualifying Examination. (1/2 to 3 courses)**

**599. Research for Dissertation. (1/2 to 3 courses)** Ph.D. dissertation research or writing. Student will have completed qualifying examination and ordinarily will take no other course work. The Staff

## APPLIED LINGUISTICS (INTERDEPARTMENTAL)

(Program Office, 3306 Rolfe Hall)

### Ph.D. in Applied Linguistics

The doctoral program in applied linguistics is administered by an interdepartmental committee of six members, three from the Department of Linguistics and three from the ESL (English as a Second Language) Section of the Department of English. The courses around which the program is built are taught by all members of the ESL and Linguistics faculties as well as certain members of related departments such as Anthropology, Education, Psychology, Sociology and various foreign languages.

The goal of the program is to prepare students to apply relevant elements of linguistics, psycholinguistics, and sociolinguistics to the solution of practical problems of language use and language teaching. This is to be achieved by providing them with the broad background of information and the investigatory skills needed for teaching at the university level, for program planning, and for effective research.

Four areas of specialization are available: language analysis, language education, language acquisition, and language use. The specialization in *language analysis* is designed to prepare researchers to present to students significant data on languages the researchers know well; to construct school grammars, dialect atlases, descriptive phonologies, contrastive analyses, etc.; and to carry out similar empirically oriented pursuits. The specialization in *language education* concerns various forms of language instruction: English as a second or foreign language, the teaching of other languages, and language in bilingual/bicultural or bidialectal education. It is designed to prepare graduates competent to serve in the areas of curriculum development, language consultation, language testing, materials preparation, and teacher training. The specialization in *language acquisition* involves psycholinguistics. It refers to both child-language acquisition and second-language acquisition. It is intended to equip students to conduct research on language learning in clinics, laboratories, classrooms, and also in informal natural settings. The specialization in *language use* relates generally to sociolinguistics, and specifically to language planning, language policy in the United States and abroad, as well as to the analysis of discourse. It is aimed at the development of competence in such areas as educational consultation, program planning and evaluation, language surveys, and literacy campaigns.

### Admission to the Program

The basic requirement for admission is the completion of the UCLA master's degree in Teaching English as a Second Language or in Linguistics, or else the equivalent of one of these. Applicants with a graduate degree in TESL, Linguistics, Applied Linguistics, Psycholinguistics, or Sociolinguistics from another recognized institution may be admitted provided they then make up the courses in one or the other of the two UCLA M.A. programs whose equivalents they have not yet taken. Students with graduate degrees in other related disciplines (such as a foreign language, English, education, psychology, sociology, or anthropology) may need to make up a large number of course deficiencies. Unless

much of their previous work can be shown to be particularly applicable to one of the four areas of specialization, it will be advisable for them to complete the UCLA M.A. in Linguistics or TESL before seeking admission to the Ph.D. program.

Other criteria that will be taken into consideration in admitting students include their graduate and undergraduate grade-point averages, their relevant professional experience, their command of foreign languages, the quality of their M.A. thesis, and any language-related publications they may have written. Information regarding the procedures to be followed in applying for admission is available from the program office.

### Requirements for the Ph.D. Degree

In addition to fulfilling the general University requirements for the doctorate, candidates for the Ph.D. in Applied Linguistics must meet the program requirements listed below.

**Basic preparation.** Any of the following courses not already taken must be completed as early as possible and before advancement to candidacy for the degree: Linguistics 120A and B, 164, and either 165A or 165B; English 370K, 250K, and 380K. English 370K must be taken at UCLA. If a student can establish that he has taken courses equivalent to any of the remaining courses at another institution, he will not be required to take them at UCLA. If he has at least one year of experience in teaching ESL, he can be exempted from English 380K.

**Foreign languages.** Before advancement to candidacy for the degree, students must demonstrate either an effective reading knowledge of two foreign languages or a reading knowledge of one foreign language at a high level of proficiency. If there is no substantial body of academic literature published in this latter language, the proficiency must include oral proficiency. The languages chosen should be especially relevant to the student's intended dissertation topic or professional plans. A student whose mother tongue is a language other than English is exempted from this foreign-language requirement. Language-proficiency examinations for the Ph.D. in Applied Linguistics are administered by a special ad-hoc committee. Information regarding the nature and administration of the examinations is available from the Program Office.

**Units and Courses.** All candidates must take at least 32 units of graduate-level course work (in the 200 or 500 series). These 32 units may not include courses taken while completing the M.A., courses listed above as basic preparation, Linguistics 275, English 400K, or Applied Linguistics 599. No more than eight of the 32 units may be in 596 courses, and these should be in Applied Linguistics 596.

The 32 units (eight courses) must include at least two courses in each of the specializations of language analysis and language education as well as two courses in either language acquisition or language use. An additional two courses are required in the specialization in which the candidate chooses to do his dissertation research. Thus a student who opted for a dissertation in language acquisition would take a minimum of four courses in that area, plus two in language analysis and two in language education.

Credit may be transferred for up to two courses taken at another institution, but only for graduate-level courses taken after completion of the M.A. and preferably taken within the framework of UCLA's course Applied Linguistics 501.

Within the limits imposed by the Graduate Division, undergraduate courses taken as prerequisites to needed graduate courses, unrequired undergraduate courses, reading courses in a foreign language, graduate courses taken in addition to the required 32 units, Applied Linguistics 501 and 599, English 400K, and Linguistics 275 may be taken on a Satisfactory/Unsatisfactory basis. All other courses must be taken for letter grades.

**Examinations.** In lieu of a written qualifying examination, the student will submit two original research papers of publishable quality in different areas of specialization. These may be revised or extended seminar papers but must be prepared after admission to the Ph.D. program. The topics of these papers are to be chosen by the student, in consultation with appropriate faculty members and with the approval of the Ph.D. Program Advisor (chairman of the interdepartmental committee that administers the program). Each of the finished papers is evaluated by two faculty members chosen by the student in consultation with the Ph.D. Program Advisor. Any paper or papers judged unsatisfactory by either of the two readers must be revised to that reader's satisfaction. For each paper one of the two readers may be from outside Linguistics and ESL.

At this point a doctoral committee for the student is nominated by the Ph.D. Program Advisor after consultation with the student, and is then appointed by the Dean of the Graduate Division. The doctoral committee will include a minimum of five members, two of whom hold no appointment in Linguistics or ESL. Upon appointment, the chairman of the doctoral committee becomes the student's chief source of guidance. The doctoral committee administers to the student an oral candidacy examination, the focus of which will be a prospectus of his dissertation which the student must submit to the committee prior to the examination. The committee also has the responsibility for determining the adequacy of the student's preparation for writing the dissertation. If prospectus and preparation are judged adequate, the choice of the dissertation topic is thereby approved and the student becomes eligible for advancement to doctoral candidacy. In case of failure, the doctoral committee determines whether or not the candidate may be reexamined and if further courses must be taken before the reexamination.

**Dissertation.** All candidates are required to prepare a dissertation as a demonstration of their ability to carry out original research under the guidance of their doctoral committee. A minimum of three members of the doctoral committee, suggested by the committee chairman and approved by all committee members at the time of the oral candidacy examination, must read each dissertation and certify that it satisfies the research requirements of the Ph.D. These three readers must include at least two faculty members from ESL or Linguistics and at least one member from another department.

As the dissertation nears completion, all candidates must make a public report on the results of their research. This may be done, at the candidate's choice, at a meeting of the colloquium of either the Department of Linguistics or the ESL Section. Each candidate must, therefore, enroll in either English 400K or Linguistics 275 during the appropriate quarter. All members of the doctoral committee who will read the dissertation will attend the colloquium session at which the public report is made and will then determine whether or not the candidate will be required to pass a final oral examination. Only by a unanimous vote of the readers can the final oral be waived. The Graduate Division requires that, if a final oral examination is held, all members of the doctoral committee must attend and vote. Even if no final oral examination is held, the readers of the dissertation must still determine in the usual way whether or not the dissertation is finally approved after it has been completed.

### Financial Aid

For information on student support in the form of fellowships, research assistantships, and teaching assistantships, consult the ESL Section and the Department of Linguistics.

### Approved Courses

This is a partial listing of the courses that are acceptable in fulfillment of the 8-course requirement for the doctoral degree. Other courses may be approved by the Ph.D. Program Advisor. For some of the listed courses there may be undergraduate prerequisites which will not count for credit toward the doctorate. The list will be periodically reviewed by the interdepartmental committee which administers the program.

### Language Analysis

English 215. The Structure of Present-Day English.

241. Studies in the Structure of the English Language.

Linguistics 201. Phonological Theory.

204. Experimental Bases of Linguistics.

206. Syntactic Theory.

210A-B. Field Methods.

220A-H. Linguistic Areas (such as Africa, Southeast Asia, and Aboriginal North America).

225A-Z. Linguistic Structures (such as Germanic, Japanese, and Malayo-Polynesian).

251A-C. Topics in Phonetics and Phonology.

252A-C. Topics in Syntax and Semantics.

254. Topics in Linguistics: Linguistic Universals.

### Language Education

Education 210A. Basic Concepts in Educational Research.

210B. Experimental Design in Educational Research.

211A. The Measurement of Educational Achievement and Aptitude.

211B. Measurement in Education: Underlying Theory.

262B. Seminar: Reading.

270E. Seminar: In-Service Education.

English 210K. Role of ESL in Bilingual Education.

215. The Structure of Present-Day English.

251K. Bilingual Comparative Studies.

261K. Language Testing for Teachers of English as a Second Language.

270K. Language Policy in Developing Countries.

272. Section 1, Media in the ESL Classroom.

272. Research Design and Statistics in ESL.

### Language Acquisition

Education 212A. Learning and Education.

212B. Motivation and Affect in the Educative Process.

212C. Cognition and Creativity in Education.

217D. Language Development and Education.

English 260K. Psycholinguistics and Language Teaching.

272. Section 2 (to become English 262K), Second-Language Acquisition.

Linguistics 254. Topics in Linguistics: Psycholinguistics.

254. Topics in Linguistics: Language and the Brain.

254. Topics in Linguistics: Child Language.

Psychiatry 257A-B-C. Diagnostics and Therapeutics of Language Disabilities.

Psychology 240. Developmental Psychology.

260A-B. Proseminar in Cognitive Psychology.

263. Psycholinguistics.

#### Language Use

**Anthropology** 212. Anthropological Linguistics.

M276A-B-C. Linguistic Anthropology.

**English** 210K. TESL in Bilingual Education.

242. Language and Literature.

270K. Language Policy in Developing Countries.

271. Studies in African Literature in English.

273. Studies in Afro-American Literature.

274. Teaching English to Minority Groups.

275. Stylistics and the Teaching of English.

**Linguistics** 254. Topics in Linguistics: Pidgins and Creoles.

254. Topics in Linguistics: Bilingualism.

**Sociology** 216A-B. Survey Research Methods.

217. Ethnographic Field Work.

238A-B. Field Work in Minority Communities.

266. Selected Problems in the Analysis of Conversation.

#### Graduate Courses

**501. Cooperative Program.** (½ to 2 courses) Prerequisite: approval of Ph.D. Program Advisor and Graduate Dean. Approval of host campus instructor, Department Chairman and Graduate Dean. The course is used to record the enrollment of UCLA students in courses taken under cooperative arrangements with neighboring institutions. To be graded S/U.

**596. Directed Individual Study.** (1 to 2 courses) Prerequisite: admission to doctoral program. Independent study in an area of Applied Linguistics. May be repeated for credit. Up to eight units of 596 credit applicable to course requirements for Ph.D. in Applied Linguistics.

**599. Research for and Preparation of the Doctoral Dissertation.** (1 to 4 courses) Prerequisite: advancement to candidacy for the Ph.D. degree. Required of all doctoral candidates each quarter they are registered and engaged in dissertation preparation. May be repeated for credit, but may not be applied towards fulfillment of Ph.D. course requirements. To be graded S/U.

specialization is possible. There is no undergraduate program in Archaeology leading to a B.A. degree.

As outlined in the Program's "Guidelines" brochure, (which will be sent to applicants upon request), the interdepartmental degree requires a planned program of graduate study in two or more departments. The Archaeology Program has two tracks, one of which the applicant must select as part of the application for admission: (1) Interdisciplinary, in which students take half of their courses in departments *not* offering archaeology; (2) Interdepartmental, in which students may take all of their courses in departments offering archaeology. It is estimated that roughly half of the students admitted will be on each track, although no firm ratio is to be established. Those students whose courses of study will be largely within a single department (in such fields as ancient history, anthropology, art history, classics, Indo-European studies, Near Eastern languages and cultures, and Oriental languages) should refer to the separate degree program offered by the appropriate department. The graduate advisers for the Archaeology Program and for the various departments will provide counseling to ensure that each applicant selects the department or program (and degree objective) best suited to his/her interests.

Active archaeological research is underway in various parts of the world, and field training in archaeology is offered. There are opportunities for participation in a variety of laboratory and field researches in both the Old and New Worlds. Guidance for students interested in Contract Archaeology is available (see statement following the course listings).

Graduate Adviser: James N. Hill

#### Admission to Graduate Status

For general requirements, see the Graduate Division section. Any undergraduate major will be considered for admission into the program. The minimum Grade Point Average required for admission is 3.0. A Graduate Record Examination (Aptitude Test) Report is mandatory. The following application materials must be submitted *directly* to the Chairman of the Archaeology Program: an acceptable Plan of Study (including a statement of the applicant's objectives, an outline of projected course work and a general indication of an M.A. paper or dissertation topic); three letters of recommendation; a research paper preferably but not necessarily relevant to archaeology, or comparable evidence of scholarly work. Applicants are accepted for admission for the Fall Quarter only. The deadline for receipt of these materials is February 15.

#### Requirements for the M.A. degree in Archaeology

1. Nine 4 unit courses (taken for a letter grade) are required, distributed as follows: four upper division courses (100 series) (no 199 may be included); five graduate courses (200 and 500 series). (Only one of these may be in the 500 series.) Archaeology 200 is required. No more than any 3 of the 9 courses may be offered by the same department.

2. Core Examination: During the 4th quarter of residence, students will take a comprehensive core examination (6 hours) based on a list of readings (approximately 30 volumes) submitted by faculty members and designed to ensure that students master that body of knowledge considered to be of importance in the education of any professional archaeologist. The examination may be repeated one time.

3. Proficiency in one foreign language (for which there is a relevant scholarly literature) must be demonstrated by the end of the sixth quarter, unless an earlier deadline is imposed by the student's adviser. Additional language skills may be required depending on the field of specialization; this will be decided by the student's committee.

4. Field Work: All students receiving the M.A. in archaeology must demonstrate practical knowledge of methods and techniques used in archaeological field work, and must be able to relate this knowledge to relevant theoretical and general methodological concerns. This requirement may be met in several ways; the general standard is that no graduate degrees will be awarded to archaeologists until they have field experience and are competent to conduct field research in archaeology.

5. By the end of the third week of the 7th quarter the student must submit an acceptable M.A. paper to the Chairperson of the Archaeology Program. In addition, all requirements of the Graduate Division (residence, unit patterns, etc.) must be met. Consult the Graduate Division brochure, Standards and Procedures for Graduate Study at UCLA I.

6. There is a *ceiling* of 7 quarters for the completion of all work for the M.A. degree.

#### Requirements for the Ph.D. degree in Archaeology

1. M.A. degree from an appropriate program (which may or may not involve archaeological training).

2. Proficiency in at least one foreign language, as determined by the student's committee.

3. Field work requirement (as in M.A. Program, item #4 above, unless it has already been satisfied).

4. Written qualifying examination—by the fourth quarter in the doctoral program the student must pass a written qualifying examination in at least the following three fields: a) Topical or problem specialization; b) Analytical Theory, Method and Technique; c) Regional culture history.

5. Oral qualifying examination—to be passed by the 6th quarter of the doctoral program.

6. A doctoral dissertation which will embody the results of original research and constitute a contribution to knowledge.

7. Time limit—there is a ceiling of 14 quarters (4-2/3 calendar years) for completion of all work towards the Ph.D. degree, including the dissertation.

## COURSE LISTINGS

Of all the courses listed, only Archaeology 200 is required. Other courses are listed simply to provide prospective applicants with information regarding course offerings in the Archaeology Program itself, and in the various departments that offer archaeology or archaeology-related courses. It is not feasible, to list the many courses offered by other departments or disciplines at U.C.L.A., even though many such courses will be relevant to individual programs of study.

#### Graduate Courses

Prerequisite for all courses: consent of the instructor. All courses may be repeated for credit upon recommendation of adviser. Of the following graduate courses only Archaeology 200 is required.

**200. Archaeology Colloquium.** (¼ to 1 course) Seminar, two hours. Prerequisite: Archaeology major or consent of instructor. The development of archaeology as a discipline. Major intellectual trends and current issues in archaeology. Scientific and humanistic viewpoints presented by archaeologists from different academic departments. May be taken repeatedly for credit; however, M.A. candidates may apply this course only twice toward the fulfillment of the departmental M.A. requirements. The Staff

**259. Field Work in Archaeology.** (½ to 2 courses) Participation in archaeological field excavations or museum research under supervision of staff archaeologists. A minimum of one month of field time away from the campus is required. The Staff

#### Individual Study and Research

**596. Individual Studies for Graduate Students.** (½ to 2 courses) Hours to be arranged. Prerequisite: consent of the instructor. The Staff

**597. Preparation for Doctoral Qualifying Examinations.** (½ to 2 courses) Prerequisite: completion of formal course work and passing of language examinations before enrollment. Graded S/U. The Staff

**598. M.A. Thesis Preparation.** (½ to 2 courses) Prerequisite: consent of the instructor. Graded S/U. The Staff

**599. Dissertation Research and Preparation.** (½ to 2 courses) Prerequisite: consent of the instructor. Graded S/U. The Staff

#### Related Courses in Other Departments

Most archaeology courses are taught in the various departments. The following is a listing of such courses, by topic and department. They are listed here for reference; students should consult the departmental course lists for full descriptions and prerequisites. No attempt is made to list relevant courses in other disciplines.

#### METHODOLOGY AND HISTORY

**Anthropology** 111A-111B. Fossil Man and His Culture.

112. Hunting and Gathering Societies.

122C. Technology and Environment.

156. Cultural Ecology.

170A. Field Training.

171A. Lab Methods in Physical Anthropology.

172. Methods and Techniques of Ethnohistory.

173A-173B. Research Design and Quantitative Procedures.

174. Laboratory Methods in Technology and Invention.

175A. Strategy of Archaeology.

175B. Archaeological Research Techniques.

M175C. Dating Techniques in Environmental Sciences and Archaeology (same as Geography M17B).

175E. Laboratory Analysis in Archaeology.

178A-178B-178C. Museum Studies.

183. History of Archaeology.

210A-210B. Analytical Methods in Archaeological Studies.

214H. Selected Topics in Historical Reconstruction and Archaeology.

M214I. Selected Topics in Dating Techniques in Environmental Sciences and Archaeology (same as Geography M27B).

214J. Selected Topics in Field Training in Archaeology.

221A-221B. The Fossil Evidence for Human Evolution.

234. Explanation of Societal Change.

263. Analysis of Field Data.

269H. Selected Topics in Cultural Ecology.

## ARCHAEOLOGY (INTERDEPARTMENTAL)

Alexander Badawy, Ph.D., *Professor of Art.*

C. Rainer Berger, Ph.D., *Professor of Geography and Geophysics.*

Giorgio Buccellati, Ph.D., *Professor of Ancient Near East (Department of Near Eastern Languages and Cultures) and History.*

Marija Gimbutas, Ph.D., *Professor of European Archaeology (Department of Slavic Languages).*

James N. Hill, Ph.D., *Professor of Anthropology. Clement W. Meighan, Ph.D., Professor of Anthropology.*

Henry B. Nicholson, Ph.D., *Professor of Anthropology.*

Wendell H. Oswalt, Ph.D., *Professor of Anthropology.*

Merrick Posnansky, *Professor of African History and Archaeology (Department of History).*

J. LeRoy Davidson, Ph.D., *Emeritus Professor of Art.*

Katharina Otto-Dorn, Ph.D., *Emeritus Professor of Islamic Art.*

Richard C. Rudolph, Ph.D., *Emeritus Professor of Oriental Languages.*

Hung-hsiang Chou, Ph.D., *Associate Professor of Oriental Languages.*

Christopher B. Donnan, Ph.D., *Associate Professor of Anthropology.*

Susan B. Downey, Ph.D., *Associate Professor of Art.*

Steven Lattimore, Ph.D., *Associate Professor of Classics and Classical Archaeology.*

James R. Sackett, Ph.D., *Associate Professor of Anthropology.*

Elizabeth Carter, Ph.D., *Assistant Professor of Near Eastern Archaeology (Department of Near Eastern Languages and Cultures).*

Timothy Earle, Ph.D., *Assistant Professor of Anthropology.*

Gail Kennedy, Ph.D., *Assistant Professor of Anthropology.*

Paul A. Clement, Ph.D., *Emeritus Professor of Classics and Classical Archaeology.*

C. W. Ciewlow, Ph.D., *Lecturer in Anthropology.*

Jay D. Frierman, M.A., *Lecturer in Near Eastern Archaeology (Department of Near Eastern Languages and Cultures).*

Bernard D. Frischer, Ph.D., *Assistant Professor of Classics.*

Cecelia F. Klein, Ph.D., *Assistant Professor of Art.*

Deborah Kimburg-Salter, Ph.D., *Assistant Professor of Art.*

Kan Lao, Academician, *Emeritus Professor of Oriental Languages.*

Willard F. Libby, Ph.D., *Emeritus Professor of Geophysics.*

Martin Powers, Ph.D., *Acting Assistant Professor of Art.*

Dwight Read, Ph.D., *Associate Professor of Anthropology.*

Arnold Rubin, Ph.D., *Associate Professor of Art.*

Stanislav Segert, Ph.D., *Professor of Biblical Studies and Northwest Semitics (Department of Near Eastern Languages and Cultures).*

An interdepartmental committee administers graduate degree programs leading to the M.A. and Ph.D. in Archaeology, in addition to the individual departmental programs in which archaeological

292. **Mathematical Models in Anthropology.**

Art 265. Field Work in Archaeology.

**Engineering 146E.** Ceramic Materials in History and Archaeology.**Near Eastern Languages and Cultures: Ancient Near East 261.** Practical Field Archaeology.**NEW WORLD****Anthropology 106B.** Peoples of California: Prehistory.

106C. Peoples of North America.

106D-106E. Archaeology of North America.

123C. Ancient Civilizations of Western Middle America. (Nahuatl Sphere)

123D. Ancient Civilizations of Eastern Middle America. (Maya Sphere)

123E. Ancient Civilizations of Andean South America.

205. Problems in Southwestern Archaeology.

214E. Selected Topics in Prehistoric Nonagricultural Societies.

214G. Selected Topics in Prehistoric Civilizations of the New World.

**Art 117A.** Advanced Studies in Pre-Columbian Art: Mexico.

117B. Advanced Studies in Pre-Columbian Art: Central America.

117C. Advanced Studies in Pre-Columbian Art: The Andes.

118A. The Arts of Oceania.

118B. The Arts of Pre-Columbian America.

118D. The Arts of Native North America.

217. Topics in Oceanic Art.

218. Topics in Pre-Columbian Art.

219. Topics in Native North American Art.

220. The Arts of Africa, Oceania and Pre-Columbian America.

**OLD WORLD — EUROPE****Anthropology 109.** Old Stone Age Archaeology.**M206A-206B. Seminar in European Archaeology.** See Indo-European Studies M250A-250B.

214F. Selected Topics in Problems in Old World Archaeology.

**Art 103A.** Greek Art.

103B. Hellenistic Art.

103C. Roman Art.

103D. Etruscan Art.

221. Topics in Classical Art.

222A-222B. Graeco-Roman Art.

223. Classical Art.

**Classics 151A.** Classical Archaeology: Graeco-Roman Architecture.

151B. Classical Archaeology: Graeco-Roman Sculpture.

151C. Classical Archaeology: Graeco-Roman Painting.

251A-251D. Seminar in Classical Archaeology.

252. Topography and Monuments of Athens.

253. Topography and Monuments of Rome.

**Indo-European Studies 131.** European Archaeology: Proto-Civilizations of Europe.

132. European Archaeology: The Bronze Age.

**M250A-250B. Seminar in European Archaeology.** (Same as Anthropology M206A-206B).**OLD WORLD — NEAR EAST****Anthropology 123.** Origins of Old World Civilization.**Art 101A-101B-101C.** Egyptian Art and Archaeology.

101D. Art of the Ancient Near East.

210. Egyptian Art.

211. Topics in Egyptian Art.

**History 124C.** Religions of the Ancient Near East.

140A-140B. History of Ancient Mesopotamia and Syria.

203. History of Ancient Egypt in the Late Period.

240J. Near Eastern History.

**Near Eastern Languages and Cultures: Ancient Near East 160A-160B.** Introduction to Near Eastern Archaeology.

161A-161B-161C. Archaeology of Pre- and Proto-Historic Mesopotamia.

162. Archaeology of Palestine.

163. Archaeology of Iran.

164A-164B-164C. Archaeology of the Historic Periods in Mesopotamia.

220. Seminar in Ancient Egypt.

250. Seminar in Ancient Mesopotamia.

250x. Seminar in Ancient Mesopotamia.

260. Seminar in Ancient Near Eastern Archaeology.

262. Seminar in Object Archaeology.

**OLD WORLD — ISLAM****Art 104B-104C-104D.** Architecture and the Minor Arts of Islam in the Middle Ages.

212. Problems in Islamic Art.

213. Problems in Islamic Art.

**OLD WORLD — AFRICA****Art 118C.** The Arts of Sub-Saharan Africa.

119A. Advanced Studies in African Art: The Western Sudan.

119B. Advanced Studies in African Art: The Guinea Coast.

119C. Advanced Studies in African Art: The Congo.

216. Topics in African Art.

220. The Arts of Africa, Oceania, and Pre-Columbian America.

**History 125A.** History of Africa.

197. Gold in African History.

240. Africa and The Indian Ocean.

240N. Archaeological Background to West African History.

**OLD WORLD — INDIA AND THE FAR EAST****Art 114A.** The Early Art of India.

114B. Chinese Art.

114C. Japanese Art.

115A. Advanced Indian Art.

115B. Advanced Chinese Art.

115C. Advanced Japanese Art.

259. Topics in Asian Art.

260. Asian Art.

**Oriental Languages 170A-170B-170C.** Archaeology in Early and Modern China.

188A-188B. Chinese Paleography.

270. Seminar: Selected Topics in Chinese Archaeology.

275. Seminar: Selected Topics in Chinese Cultural History.

**OTHER RELATED PROGRAMS**

Related courses (not listed individually) include regional geography, ancient history and regional history, ethnography, folklore and history of technology. Also recommended are the appropriate modern and ancient languages for the student's area of study.

Students are encouraged to examine the course listings of any and all departments whose offerings may contribute to a truly interdisciplinary course of study.

**CONTRACT ARCHAEOLOGY**

While the importance of Contract (Public) Archaeology is recognized, UCLA currently offers no formal courses in this subject. Archaeology students whose interests include this field (as well as other disciplines which intersect archaeology) are encouraged to apply. Efforts will be made to develop a specially tailored program including the rudiments of Contract Archaeology.

**ARCHITECTURE AND URBAN PLANNING**

(Department Office, 1317 Architecture Building)

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**401. Projects in Architecture.** Laboratory, three hours. Prerequisite: consent of instructor. A number of different projects in relevant problem areas will be offered by faculty members from which the student may choose. May be repeated for credit.

The Staff

**402. Projects in Urban Design.** Laboratory, three hours. Prerequisite: consent of instructor. A number of different projects in relevant problem areas will be offered by faculty members from which the student may choose. May be repeated for credit.

The Staff

**403. Project Studio With Specific Topic. (½ to 1 course)** Laboratory, four to eight hours. Prerequisite: previous courses of particular sequence or consent of instructor.

403A. Projects in Systems Building.

403B. Projects in Energy Conserving Design.

403C. Projects in Man-Environment Relations.

403D. Projects in Educational Facilities.

403E. Projects in Health Facilities.

403F. Projects in History.

403G. Projects in Design Methodology.

May be repeated for credit.

The Staff

**403H. Projects with Specific Topic: Projects in Computer Aided Design. (½ to 1 course)** Prerequisite: previous course(s) in particular sequence or consent of instructor. May be repeated for credit.

The Staff

**411. Introductory Design Studio.** (Formerly numbered 451.) Laboratory, eight hours. Prerequisite: consent of instructor. Architectural composition is initially studied in terms of its separate elements. After each is studied by means of a manipulative exercise which allows for experimentation of its intrinsic possibilities, the student then undertakes a series of closely controlled exercises dealing with combining the elements. The latter part of the course is spent in the design of a small building, in which previously acquired knowledge is synthesized into a single design.

The Staff

**412. Building Design Studio.** Prerequisite: course 411 or consent of instructor. The design of the project starts with the exploration of the architectural program in relation to the design process and particularly the implications of the program on architectural forms and concepts. In a second phase structural elements are introduced to fulfill the program requirements and to support and further develop the intended forms and concepts.

The Staff

**413. Building Design with Landscape Studio.** Laboratory, eight hours. Prerequisites: course 411, 412 or consent of instructor. Building Design and Site Planning in relation to water, land forms and plants in natural landscape, with special attention to natural light, heat and ventilation.

The Staff

**414. Major Building Design.** (Formerly numbered 453.) Laboratory, eight hours. Prerequisites: second year standing. Design projects which enable students to concentrate on specifically architectural issues, with emphasis either on treatment

in breadth of large scale projects, or exploration in depth and detail of smaller scale projects. Students will learn to integrate structure, environmental control, physical context and the cultural environment in design of buildings, and to present their ideas in graphic or model form. The Staff

**415. Major Building Design II.** (Formerly numbered 454.) Laboratory, eight hours. Prerequisites: completion of 414, Major Building Design I. Design projects which enable students to concentrate on specifically architectural issues, with emphasis either on treatment in breadth of large scale projects, or exploration in depth and detail of smaller scale projects. Students will learn to integrate structure, mechanical systems, physical context, and the cultural environment in design of buildings, and to present their ideas in graphic or model form. Special emphasis will be placed upon integration of environmental control systems. The Staff

**416. Comprehensive Design Studio.** Prerequisite: completion of required course work up to second quarter, third year. Consent of instructor. Course will complete regular required sequence of design work, preparing students for the third year thesis preparation. Comprehensive design projects will be structured to test students on integration of structural aspects, mechanical systems, site planning, and climatic considerations within their design solutions.

**421. Basic Design.** (Formerly numbered 410.) Discussion, three hours; laboratory, three hours. Prerequisite: consent of instructor. Development of basic skills in graphic presentation and design. Drawing systems covered include diagramming, orthogonal and axonometric projection and perspective. The Staff

**422. Basic Design.** Discussion, three hours; laboratory, three hours. Prerequisite: course 421 or consent of instructor. The course continues with an emphasis on the exploration of the interrelationship between drawing and design. More advanced design strategies and modes of graphic exploration and presentation are developed. The Staff

## METHODOLOGY AND COMPUTER AIDED DESIGN

**224. Methodology: Design Theory.** Lecture, three hours. A survey of the literature on systematic methods and design including problem-solving, information handling, artificial intelligence, and decision-making in the design process. Mr. Milne

**225A. Information Systems.** (Formerly numbered 280.) Discussion, three hours. Prerequisite: consent of instructor. Information processing models of design. The relations between information flows and organizational structure. New techniques for information handling in design: storage and retrieval systems, automated document production, computer-assisted design techniques. Mr. Hamer, Mr. Mitchell

**227A. Computer Graphics.** Discussion, three hours. Prerequisites: consent of instructor. Assuming a basic familiarity with computer programming, the course provides an introduction to the theory, techniques, and applications of computer graphics in architecture. It consists of a series of lecture/seminars on technical topics, plus intensive practical work conducted on two storage-tube graphics terminals. Mr. Mitchell

**227B. Computer Aided Design.** (Formerly numbered 227.) Discussion, three hours. Prerequisite: consent of instructor. An examination of existing computer-based systems for aiding decision-making. Topics will include artificial intelligence, self-organizing systems, and hardware capabilities and limitations. An attempt will be made to develop and test components of a computer design partner. Mr. Hamer, Mr. Milne

**228A. Mathematical Models in Architectural Design.** (Formerly numbered 281.) Lecture, three hours. Prerequisite: consent of instructor. An introduction to concepts and techniques of mathematical modeling in architecture. Basic mathematics needed to develop models. The formal description of built form: date structures. Practical case studies and exercises dealing with the use of mathematical models in architectural design. Ms. Liggett, Mr. Mitchell

**228B. Research in Design Methods.** (Formerly numbered 228.) Lecture, three hours. Prerequisite: consent of instructor. Developmental work on a specific method of design. Theoretical and operational problems of a design method: degree of systemization, man-machine relationships areas of application, problems of translation and compatibility with other methods. The Staff

## ENVIRONMENTAL TECHNOLOGY

**431. Structures I.** (Formerly numbered 425A.) Lecture, three hours. Prerequisite: basic algebra, geometry, trigonometry and consent of instructor. Introduction to structural behavior and structural statics. Operations with forces and vectors, both algebraically and graphically. Equilibrium of force systems; polygon of forces and funicular polygon. Internal actions: axial force and bending moment. Reactions, stability and statical determinacy. Determinate frames. Plane trusses: analysis and design. Mr. Aroni

**432. Structures II.** (Formerly numbered 425B.) Lecture, three hours. Prerequisite: completion of Structures I, consent of instructor. Mechanics of structures and structural elements. Elastic materials: stress, strain and stress-strain relations. Theory of bending: curvature, stress and strain distributions, centroid,

moments of inertia, resisting and plastic moments. Design of beams for bending, shear and deflections. Torsion members. Instability and design of columns. Design for combined bending and compression. Tensile structures; cables, pneumatic structures. Slabs and plates; shells and folded plates. Mr. Aroni

**433. Structures III.** (Formerly numbered 425C.) Lecture, three hours. Prerequisites: Structures II, consent of instructor. Introduction to statically indeterminate analysis. Structural materials and loads. Wind loads: distribution with height, design for comfort, structure behavior under lateral loads. Steel construction and concepts for high rise structures. Structural case studies in timber and steel. Introduction to earthquakes: seismology, magnitude, intensity, history. Seismic instrumentation. Case studies of recent earthquakes and damage. Earthquake design concepts and seismic code requirements. Mr. Aroni

**434. Structures IV.** Lecture, three hours. Prerequisites: Structures I, II, III, consent of instructor. Considerations of concrete structures. Materials of construction: cement aggregates, concrete mix design. Construction methods and structural systems. Reinforced concrete theory: elastic and ultimate strength analysis and design of beams, columns and slabs. Case studies of concrete structures. Economics of high rise concrete apartment buildings. Mr. Aroni

**436. Construction Documents.** Laboratory, eight hours. This course considers the relationship of the design processes from schematic design through the production of all of the documents for the construction contract. A simple structure will be designed and the design development will be carried through working drawings and an outline form of specifications. Mr. Mills, Ms. Sklarek

**437. Building Construction.** Lecture, four hours. Introduction to the first principles of structure and building construction. Building elements are not only explored for their structural qualities and possibilities of their production and assembly, but also concerning their formal and functional properties, and particularly their application and role within a building. Mr. Mills, Mr. Schoen, Ms. Sklarek

**438. Systems Building.** (Formerly numbered 242.) Discussion, four hours. Prerequisite: consent of instructor. Survey of past and present developments in Europe, the USSR and the USA. Impacts, demands, socio-economic and legal constraints, user needs, performance specifications. Systems engineering and design. Measurement regulation, modular coordination, closed systems, open systems, design of systems, subsystems, components, elements and materials. Mr. Schulitz

**439. Methods in Building Systems Development.** (Formerly numbered 244.) Base for open building systems: reference system, component compatibility, measurement regulation, modular coordination. In-depth study of past and present research and developments, such as SCSD, SAR.

**441. Environmental Control Systems.** (Formerly numbered 245.) Lecture, three hours. Prerequisite: consent of instructor. The design of the mechanical systems necessary for the functioning of large buildings: air handling, fire and life safety, plumbing, vertical and horizontal circulation, communication and electrical power distribution, analysis of the interaction of these systems and their integrated effects on the architectural form of a building. Mr. Aroni, Mr. Milne

**442. Building Climatology.** (Formerly numbered 423A-423B.) Lecture, three hours. Prerequisites: basic physics, completion of first year M.Arch. I, consent of instructor. The design of buildings which specifically respond to the local climate; utilization of natural energies, human thermal comfort; sun motion and sun control devices; use of plant materials and land form to modify microclimate. Mr. Milne

**443. Heat and the Thermal Environment.** (Formerly numbered 424A-424B.) Lecture, four hours. Prerequisites: Structures II, Environmental Control Systems or consent of instructor. Explores the extent to which the physical form of a building controls the thermal environment of its occupants; the design of naturally and artificially heated and cooled environments; parameters of human thermal comfort; advanced concepts in building climatology. Mr. Givoni

**444. Light and the Visual Environment.** Lecture, four hours. Prerequisites: Structures II, or consent of instructor. Explores the extent to which the physical form of a building controls the luminous environment of its occupants; the design of naturally and artificially illuminated environments; parameters of human visual comfort. Mr. Milne

**445. Sound and the Auditory Environment.** Lecture, four hours. Prerequisite: Structure II, or consent of instructor. Explores the extent to which the physical form of a building controls the acoustic environment of its occupants; the design of spaces for auditory privacy and for auditory enhancement; parameters of human audition. Mr. Milne

**446. Introduction to Energy Conserving Design.** (Formerly numbered 243.) Prerequisites: M.Arch. I students must have taken Building Climatology or equivalent. Others: consent of instructor. A professional practice-oriented view of introductory energy flow and thermal comfort concepts. Review of existing and developing Energy Conserving Design and Management "active" and "passive" techniques. Application of solar technology to architectural design within the ECD/M context. Explanation of historical as well as current and proposed energy/resource consuming, climate

responsive buildings and cities. May be repeated for credit.

Mr. Schoen

## SOCIO-PHYSICAL RESEARCH AND DESIGN

**180. Visual Thinking.** Review of concepts of perception and conception (e.g., imagery, reasoning, memory, representation, communication) as they apply to the design process; special emphasis on the role of visual and schematic thinking in design problem-solving. Training of visual skills. Mr. Rusch

**192. Housing and Settlement Patterns.** Patterns of spatial organization in housing and small settlements in a range of cultures. Interaction between spatial patterns and prevailing social attitudes toward the individual, the family, land ownership and toward authority, aggression, and communalism. Mr. Rand, Mr. Vreeland

**258. Research in Man-Environment Relations.** (½ to 2 courses) Selected topics for research in social and behavioral relations to the environment. This course is intended to provide a teaching space for visiting teachers in the social and behavioral sciences. It may be repeated since its contents are not set and differ each time if is offered. The Staff

**292. Social Building Theory.** Prerequisite: consent of instructor. Review of basic literature on application of social science theory and data to the design and development of socio-technical systems.

**293. Experiencing the Environment.** Prerequisite: consent of instructor. Introduction to experience of the environment and its representation in graphic and visual forms. Focus on metaphorical thinking and personal discovery of the meaning and significance of the environment.

**294. Environmental Psychology and Sociology.** Prerequisite: consent of instructor. Environmentally based and interpreted approach to psychological states and individual and social behavior. Territoriality, density, stress and adaptation, environmental cognition, aesthetics and preferences are considered.

**295. Cognitive Processes of Design.** (Formerly numbered 225.) Lecture, three hours. Review of concepts of perception and conception (e.g., imagery, reasoning, memory, representation, communication) as they apply to the design process. Special emphasis on the role of visual and schematic thinking in design problem-solving. Mr. Rusch

**296. Social Analysis of Buildings and Settings.** Prerequisite: consent of instructor. The class will conduct a ten week evaluation of a building in Los Angeles, designed and built within the past five years, where the architect, builder, initiator or other parties involved in the inception process are available for cooperative review of the facility. The structure of the course involves a review of evaluation theory in the first three weeks, and a series of exercises performed on a single building, looking at its effectiveness and character through a variety of approaches to evaluation. The class will produce a comprehensive evaluation using multiple-methods for each building evaluated. Mr. Adelson, Mr. Silverstein

**297. Group Process in Design.** (Formerly numbered 496.) Prerequisite: consent of instructor. This course aims to equip students with the knowledge and skills needed to work effectively in design processes with other professionals and with client and user groups in organizational and other settings where interaction is important in determining design outcomes.

**298. Social Meaning of Space.** (Formerly numbered 257.) Discussion, three hours. Traces the evolution of the concept of space from its origins in ritual and primitive social organizations. Concentrates on the child's evolving conception of space, literature on perceptual development and studies of adaption to the spatial order of the man-made environment. Mr. Rand

**299. Application of Behavioral Research to the Design Process.** (Formerly numbered 253.) Lecture, three hours. Prerequisite: course 258 or consent of instructor. Application of behavioral research to the design process. This course attempts to begin the difficult task of bridging the gap between research and design by building upon the ideas and techniques generated in SAUP 258 and applying them to research in a field situation and the translation of the results of this research into a preliminary design solution in a selected community. Emphasis will be placed upon problem definition, the generation of meaningful research questions and understandable results, iterative approaches to the research/design interface, and novel ways of presenting design ideas. May be repeated for credit. The Staff

**299. Application of Behavioral Research to the Design Process.** (Formerly numbered 253.) Lecture, three hours. Prerequisite: course 258 or consent of instructor. Application of behavioral research to the design process. This course attempts to begin the difficult task of bridging the gap between research and design by building upon the ideas and techniques generated in SAUP 258 and applying them to research in a field situation and the translation of the results of this research into a preliminary design solution in a selected community. Emphasis will be placed upon problem definition, the generation of meaningful research questions and understandable results, iterative approaches to the research/design interface, and novel ways of presenting design ideas. May be repeated for credit. The Staff

## ARCHITECTURAL AND URBAN ANALYSIS

**210. Health Care Facilities.** Studies the context of health care delivery and the impact on the process of planning health care facilities. Student work is a case study of an existing Southern California hospital. Studies in detail the process of the design of hospitals and the operational requirements of individual departments of the hospital. May be repeated for credit. Mr. Bobrow

**218A-218B. Urban Structure: Analysis and Modeling.** Discussion, three hours. Prerequisite: consent of instructor. Generation of conceptual frameworks on the urban structure based on empirical data, urban theories, and mathematical models. Individual and group research on selected aspects of urban systems. Application



of models in decision-making, particularly in urban design projects.  
Mr. Lang

**238. Research in Architectural and Urban Analysis.** Discussion, three hours. Prerequisite: consent of instructor. Selected topics in architectural and urban systems. Documentation and project work; field work. The Staff

**255. Urban Morphology: Definitions and Consequences.** Lecture, three hours. An analysis of urban spatial form and its socio-economic and behavioral bases and consequences. Special emphasis is placed on ecological approaches (e.g., social area analysis, urban growth models, factorial ecology) and behavioral analysis (cognitive mapping, urban imagery, attitudes toward human and material resources). Mr. Stea

**271. Elements of Urban Design.** (Formerly numbered 237.) Lecture, three hours. Introduction into basic knowledge of elements and methods of urban design. A multidisciplinary approach leading to an understanding of the political, socio-economic and technological framework of urban systems and its dynamic interrelations. Mr. Lang, Mr. Schultz

**275. Urban Form.** (Formerly numbered 236.) Discussion, four hours. Seminar on recent and historical urban design projects, elucidating the planning objectives, structuring principles, operational characteristics, physical components, and environmental consequences of each project. Development of a definitional framework, analytical criteria, and practical direction in the examination of urban form. Mr. Eisner

**279A. Housing for Developing Countries.** Discussion, three hours. Considerations of socio-cultural, economic, and political factors, materials, structural systems, shelter accessories and manufacturing technologies, related to the priorities of developing countries in housing policies and the planning and design of shelter. Mr. Aroni

**289. Special Topics in Architecture and Urban Design.** (½ to 1 course) Prerequisite: consent of instructor. Selected academic topics initiated by students, student teams or faculty and directed by a member of the faculty. May be repeated for credit.

**290. Design Seminar in Educational Systems and Facilities.** (Formerly numbered 247.) Laboratory, six hours. Explores education as an environmental system, including goals, institutional structure, functions, technology, interactions with other social systems, and possible innovations. Examines implications for design of educational structures, facilities, equipment, and arrangements. Requires design and critique of alternative physical or functional features. May be repeated for credit. Mr. Rusch, Mr. Vreeland

## ENVIRONMENTAL MANAGEMENT

**203A-203B. Decision-Making in Planning and Design.** Lecture, three hours. Statistical decision theory and alternative design solutions for coping with different degrees of future uncertainty in planning; nature of models for rational behavior in presence of conflicts of interest; individual and group decision-making under uncertainty. Mr. Adelson

**204. Imaging the Future.** Lecture, three hours. Introduction to social and technological forecasting, including: nature and limitations of forecasting; ideology and values in forecasting, review of integrative forecasting techniques, and the role of forecasting in environmental planning, design and management processes. Mr. Adelson

**291. Architectural Programming and Theory.** (½ to 1 course) Discussion, four hours. Prerequisites: completion of all specifically required courses in the first and second years of M.Arch. I. The first part of the course explores concepts and methods of architectural programming and its interrelation to the design process; planning of the design process; various techniques for the determination of program contents, basic conditions, resources and constraints; the identification of solution types for given situations. In the second part of the course, the theoretical background is applied in the development of a program for the thesis. The Staff

**460. Architectural Management.** Lecture, three hours. Problems of land development and real estate. The professions of architecture and planning: traditional and innovative organizational forms. Manufacture, distribution, transport, and on-site construction/assembly. Controls and resources: government programs and restrictions; financing and administration; costs estimation; materials and labor availability. The Staff

**461. Professional Organization and Practice.** Lecture, three hours. The profession of architecture: historical development, relation to other professions and disciplines, the changing role of the architect. Architecture and professional societies: The American Institute of Architects, state and national registration boards, educational accreditation. Legal and ethical questions relating to the practice of architecture. Emerging forms of architectural practice. Mr. Schoen

## THEORY, HISTORY AND CRITICISM

**191. Modern Architecture.** (½ or 1 course) A brief history of modern architecture in Europe in the first half of this century. Starting with Behrens and the German Werkbund, the course explores De Stijl in Holland, Purism in France, Constructivism in Russia, Futurism and Rationalism in Italy, the Berlin School, and the Bauhaus in Germany. Mr. Jencks, Mr. Vreeland

**201A. Architectural Theory.** (½ to 1 course) Lecture, three hours. Varying present-day and historical descriptive and normative frameworks for the discussion of architecture and its relation to other aspects of the environment. The effects of literary, art, and other forms of criticism on architectural theory. Epochs and styles, ideologies and social settings for architecture. Mr. Kupper

**282A. Image and Cultural Symbolization.** (Formerly numbered 254.) Lecture, three hours. This course will demonstrate how modern architecture is a language that sometimes fails to communicate its intended messages. It will treat the division between elitist and popular architecture and suggest means of designing to overcome this division; basically by using multiple "codes" of architectural meaning. Students will be expected to either analyze a building semiotically, or design a building using the various "codes." Mr. Jencks

**285. Architecture Case Study.** (Formerly numbered 235.) Discussion, three hours. Prerequisite: consent of instructor. Through a set of structured studio assignments and lectures, students are made aware of the underlying functional formal structural and spatial organization principles of significant buildings and building typologies. Mr. Howard

**286. History of Specific Building Types.** Lecture, three hours. Consideration of socio-economic and historical factors involved in the development of a specific building type, i.e., theaters, schools, museums and hospitals. May be repeated for credit. Mr. Aran

**287. Ancient and Islamic Architecture in the Mediterranean Area.** Prerequisite: consent of instructor. The aim of this course is to study the influence of the physical and social environments on building activity throughout the history of societies around the Mediterranean. Special consideration is given to architectural development in Greece. Mr. Aran

**288. Architectural History: Medieval Period.** Prerequisite: consent of instructor. A survey of European architecture from the year one thousand with selected buildings and environments considered in terms of the cultural contexts. Mr. Aran

## PLANNING THEORY

**200. The Good Society.** Lecture, three hours. Prerequisites: consent of instructor. An exploration of certain value premises of contemporary social planning and social practice. The seminar will cover such topics as models of man-in-society; dialogue as a basic form of social relation; territorially and non-territorially integrated societies; the social learning paradigm; optimal conditions for social learning; and problems of interface between social planning, backed by the coercive power of the State, and social practice of the Good Society. Enrollment will be limited to 12 students. Mr. Friedmann

**201B. Introduction to Planning Theory.** (Formerly numbered M201B.) The course provides a broad overview of the history of planning theory and focusses on current theories concerning the linkage of a scientific-technical intelligence to organized social actions. May be taken by upper-division, undergraduate students with consent of instructor.

**201C. Colloquium in Planning Theory.** Prerequisite: enrollment limited to Ph.D. students. An in-depth and critical examination of major issues in Planning Theory. Faculty and students jointly select topics of importance for discussion. This course is graded S/U.

**209. Special Topics in Planning Theory.** (½ to 2 courses) Lecture, three hours. Seminar on topics in planning theory selected by the faculty. May be repeated for credit. The Staff

**212. Planning Theory: Time and the Future.** Analyzes how time is, and can be, used as a factor in urban decisions and actions. Focuses on concepts and methods for dealing with the middle- and longer-range future, including asset accounting, time- and goal-oriented systems analysis, and different approaches to "planning for a better future".

**223A. Professional Development Seminar (A).** Lecture, three hours. A lecture-seminar-project course offering an introduction to the planning profession and, more specifically, to the Urban Planning Program at UCLA. An overview of the forces that shaped its practice over time and an exploration of various professional roles for planners. Planning education will be viewed as a response to changing needs and as a catalyst for emerging roles for professional planners. Several short projects are designed to expose students to real world planning problems and to the various viewpoints and methods that the Areas of Policy Concentration specialties would bring to bear. 223A is generally taken Fall quarter of the first year as an introduction to 223B and 223C. Mr. Heskin

## PLANNING METHODS

**206A. Uses of Urban Data.** (Formerly numbered 268.) Lecture, three hours. This course will cover various kinds of data which can be used and/or are used in planning studies. Heavy emphasis will be placed on census data and mapping techniques. Course will explore uses of school data, employment data, utility building, etc., in preparation of impact analyses, evaluation reports, and updating census. Generally taken in first year. Mr. Grigsby

**208A-208B. Seminar in Advanced Research Methods.** (1 course, ½ course) (Formerly numbered 208ABC) Prerequisite: consent of instructor; students are, in addition, required to participate in an independent study course (from 2-4 units) in order

to prepare dissertation topics to be discussed in 208B. The 208A course, offered Fall, will consist of (1) lecture-discussions on research method; (2) lecture-discussions by visitors, most of whom from the Urban Planning faculty, leading to the identification of dissertation topics; and (3) potential topics developed by each student. The 208B course, offered in Winter, will consist of the presentation and discussion of dissertation topics, developed in detail (with bibliographies, etc.). The intercourse during Winter quarter is intended for the development of that topic, in close collaboration with a potential dissertation advisor, through enrollment in an independent study course. This course is required of Ph.D. students; open to MA students interested in research. This course is graded S/U and may be repeated for credit.

**213. Social Indicators and Reports for Metropolitan Regions.** Discussion, three hours. Prerequisite: second year standing. Research seminar concerned with the development of social indicators for evaluating and reporting the performance of complex urban systems. Mr. Grigsby, Mr. Perloff

**M215A. Advanced Quantitative Analysis.** (Formerly M232A. Same as Geography M270.) Lecture, two hours; laboratory, two hours. Prerequisites: Geography 171 or equivalent or consent of instructor. Advanced topics in the utilization of mathematical and statistical techniques for geographic research. Emphasis on linear models, factor analysis and grouping procedures as applied to geographic data bases. Mr. Clark

**M215B. Spatial Statistics.** (Formerly numbered M232B. Same as Geography M272.) Lecture, two hours; discussion, one hour; laboratory, one hour. Prerequisites: Mathematics 50 or Geography 171 and consent of instructor. Specific techniques useful in the analysis of spatial distributions including both point and areal patterns; and emphasizing spatial descriptive statistics, probability models of spatial distributions, and statistical surfaces. Mr. Clark

**220A. Quantitative Methods: Basic Analytical Concepts.** Prerequisite: college algebra. Introduction to specific topics in mathematics most useful for planners. Topics include: review of the vocabulary of mathematics with emphasis on planning model formulation; analysis of linear and nonlinear functions focussing on growth curves and mathematics of finance; matrix algebra and linear optimization; applications of basic calculus to planning models focussing on problems of optimization.

**220B. Quantitative Methods: Urban Data.** (½ to 1 course) An introduction to statistical concepts and methods with applications in urban planning. Topics to be covered include elements of probability theory, probability distribution, sampling, estimation methods, hypothesis testing, analysis of variance, correlation and regression. The course will also include introduction to the use of the computer as a tool in statistical analysis. (Students with a statistics background may enroll in 220B for 2 units in order to obtain an introduction to computer techniques.

**220C. Quantitative Methods: Models.** Lecture, three hours. Prerequisites: course 220A-220B or consent of instructor. An introduction to math-statistical modelling methods with emphasis on urban growth and spatial allocation models. Mr. Shoup, Mr. Wachs

**221A. Evaluation Research.** (Formerly numbered 206B.) Prerequisite: course 220B or equivalent. This course focuses on the conceptual approach, methods and problems encountered in conducting evaluative research. Topics covered will begin with the purposes of evaluations, follow through with steps involved in the evaluative process, and conclude with some discussion on the uses and future of evaluation in planning. Case studies will be used as examples. Students will develop an evaluation design for a social action program as a class project.

**221B. Project Evaluation Methods.** (Formerly numbered 221.) Prerequisite: economics 200. Major topics include benefit-cost analysis; goals-achievement matrices (and variants); panels of experts (Delphi, etc.); citizen participation in policy evaluation; sensitivity analysis; brief exposure to complementary approaches (cross-impact matrices, graphics, advocacy, domains analysis, systems analysis, PPBS variants, goals programming, logical frameworks).

**229. Special Topics in Planning Methods.** (½ to 2 courses) Lecture, three hours. Seminar on topics in planning methodology selected by the faculty. May be repeated for credit. The Staff

## PROJECTS IN PLANNING

**M202C-202D. Urban Affairs Seminar.** (½ course each) (Formerly numbered M265A-265B. Same as Law M332.) Lecture, two hours. The purpose of this course is to explore in a concrete case setting the application of legal tools to the solution of planning and land use problems. Real situations are selected in which significant planning problems exist that appear to be amenable to solution by careful analysis and application of legal tools. A number of case studies are selected so that students may choose one issue which directly interests them. For each case a specific client works with the class in presenting to it the problem that client is facing, and remains available through the course of the project for consultation; the end product for each case is the presentation of a formal report. Clients include the City Planning Commission, the Environmental Quality Board, the Housing Authority, and others. Credit received only upon completion of M202D. Mr. Hagman

**217A-217B. Comprehensive Planning Project.** (Formerly numbered 275A-275B.) Prerequisite: second year standing. The comprehensive project is offered by at least two faculty members representing different Areas of Policy Concentration in the Urban Planning Program and brings together students of varying backgrounds and interests in joint solution of a problem in urban planning and development. Each project counts the equivalent of 8 units, total, and will span two quarters. Because of the time required for the completion of project work, it is expected that students enrolled in a project will choose the Comprehensive Examination Plan option in place of the Master's thesis. Credit on completion of 217B. The Staff

**223B-223C. Professional Development Seminar (B) (C).** Prerequisite: 223A highly recommended. A two quarter sequence concerned with problems of professional practice. Students must be working in a field setting to enroll in the course. A job fair will be held at the beginning of the Winter quarter to place students in field settings. Students who wish to arrange their own placement and join the class may do so with the permission of the instructor. 223B focuses on developing methods which integrate theory and practice through readings and individual and collective analyses of each student's experience. 223C continues the processes of 223B with the addition of a larger look at the planning profession by bringing noted professionals to the classroom to dialogue with the students. 223A is highly recommended as a prerequisite but not required. Students may wish to combine either 223B or 223C with one quarter of 496F or 490 to meet their field work requirement. Mr. Heskin

## PLANNING, LAW AND POLITICS

**M202A. Urban Planning and Controls.** (Formerly numbered M202. Same as Law M224.) Analysis of the legal and administrative aspects of the regulation of land use and development, and the problems and techniques of urban planning; dwelling legislation, building codes, zoning, subdivision controls, public acquisition of land, tax controls, and urban development. Mr. Hagman

**M202B. Urban Government.** (Formerly numbered M215. Same as Law M223.) Legal problems involving local and governmental entities; sources and extent of powers and duties with respect to personnel, finance, public works, community development, and related topics. Mr. Hagman

**M205C. Urban Government.** (Formerly numbered M217. Same as Political Science M229.) Discussion, four hours. An analysis of the policies, processes, interrelations and organization of governments in heavily populated areas. May be concurrently scheduled with Political Science 197F, sec. 1. Mr. Bollens

**211. Law and the Quality of Urban Life.** (Formerly numbered 283.) Lecture, three hours. This course is an introduction to law as an urban system and is directed primarily toward those interested in social and advocacy planning. The course will be organized around a number of urban problems such as employment, housing, social welfare and land use and examine the law's role as a partial cause and cure of these problems. Although certain legal principles will be stressed, the course examines law as a changing process rather than a collection of principles. It is a goal of the course that the students develop a facility to interact with law and lawyers in a positive and forceful manner. Mr. Heskin

## URBAN-REGIONAL DEVELOPMENT POLICY (APC)

**M231. Urban Housing and Redevelopment.** (Same as Law M275.) Lecture, three hours; discussion, one hour. The course will comprehensively consider the rebuilding and construction of American cities with the major emphasis upon the "housing process" — the way in which shelter and related facilities are created by the institutions which direct housing activities in urban areas. Students are encouraged to undertake research projects with an emphasis on field research in lieu of a substantial portion of the final examination. Mr. McGee

**232. Spatial Planning: Regional and International Development.** (Formerly numbered 233B.) An examination of the theory and practice of spatial planning at the regional, national, and international scales, including an evaluation of regional growth strategies, national settlement policy, growth center concepts, and the normative-ideological issues involved in international development planning. Generally taken in first year.

**233. Spatial Organization and Urban Planning.** (Formerly numbered 233A.) An introduction to the concepts and methods of spatial analysis as they apply to problems of planning and urban design. The organization of space in human societies is examined at a variety of scales, from the role of personal space and distancing in interpersonal behavior to studies of income distribution and social justice in urban areas. The emphasis is on developing a greater sensitivity to the spatial perspective and its role as a framework for urban planning and policy decisions. Generally taken in first year.

**234. Seminar in Spatial Development Policy.** Prerequisite: course 232 or some background in analytical human geography; or consent of instructor. An advanced course dealing with the analysis, measurement, and interpretation of spatial change in developing countries, particularly in East and West Africa. It combines an in-depth examination of spatial development theory (especially with regard to spatial diffusion and settlement systems models), comparative studies in the geography of development, and

a detailed assessment of some current African regional development plans. Generally taken in the second year.

**235A-235B. Regional Approaches to National Development.** Prerequisite: consent of instructor; 235A for 235B. An advanced research seminar for students enrolled in the doctoral program. The first quarter deals with theoretical aspects of urbanization in the context of national development. The second quarter addresses major policy issues. 235A receives a grade of IP. Credit received upon completion of 235B.

**237. Evolution of Regional Planning Doctrines: 1925 to the Present.** Prerequisite: consent of instructor for students not majoring in Urban-Regional Development. A critical survey of major doctrines in regional planning from the mid-1920's to the present. (Recommended for students majoring in Urban-Regional Development. Because a general familiarity with the relevant literature is essential to comprehension of the material to be covered, students not majoring in this area are asked to obtain approval from the instructor prior to enrollment in the course.)

**236A-236B. Urban Regional Development Theory.** (Formerly numbered 211A-211B.) Lecture, three hours. Prerequisites: M207A or equivalent to 236A; 236A prerequisite to 236B. Economic growth and development in urban and regional systems, and the resulting changes in spatial patterns. Special attention to associated planning problems. Generally taken in the first year. Mr. Burns, Mr. Shoup

**239. Special Topics in Urban-Regional Development Policy.** (½ to 2 courses) Lecture, three hours. Seminar on topics in urban and regional development policy selected by the faculty. May be repeated for credit. The Staff

## PUBLIC SERVICE SYSTEMS (APC)

**240. Advanced Seminar in Public Service Systems.** Lecture, three hours. Prerequisites: course 242 or consent of instructor and second or third year standing. A seminar dealing with the general system within which services are supplied publicly or semi-publicly, the specific sectors comprising the system, and analytical techniques for evaluating the efficiency and effectiveness of services delivered to the public. Mr. Hudson, Mr. Shoup

**M241A. Urban Transportation Planning Policy.** (Same as Engineering M288A.) Lecture, three hours. Prerequisite: Engineering 106A, 193; or AUP 207 or equivalent. Historical over-view of urban transportation planning and the current political and administrative frameworks for planning; the economic and social basis for travel; measuring the performance of urban transportation systems; basic approaches to transportation system evaluation. Mr. Wachs

**M241B. Urban Travel Demand Analysis.** (Same as Engineering M288B.) Lecture, four hours. Prerequisites: Engineering 106A, 193, Engineering Systems M288A or AUP 207 or equivalent; 220A-220B-220C or equivalent; 241A. Methods of modelling and forecasting travel in urban transportation systems; basic data collection methods; models of trip generation, distribution, modal split, traffic assignment; direction demand models; behavioral demand models; case studies of travel analysis in Los Angeles and elsewhere. Mr. Wachs

**242. Analysis of Public Service Systems.** (Formerly numbered 233.) Lecture, two hours; discussion, two hours. The application of systems analysis to problems of planning public service systems. Specific methods are presented for the definition and delimitation of systems, formulation of objectives, generation and evaluation of alternatives, and the application of analysis to decision-making and policy formulation. Case studies are drawn from various public service sectors. Mr. Hudson, Mr. Shoup

**245. Finance of Local Public Services.** (Formerly numbered 267.) Lecture, three hours. Prerequisite: Economics 200 or consent of instructor. An examination of the major types of local government revenue sources (taxes, user charges, intergovernmental aid, borrowing). Discussion of revenue decision-making processes, intergovernmental relations, questions of equity, the role of revenue sharing, and social objectives attainable with revenue instruments. Mr. Shoup

**246. Models of the Housing Market.** (Formerly numbered 279.) Lecture, three hours. Prerequisite: Economics 200 or consent of instructor. Analysis of models of metropolitan housing markets, with attention to their implications for different housing assistance policies, such as housing allowances, building code enforcement, interest rate and construction subsidies, public housing, urban renewal, and rent control. The spatial organization of housing submarkets, the causes and effects of residential segregation, and the economics of construction and maintenance decisions will be discussed. Mr. Burns, Mr. Shoup

**M248. Urban Transportation Law.** (¾ course) (Same as Law M281.) Lecture, three hours. This course will begin with an exploration of the urgent policy questions facing the urban transportation decision-maker today. It will then focus on the existing governmental programs for urban transportation, on the policies they embody, and on the public institutions created to or charged with the duties of administering them. Mr. Schwartz

**249. Special Topics in Public Service Systems.** (½ to 2 courses) Lecture, three hours. Seminar on topics in planning for public service systems selected by the faculty. May be repeated for credit. The Staff

## SOCIAL DEVELOPMENT POLICY (APC)

**251. Planning for Multiple Publics.** Lecture, three hours. Prerequisite: recommended background in statistics and research design. Course is designed to explore the planning needs of various social groups in urban settings. Students will be required to explore existing literature and research studies to determine appropriate mechanisms of planning for multiple publics. The course will have students analyze communities in the Los Angeles metropolitan area as a means of gaining insights into the practical, theoretical, and methodological problems of planning for multiple publics. Generally taken in the first year. Mr. Grigsby

**252A. Human Lives in Development.** Lecture, three hours. Covers the growth and development of the individual throughout the life cycle. In-depth attention given to various theories regarding human development, drawing implications for planning approaches. Emphasis is on psycho-social basis of individual development. Some proposed approaches are also offered for using human development information in social impact analysis. Ms. Hill Scott

**252B. Social Policy in Human Development.** Prerequisite: course 252A or consent of instructor. Seminar that explores the use of lifestyle and life cycle information in the planning process. Multi-disciplinary background reading on exemplary planning studies that have attempted to consider behavioral needs and potentialities during the planning process are analyzed. Case examples of the converse approach to planning and its consequences for society are also discussed.

**253. Social Theory for Planning.** (Formerly numbered 208.) Lecture, three hours. Examination of literature and theories from different disciplines which attempt to account for social change. "Models" such as "change, conflict, and equilibrium" will be used to critically evaluate this literature, particularly as they attempt to account for minority groups' development within America. Mr. Grigsby, Mr. Morris

**254. Research Methods in Social Development Policy.** Prerequisite: recommended 220B or equivalent. Course reviews basic methods commonly used in planning or in applied social research. However, the emphasis is on the research process as a whole rather than specific techniques of design. Topics will include: conceptualizing the research problem; developing a research plan; sampling, instrumentation, and data collection; and time management of a research study.

**256. Social Impact Analysis.** (Formerly numbered 282.) Lecture, three hours. Prerequisites: recommended: 220A-220B-220C, a course in advanced statistics, a course in survey research and methodology; or consent of instructor. This course will explore ways of creating methods for assessing and determining social impacts on communities. Intent will be to develop both methodologies and policy formulation for assisting in community development. Enrollment limited. Generally taken in second year. Mr. Grigsby

**257. Loss and Change.** The course explores underlying patterns of response to change, and how those are reflected in social movements and institutions—communities displaced by slum clearance, organizations struggling to assimilate new relationships, tribal societies undergoing modernization, scientists faced with revolutions in theory—trying to show how the process of change generates some fundamentally similar patterns of reaction and assimilation in both individuals, groups, and even whole societies. Implications of the argument for the management and planning of change will be discussed.

**259. Special Topics in Social Development Policy.** (½ to 2 courses) Lecture, three hours. Seminar on topics in social development policy selected by the faculty. May be repeated for credit. The Staff

## ENVIRONMENTAL PLANNING AND MANAGEMENT (APC)

**M195. Engineering and Environmental Geology.** (Same as Earth and Space Sciences M139.) Lecture, two and one-half hours. Prerequisites: Geology 1 or 100; 111A recommended. Principles and practice of soil mechanics and foundation engineering in light of geologic conditions, recognition, prediction and control or abatement of subsidence, landslides, earthquakes, and other geologic aspects of urban planning and subsurface disposal of liquids and solid wastes. Mr. Merfield

**M196. Geomorphology.** (Same as Geography M102.) Lecture, three hours; reading period, one hour. Prerequisites: Geography 1 or equivalent, or junior standing, or consent of instructor. A study of the processes responsible for shaping the world's landforms with emphasis on the relationship between the energy and materials involved and the magnitude and organization of the surface forms produced. Mr. Orme

**260. Advanced Seminar in Environmental Planning and Management.** (½ to 1 course) Discussion, three hours. Prerequisites: consent of instructor. Discussion and organized individual and group research. Exploration of broad issues related to environmental planning of special interest to students. Generally intended for second year students specializing in Environmental Planning and Management. May be repeated for credit. Mr. Conn, Mr. McAllister

**261A. Ecology and Man.** Lecture, three hours. Discussion of basic ecological principles relevant to environmental planning, including

characteristics of ecosystems, energy transfer, biogeochemical cycles, dominance and niche theory, diversity and stability, species-area relations, etc. Attention will be drawn to man's historical role in modifying ecosystems. Generally taken during first year.

Ms. Corwin

**261B. Environmental Impact and Resource Management.** Lecture, three hours. Prerequisites: course 261A or consent of instructor. Application of ecological principles to the analysis of environmental impacts and the management of natural and urban/regional resources.

Ms. Corwin

**262. Residuals Management.** (½ to 1 course) Lecture, three hours. Prerequisites: Economics 200 or 221B or consent of instructor. Advanced seminar covering a selected topic (to be specified each time that the course is offered) in the management of atmospheric emissions or solid wastes or nuclear radiation, etc. Intended for, although not restricted to, students specializing in Environmental Planning and Management, and generally taken during the second year. May be repeated for credit.

Mr. Conn and Staff

**M264A. Environmental Law and Policy.** (½ course) (Same as Law M272.) The course first examines, from perspectives meaningful to legal institutions, the nature of environmental problems. It then considers the means by which law has responded, and can and should respond, to problems of environmental quality. Both common law and legislative and administrative measures are considered. The course uses the air pollution problem as the primary vehicle for study.

Mr. Krier

**266. Seminar on Land-Use Planning.** Lecture, three hours. Prerequisites: Economics 200, 236A, 261A, 221B, or consent of instructor. A seminar-discussion course that builds on the basic planning concepts and knowledge discussed in other planning courses. The topics of discussion include the current practice of land-use planning, issues and problems, land-use planning as a tool for environmental protection and enhancement, and evolving policy.

Mr. McAllister, Mr. Shelton, and Staff

**269. Special Topics in Environmental Planning and Management.** (½ to 2 courses) Lecture, three hours. Seminar topics in environmental planning and management selected by the faculty. May be repeated for credit.

The Staff

## URBAN DESIGN (APC)

**219. Special Topics in Urban Design.** (½ to 2 courses) Lecture, three hours. Seminar on topics in urban design selected by the faculty. May be repeated for credit.

The Staff

**274. Introduction to Urban Design.** Lecture, three hours. Overview of trends in urban design. Attempt at redefinition of the field from the perspective of the planner. Exploration of those theories, methods, and skills taught at SAUP and other departments which are potentially applicable to urban design. A seminar utilizing brainstorming, reading, guest lectures and discussions. The course is expected to aid in the continuing clarification of the planner's contribution to and role in urban design. Generally taken in the first year.

Mr. Kamnitzer, Mr. Stea

**276A-276B. Planning Workshop.** (1 to 2 courses each) Lecture, three hours; laboratory, two hours. Prerequisites: 421 or 422 or Art 153A-153B or demonstrated background in architectural design or consent of instructor. Planning projects with a focus on physical planning. Emphasis on SYNTHESIS combined with iterative evaluation of the emerging solutions. Projects may be reality bound, hypothetical, or in the form of exploring the impact of non-physical forces on the physical environment. Development of presentation skills, both graphic and verbal, is an essential component of this workshop.

Mr. Kamnitzer

**277A-277B-277C. Urban Design Research Seminar.** (½ course each) Lecture, three hours. Prerequisite: course 274. Built on AUP 274, this research seminar continues through three subsequent quarters to search for the "design content" of planning theories, methods and skills. Students will report on content of planning courses as they advance through the program and will jointly search for optimal applications of the learning acquired to the field of urban design. 277A generally taken in the first year. 277B and 277C generally taken in the second year.

Mr. Kamnitzer, Mr. Stea

## INDEPENDENT STUDY

**199. Special Studies.** (½ to 2 courses) Prerequisite: consent of instructor. Independent research or investigation on a selected topic to be arranged with a faculty member. May be repeated for credit.

The Staff

**494. Supervised Independent Teaching.** (½ to 2 courses) Supervised individual teaching experience. This course is graded S/U and may be repeated for credit.

The Staff

**495P. Teaching Clinic in Urban Planning.** (½ course) Discussion, two hours. Supervised teaching clinic. Will include discussion of teaching experiences, teaching methods, procedures, etc. Guest lecturers from other departments on campus will be invited to participate in the course. This course is required of all Teaching Associates in the Urban Planning Program and will be an integral part of our teaching associate program. May be repeated once for credit. This course is graded S/U.

Mr. Wachs and Staff

**496. Special Projects in Architecture.** (½ to 2 courses) Prerequisite: consent of instructor. Projects initiated by either individual students or students teams, and directed by a member of the faculty. May be repeated for credit.

**496F. Field Projects.** (½ to 2 courses) To be graded S/U only; may be repeated for credit.

The Staff

**497. Special Projects in Urban Design.** (½ to 2 courses) Prerequisite: consent of instructor. Projects initiated by either individual students or student teams, and directed by a member of the faculty. May be repeated for credit.

The Staff

**501. Cooperative Program.** (½ to 2 courses) Prerequisites: approval of UCLA Graduate Advisor and Graduate Dean. Approval of host campus instructor, Department Chairman and Graduate Dean. The course is used to record the enrollment of UCLA students in courses taken under cooperative arrangements with neighboring institutions. To be graded S/U.

The Staff

**596A. Directed Individual Research and Study in Architecture and Urban Design.** (½ to 2 courses) May be repeated for credit.

The Staff

**596P. Research in Planning.** (½ to 2 courses) May be repeated for credit.

The Staff

**597P. Preparation for the Comprehensive Examination for the Master's Degree or Qualifying Examinations for the Ph.D. Degree.** (½ to 2 courses) May be repeated for credit. Graded S/U.

The Staff

**598A. Preparation in Architecture/Urban Design for the Master's Thesis.** (½ to 2 courses) Prerequisite: consent of instructor. May be repeated for credit.

The Staff

**598P. Preparation for Master's Thesis in Urban Planning.** (½ to 2 courses) May be repeated for credit. Graded S/U.

The Staff

**599P. Doctoral Dissertation Research in Planning.** (½ to 2 courses) May be repeated for credit. Graded S/U.

The Staff

## INTERPROGRAM COURSES

**190. Man and his Environment: Urban Form and Urban Life.** This course aims to introduce students to the kinds of problems that arise in creating and maintaining an environment for urban activities, and the approaches and methods of architecture and urban planning in helping to cope with such problems. The students are exposed to the complexities involved in giving expression to human needs and desires in the provision of shelters and movement systems; to the possibilities and limitations of technology and building forms; and the issues involved in relating the man-made to the natural environment. The students are encouraged to comprehend the major urban issues both as citizens and as potential technical experts.

Mr. Perloff

**226A. Computer Applications in Architecture and Urban Planning (Introductory).** (Formerly numbered 226.) Lecture, three hours. Introduction to electronic computers and the FORTRAN IV programming language, with emphasis on writing and executing programs specifically applicable to architecture, urban design and planning. The course will also provide an introduction to computer mapping techniques. No prerequisite or prior knowledge of computing is required.

Ms. Liggett

**226B. Computer Applications in Architecture and Urban Planning (Advanced).** Lecture, three hours. Prerequisite: course 226A or equivalent. Seminar on advanced computing techniques and modeling as applied to architecture and urban planning. This course will introduce the PC1 programming language but will assume students have previous computing experience in another language.

Ms. Liggett

**278. Research Methods in Man-Environment Relations.** (½ to 1 course) Lecture, three hours; discussion, two hours. A survey of a variety of research methods applicable to problems on the man-environment interface, including both those now frequently employed (e.g., survey research) and others not so well known (e.g., ecological psychology, ethnomethodology, etc.). Emphasis will be placed on understanding the nature of research, upon the application, advantages and disadvantages, of the various methods rather than upon the learning of techniques. The course will start with a review of certain concepts basic to the philosophy of science, emphasize practice in the application of research methods to selected exercises and a specific field situation, and conclude with some commentary upon the nature and future of statistical methods in the study of man-environment relations.

Mr. Stea

**490. Urban Innovations Group Workshop.** (1 to 2 courses) Laboratory. Prerequisite: consent of Workshop Staff. Applied research and development work in the Urban Innovations Group workshop under the supervision of the workshop staff. Client-oriented projects concerned with significant urban, social or technical problems of the physical environment. May be repeated for credit.

The Staff

Alexander Badawy, B.Arch., D.I.A., Ph.D., Professor of Art.  
E. Maurice Bloch, Ph.D., Professor of Art and Curator of Prints.  
William J. Brice, Professor of Art.

Raymond B. Brown, M.A., Professor of Art (Chairman of the Department).

Jack B. Carter, M.A., Professor of Art.

Eliot J. Elgart, M.F.A., Professor of Art.

Robert F. Heineken, M.A., Professor of Art.

Thomas Jennings, M.A., Professor of Art.

J. Bernard Kester, M.A., Professor of Art.

Velizar Mihich (Vasa), Professor of Art.

Lee Mullican, Professor of Art.

Gordon M. Nunes, M.A., Professor of Art.

Carlo Pedretti, M.A., Professor of Art.

Jan Stussy, M.F.A., Professor of Art.

Otto-Karl Werckmeister, Ph.D., Professor of Art.

Laura F. Andreson, M.A., Emeritus Professor of Art.

Karl M. Birkmeyer, Ph.D., Emeritus Professor of Art.

Helen Clark Chandler, Emeritus Professor of Art.

J. LeRoy Davidson, Ph.D., Emeritus Professor of Art.

Annita Delano, Emeritus Professor of Art.

Archine V. Fetty, M.A., Emeritus Professor of Art.

Lester D. Longman, Ph.D., L.H.D., D.F.A., Emeritus Professor of Art.

Katharina Otto-Dorn, Ph.D., Emeritus Professor of Art.

Josephine P. Reys, Emeritus Professor of Art.

Frederick S. Wight, M.A., Emeritus Professor of Art.

Karl E. With, Ph.D., D.F.A., Emeritus Professor of Art.

Susan B. Downey, Ph.D., Associate Professor of Art.

Mitsuru Kataoka, M.A., Associate Professor of Art.

David M. Kunzle, Ph.D., Associate Professor of Art.

Donald F. McCallum, Ph.D., Associate Professor of Art.

John A. Neuhart, Associate Professor of Art.

Arnold Rubin, Ph.D., Associate Professor of Art.

Nathan Shapira, Dottore in Architettura, Associate Professor of Art.

James R. Valerio, M.F.A., Associate Professor of Art.

James W. Bassler, M.A., Assistant Professor of Art.

Ioli Kalavrezou-Maxeiner, Ph.D., Assistant Professor of Art.

Cecelia F. Klein, Ph.D., Assistant Professor of Art.

Deborah Klumburg-Salter, Ph.D., Assistant Professor of Art.

Alice E. McCloskey, M.A., Assistant Professor of Art.

Adrian Saxe, B.F.A., Assistant Professor of Art.

Madeleine Sunkees, B.Ed., Assistant Professor of Art, Emeritus.

Cornelia K. Breitenbach, M.F.A., Lecturer in Art.

Benjamin B. Johnson, M.A., Lecturer in Art.

Martin J. Powers, M.A., Acting Assistant Professor of Art.

Donald Roberts, Lecturer in Art.

Robert Wark, Ph.D., Lecturer in Art.

Jean Weisz, M.A., Lecturer in Art.

Christopher G. Williams, Ph.D., Lecturer in Art.

It is recommended that each student majoring in art have each quarter's program approved by a departmental adviser.

The departmental major offered in the College of Fine Arts leads to the degree of Bachelor of Arts with the opportunity to specialize in one of three areas: (1) Art History, (2) Painting/Sculpture/Graphic Arts (A Portfolio may be required as basis for acceptance to Junior standing. Applicants will be notified.) (3) Design.

### Preparation for the Major

Art History: Courses 50, 51, 52, 53, 54 and 55.

Painting/Sculpture/Graphic Arts: Courses 10A, 10B, 20A, 20B, 25; and two courses selected from 50, 51, 52, 53, 54, 55.

Design: Courses 31A, 31B, 32A, 32B, 34A, 34B; and three courses selected from 50, 51, 52, 53, 54, 55.

### The Major

Art History. (12 courses upper division art history required.)

I. A total of nine courses from the following nine areas: at least three courses in one area for the concentration, at least one course each in four of the remaining areas, and two additional courses from any of the nine areas.

- 101A, 101B, 101C, 101D.
- 103A, 103B, 103C, 103D, 103E.
- 104B, 104C, 104D.
- 105A, 105B, 105C, 105D, 105E.
- 106A, 106B, 106C, 108A, 108B, 109A, 109B, 109C, 109D, 120A, 121A.
- 110A, 110B, 110C, 110D, 120B, 120C, 121B.
- 112A, 112B, 112C.
- 114A, 114B, 114C, 114D, 115A, 115B, 115C.
- 117A, 117B, 117C, 118A, 118B, 118C, 118D, 119A, 119B, 119C.

II. Three courses of art history electives which may include Classics 151ABC, Art 125, 197, 199 (design or studio courses do not apply as electives.)

In addition to the 12 courses (48 units) of upper division art history, three upper division courses from other departments related to the area of concentration are to be selected in consultation with a faculty adviser.

Three quarters of one foreign language, or the equivalent. The language should be in relation to the concentration area and is in

## ART

(Department Office, 1300 Dickson Art Center)

Samuel Amato, B.F.A., Professor of Art.  
Oliver W. Andrews, A.B., Professor of Art.

admission to the foreign language which is part of the General College requirements.

**Painting/Sculpture/Graphic Arts.** A minimum of 14 upper division courses selected in consultation with a painting/sculpture/graphic arts adviser including one course each in courses 130, 132, 133, 135, 137, 140, 145 and 147; two courses selected from courses 101-122 and four courses of art electives.

**Design.** A minimum of 12 upper division courses selected in consultation with an adviser including eight courses from 161A-172B; at least one course from 192-193 and three courses of art electives.

#### Admission to Graduate Status

**Painting/Sculpture/Graphic Arts or Design.** In addition to meeting the requirements of the Graduate Division, the student will usually be expected to have a bachelor's degree in Art. Students whose preparation in Art is deficient as determined by the departmental adviser will be required to take additional work before proceeding with the graduate program.

**Art History.** In addition to the University minimum requirements, the student must have a bachelor's degree with a major in the history of art, with a minimum of 44 quarter units of upper division work or 32 semester units, not including studio courses in art. The undergraduate major must include at least one advanced-level course (quarter or semester) in five of the following six areas: a) Egypt, Ancient Near East, Classical; b) Medieval, Islamic; c) Renaissance, Baroque, Prints and Drawings; d) Modern European and American, Prints and Drawings; e) Indian, Chinese, Japanese, Islamic; f) African, Oceanic, Native North and South American. No area may be offered in satisfaction of more than one requirement. Students whose preparation in Art is deficient as determined by the departmental adviser will be required to take additional work not applicable to the graduate degree. Deficiencies may be fulfilled by taking upper division courses or competency examinations in the deficient area.

#### Requirements for the Master's Degree

For the general University requirements, see the Graduate Division. The Art Department offers graduate study in three areas of specialization: (1) History of Art, (2) Painting/Sculpture/Graphic Arts, (3) Design. When applying for admission, the student is expected to designate the area of specialization.

**Art History.** The program for the Master of Arts Degree in art history follows the Comprehensive Examination plan. Students are required to take a minimum of nine quarter courses in art history at UCLA: at least five graduate seminars, one of which must be 201; and no more than two "directed studies" (596). The M.A. degree requires the completion of a major and two minors. Students intending to major in areas included in categories e. and f. (above) will choose at least one minor from areas included in categories a. through d., while students intending to major in areas included in categories a. through d. will choose at least one minor from areas included in categories e. and f. The program for the degree is worked out under the guidance of the advisors in the student's major and minor areas. Reading knowledge of French and German is required of all students except those intending to major in Chinese or Japanese or Pre-Columbian art; the first language examination must be passed by the end of the second quarter of residence study, and the second by the end of the fourth quarter of residence. Students intending to major in Chinese or Japanese art history who are not native speakers of the relevant language will substitute either Chinese or Japanese for either French or German. Students majoring in Pre-Columbian art history will be permitted to substitute Spanish for French. M.A. candidates pass a six hour written examination in the major field of study and a three hour examination in each of the two minor fields. No formal thesis is required, but the student is required to present a paper in his major field, about 50 pages in length, on a topic approved by his examination committee, and normally requiring one quarter of full time study.

**Painting/Sculpture/Graphic Arts or Design.** The Master of Arts program with these specializations follows the Comprehensive Examination Plan, a minimum of nine courses of graduate work including a minimum of five courses in the 200 series in the field of specialization. The final comprehensive examination is oral and is given within the context of the candidate's creative work. Those majoring in painting/sculpture/graphic arts may concentrate on painting, sculpture, printmaking or photography in their advanced project. Majors in design may emphasize communication imagery, image transfer, electronic imagery, costume, ceramics, glass, design and structure, fiber structures, textiles, landscape design, industrial design or exhibition design. All candidates are expected to have a general knowledge of the history and theory of art. The specific program for the Master of Arts degree is determined in consultation with a faculty member.

#### Master of Fine Arts Degree in Painting/Sculpture/Graphic Arts or Design

The program requires a minimum of 18 courses, with at least ten courses in the 200 series. Candidates must have completed, whether as undergraduates or graduate students, a minimum of ten courses in art history. The painting/sculpture/graphic arts candidate must complete a minimum of 11 courses in the field of specialization (including 10 courses in the 200 series), which includes course work supervised by his graduate committee. Candidates in design must complete a minimum of 13 courses in the field of specialization (including 13 courses in the 200 series), which includes course work supervised by the graduate committee.

Students who have an M.A. degree may be accepted as candidates for the M.F.A., but the M.A. degree is not a prerequisite. The M.F.A. is the highest degree for prospective professional artists. Three years of graduate work will normally be required to complete the requirements in terms of quality of creative work. Additional information concerning programs is available through the Art Department.

#### Doctor of Philosophy Degree in Art History

The M.A. in art history from UCLA or its equivalent is required for admission to the Ph.D. program. Acceptance of the M.A. in art history from another institution will be decided by the departmental graduate review committee. If an acceptable M.A. from another institution is deficient in either French or German, this deficiency must be made up by passing a language examination in the first quarter of residence. In addition to the general University regulations for the Doctor of Philosophy Degree, including the dissertation and final examination (see Doctoral Degrees), the candidate must satisfy the following departmental requirements. A program of study worked out with the student's advisory committee (the member of the art history faculty responsible for the student's field of specialization, another member of the art history faculty, and a faculty member from another department), to comprise the following: three art history courses in the 200 and 500 series; five courses in other departments (excluding first year language courses) pertinent to the student's field of study; instruction in one or more additional languages, if considered necessary by the student's guidance committee; a written qualifying examination, six hours in length, in the student's major field, including its relation to other disciplines, administered by the student's guidance committee. *Note: Check the Schedule of Classes for courses restricted to majors only.*

#### Lower Division Courses

Painting/Sculpture/Graphic Arts courses are supervised by the following faculty, augmented by visiting staff: painting and drawing, Amato, Brice, Elgart, Mullican, Nunes, Stussy and Valerio; sculpture, Andrews.

**10A. Drawing.** Studio, eight hours. Beginning course in drawing. Fundamentals of line, tone and composition as they relate to perception. Problems in sculptural form, chiaroscuro and spatial projection in a variety of drawing media. Analysis and investigation of traditional and contemporary artistic expression and concepts.

**10B. Drawing.** Studio, eight hours. Prerequisite: course 10A. Beginning course in figure drawing. Continuation of 10A. Application of drawing principles to human form with reference to anatomical structure. Analysis and investigation of traditional and contemporary artistic expression and concepts.

**20A. Painting.** Studio, eight hours. Prerequisites: 10A and 10B. Beginning course in painting. Preparation of painting surfaces and painting media. Problems in color, form and composition with stress on interpretation and expression. Analysis and investigation of traditional and contemporary artistic expression and concepts.

**20B. Painting.** Studio, eight hours. Prerequisite: course 20A. Continuation of 20A. Increased analysis and exploration of traditional and contemporary expression in both painting and non-object art forms.

**25. Sculpture.** Studio, eight hours. Beginning course in sculpture. Studio work in plaster, clay, concrete, wood, stone, metal and plastics. Lectures on technical and aesthetic principles of traditional and contemporary sculpture with emphasis on the student's individual direction. Illustrated with slides and film.

**30A. Introduction to Design and Technology.** Lecture, three hours; discussion, one hour. Understanding the design process with emphasis on development of visual awareness; a study of technological, economic, environmental, and cultural factors influencing the design of objects. Open to non-majors, and available to Art majors for credit.

The Design Staff

**31A. Fundamentals of Design.** Lecture, two hours; laboratory, four hours. Exploration of color in theory and practice. Development and articulation of sensory concepts. May be taken concurrently with 32A. Not open for credit for those who have had Art 150A.

Mr. Vasa in charge

**31B. Fundamentals of Design.** Lecture, two hours; laboratory, four hours. Prerequisite: course 31A or equivalent. Interrelation of three dimensional form concepts as a foundation for creativity; origination and solution of problems. May be taken concurrently with 32B. Not open for credit for those who have had Art 150B.

Mr. Vasa in charge

**32A-32B. Visual Presentation.** Demonstration, discussion and laboratory, eight hours. 32A is prerequisite to 32B. Translation of perception through delineation, drawing, and other descriptive media. May be taken concurrently with Art 31A-31B. Not open for credit for those who have had 153A or 153B respectively.

Mr. Vasa in charge

**34A-34B. History of Design.** Lecture, three hours; discussion, one hour. 34A is prerequisite to 34B. Analysis of significant concepts of form in relation to social, technological, and historical developments. Not open for credit for those who have had 154A or 154B respectively.

The Design Staff

**50. Ancient Art.** Lecture, three hours; quiz, one hour. Open to Freshmen and to students who have not had credit for former 1A or

100A. Prehistoric, Egyptian, Mesopotamian, Aegean, Greek, Hellenistic and Roman art and architecture.

Miss Downey

**51. Medieval Art.** Lecture, three hours; quiz, one hour. Open to Freshmen and students who have not had credit for former 1B or 100B. Early Christian, Byzantine, Islamic, Carolingian, Ottoman, Romanesque, and Gothic art and architecture.

Mrs. Kalavrezou-Maxeiner, Mr. Werckmeister

**52. Renaissance Art.** Lecture, three hours; quiz, one hour. Open to Freshmen and students who have not had credit for former 1B or 100B. Art and architecture from 1400 to 1600 in Italy, Flanders, Germany, France, and Spain.

Mrs. Weisz

**53. Baroque Art.** Lecture, three hours; quiz, one hour. Open to Freshmen and students who have not had credit for former 1C or 100C. Art and architecture from 1600 to 1800 in Italy, France, Netherlands, Germany, Spain, England and the United States.

Mrs. Weisz

**54. Modern Art.** Lecture, three hours; quiz, one hour. Open to Freshmen and students who have not had credit for former 1C or 100C. Art and architecture from 1800 to the present in Europe and the United States.

Mr. Kunzle

**55. Africa, Oceania, and Native America.** Lecture, three hours; quiz, one hour. Comparative approach, emphasizing economic, cultural, and historical aspects of selected artistic traditions which developed outside the spheres of influence of the major European and Asiatic civilizations.

Mrs. Klein, Mr. Rubin

#### Related Courses in Other Departments

Integrated Arts 1A-1B-1C.

#### Upper Division Courses

#### HISTORY AND THEORY OF ART

**101A. Egyptian Art and Archaeology.** Lecture three hours. Prerequisite: course 50. A comprehensive study of art in Ancient Egypt from the earliest times to the Roman period, covering architecture, sculpture, graphic and minor arts. Relations with contemporaneous arts of the Aegean and Greece.

Mr. Badawy

**101B. Egyptian Art and Archaeology.** Lecture three hours. Prerequisite: course 101A. Continuation of 101A.

Mr. Badawy

**101C. Egyptian Art and Archaeology.** Lecture three hours. Prerequisite: course 101B. Continuation of 101B.

Mr. Badawy

**101D. Art of the Ancient Near East.** (Formerly numbered 104A.) Lecture three hours. Prerequisite: course 50. Art and architecture of Mesopotamia, the Hittites and the Levant. Not open to students who have had credit for Art 104A.

Mr. Badawy

**103A. Greek Art.** Lecture three hours. Prerequisite: course 50. A survey of the art and architecture of Greece from the archaic period through the 5th century B.C.

Miss Downey

**103B. Hellenistic Art.** Lecture, three hours. Prerequisites: courses 50 and 103A. The art and architecture of Greece from the fourth century B.C. through the first century B.C.

Miss Downey

**103C. Roman Art.** Lecture, three hours. Prerequisite: course 50. The art and architecture of Rome and its Empire from ca. 300 B.C. to A.D. 300.

Miss Downey

**103D. Etruscan Art.** Lecture, three hours. Prerequisite: course 50. The arts of the Italic peninsula from ca. 1000 B.C. to the end of the Roman Republic.

Miss Downey

**103E. Late Roman Art.** Lecture, three hours. Prerequisites: course 50, course 103C. The art of the Roman Empire from the second through the fourth centuries A.D.

Miss Downey, Mrs. Kalavrezou-Maxeiner

**104B-104C-104D. Architecture and the Minor Arts of Islam in the Middle Ages.** Lecture, three hours. Prerequisites: course 104B for course 104C; course 104C for 104D.

**105A. Early Christian Art.** Lecture, three hours. Prerequisite: course 51 or consent of the instructor. The origins and development of the architecture, sculpture, and painting of early Christianity, to the Iconoclastic controversy. (Not open to students who have had credit for 105A.)

Mrs. Kalavrezou-Maxeiner

**105B. Early Medieval Art.** Lecture, three hours. Prerequisite: course 51 or consent of the instructor. Art and architecture of Western Europe from the Migration period until 1000 A.D.

Mr. Werckmeister

**105C. Romanesque Art.** Prerequisite: course 51. Art and architecture of Western Europe in the 11th and 12th centuries.

Mr. Werckmeister

**105D. Gothic Art.** Lecture, three hours. Prerequisite: course 51. Art and architecture of Europe in the 13th century.

Mr. Werckmeister

**105E. Byzantine Art.** Lecture, three hours. Prerequisite: course 51 or consent of instructor. The theory and development of Byzantine Art from the Iconoclastic controversy to 1453, and the diffusion of Byzantine Art in Armenia, Georgia, the Caucasus, and Russia. Not open to students who have received credit for Art 105A prior to Spring 1972.

Mrs. Kalavrezou-Maxeiner

- 106A. Italian Art of the Trecento.** Lecture, three hours. Prerequisite: course 52 or consent of instructor. Art and architecture of the 14th century.
- 106B. Italian Art of the Quattrocento.** Lecture, three hours. Prerequisite: course 52. Art and architecture of the 15th century. Mr. Pedretti, Mrs. Weisz
- 106C. Italian Art of the Cinquecento.** Lecture, three hours. Prerequisite: course 52. Art and architecture of the 16th century. Mr. Pedretti, Ms. Weisz
- 108A. Northern Renaissance Art.** Lecture, three hours. Prerequisite: course 52. Painting and Sculpture in the Northern Renaissance.
- 108B. Northern Renaissance Art.** Lecture, three hours. Prerequisite: course 108A. Painting and Sculpture in the Northern Renaissance.
- 109A. Baroque Art.** Lecture, three hours. Prerequisite: course 53. Art and architecture of Italy and Spain, 16th to late 17th century. Mr. Pedretti, Mrs. Weisz
- 109B. Baroque Art.** Lecture, three hours. Prerequisite: course 109A. Art and architecture of Northern Europe, 16th to late 17th century. Mr. Kunzle
- 109C. European Art of the 18th Century.** Lecture, three hours. Prerequisite: course 53. Painting, architecture and sculpture of the 18th century will be examined in the light of political and intellectual developments. Special emphasis will be given to the effect of the rise of democratic institutions, especially the French Revolution. Mr. Kunzle
- 109D. Art and Architecture of Georgian England.** Lecture, three hours. Mr. Wark
- 110A. European Art of the 19th Century.** Lecture, three hours. Prerequisite: course 54. Neoclassicism and Romanticism, with emphasis upon France — the development and influence of David, Ingres and Delacroix. Mr. Kunzle
- 110B. European Art of the 19th Century: Realism and Impressionism.** Lecture, three hours. Prerequisite: course 54. An inquiry into the problem of realism with emphasis on French Art, but including developments in England and Germany. Mr. Kunzle
- 110C. European Art of the 19th and 20th Century: Post Impressionism to Surrealism.** Lecture, three hours. Prerequisite: course 54. A study of the major developments in Modern Art, 1880's-1930, including Seurat, Cezanne, Gauguin, Van Gogh, Art Nouveau, Fauvism, German Expressionism. Mr. Kunzle
- 110D. Contemporary Art.** Lecture, three hours. Prerequisite: course 54. European and American art since World War II. Mr. Kunzle
- 112A. American Art.** Lecture, three hours. Architecture in the United States from the Colonial period to the 19th century. Mr. Bloch
- 112B. American Art.** Lecture, three hours. Painting and sculpture in the United States from the Colonial period to the 19th century. Mr. Bloch
- 112C. American Art.** Lecture, three hours. Art and architecture in the United States in the 20th century. Mr. Bloch
- 114A. The Early Art of India.** Lecture, three hours. Prerequisite: not open to Freshmen. Survey of Indian Art from the Indus Valley cultures to the 10th century. Emphasis will be given to the Buddhist and Hindu backgrounds of the arts. Mrs. Klimburg-Salter
- 114B. Chinese Art.** Lecture, three hours. Not open to Freshmen. Survey of the arts of China from the Neolithic times to the 18th century. The various arts will be related to the developing historical background of the country. Mr. Powers
- 114C. Japanese Art.** Lecture, three hours. Not open to Freshmen. Japanese art from its beginning in pre-history through the 19th century. Emphasis will be placed on the development of Buddhist art and its relationship with the culture. Mr. McCallum
- 114D. The Later Art of India.** Lecture, three hours. Prerequisite: course 114A or consent of instructor. Survey of Indian Art from the 10th century to the 19th century. The decline of Buddhist Art, the last efflorescence of Hindu architecture, Muslim painting and architecture, and Rajput painting. Mrs. Klimburg-Salter
- 115A. Advanced Indian Art.** Lecture, three hours. Prerequisite: course 114A. Study in Indian sculpture and architecture. Mrs. Klimburg-Salter
- 115B. Advanced Chinese Art.** Lecture, three hours. Prerequisite: course 114B. Study in Chinese painting and sculpture. Mr. Powers
- 115C. Advanced Japanese Art.** Lecture, three hours. Prerequisite: course 114C. Study in Japanese painting and sculpture. Mr. McCallum
- 117A. Advanced Studies in Pre-Columbian Art: Mexico.** Lecture, three hours. Prerequisite: course 118B or consent of the instructor. A study of the art of selected cultures of northern Mesoamerica from ca. 1200 B.C. to the Conquest, with an emphasis on historical and iconographic problems. Mrs. Klein
- 117B. Advanced Studies in Pre-Columbian Art: Central America.** Lecture, three hours. Prerequisite: course 118B or consent of the instructor. A study of the art of selected cultures of southern Mesoamerica and the remainder of Central America, from ca. 2000 B.C. to the Conquest, with particular emphasis on the history and iconography of the art of the Maya. Mrs. Klein
- 117C. Advanced Studies in Pre-Columbian Art: The Andes.** Lecture, three hours. Prerequisite: course 118B or consent of the instructor. A study of the art of selected cultures of Colombia, Ecuador, Peru, and Bolivia, from ca. 4000 B.C. to the Conquest, with particular emphasis on the history and iconography of the art of Peru. Mrs. Klein
- 118A. The Arts of Oceania.** Lecture, three hours. Prerequisite: course 55 or consent of the instructor. Survey of the arts of the major island groupings of the Pacific, emphasizing style-regions and broad historical relationships. Mrs. Klein, Mr. Rubin
- 118B. The Arts of Pre-Columbian America.** Lecture, three hours. Prerequisite: course 55 or consent of the instructor. Survey of the sequence of cultures which developed in the area between (and including) Mexico and Peru, from ca. 1000 B.C. until the conquest. Mrs. Klein
- 118C. The Arts of Sub-Saharan Africa.** Lecture, three hours. Prerequisite: course 55 or consent of the instructor. Survey, emphasizing sculpture, from the Western Sudan to the Congo Basin, with special reference to the historical and cultural ramifications of the arts. Mr. Rubin
- 118D. The Arts of Native North America.** Lecture, three hours. Prerequisite: course 55 or consent of the instructor. Survey of painting, sculpture, and other arts, from the Eskimo to the peoples of the Caribbean and the Southwestern United States. Mrs. Klein, Mr. Rubin
- 119A. Advanced Studies in African Art: The Western Sudan.** Lecture, three hours. Prerequisite: course 118C and consent of the instructor. Graduate students in Art History may receive credit toward M.A. and Ph.D. requirements. Consideration of the network of stylistic, historical, and cultural relationships existing among the peoples of the upper Niger River Valley and adjacent portions of the Western Guinea Coast. Mr. Rubin
- 119B. Advanced Studies in African Art: The Guinea Coast.** Lecture, three hours. Prerequisite: course 118C and consent of the instructor. Graduate students in Art History may receive credit toward M.A. and Ph.D. requirements. The royal and popular arts of the coastal region between Ghana and Nigeria, including the Nok Culture, ancient Ife, Benin, and other surviving bronze and terracotta traditions. Mr. Rubin
- 119C. Advanced Studies in African Art: The Congo.** Lecture, three hours. Prerequisite: course 118C and consent of the instructor. Graduate students in Art History may receive credit toward M.A. and Ph.D. requirements. The arts of the Equatorial Forest and Southern Savannah style-regions, from Northern and eastern Nigeria through the Congo River Basin, eastern and southern Africa. Mr. Rubin
- 120A. History of Prints.** Lecture, three hours. Development of style and techniques of expression in the graphic arts, from the 15th century to the early 16th century. Mr. Bloch
- 120B. History of Prints.** Lecture, three hours. Development of style and techniques of expression in the graphic arts from the 16th to the early 19th century. Mr. Bloch
- 120C. History of Prints.** Lecture, three hours. Development of style and techniques of expression in the graphic arts of the latter 19th and 20th century. Mr. Bloch
- 121A. Critical and Historical Studies in Drawing.** Lecture, three hours. Development of style and means of expression in drawing from late Middle Ages to the Early Renaissance. Mr. Bloch
- 121B. Critical and Historical Studies in Drawing.** Lecture, three hours. Development of style and means of expression in drawing from Late Renaissance to the present. Mr. Bloch
- 122. History of Style and Ornament.** Lecture, three hours. Development of stylistic ideas and motifs in the Western world and their expression in design media from the Renaissance to 1900. A study in connoisseurship. Mr. Bloch
- 125. Tutorial Conferences.** Discussion, two hours. Prerequisites: courses 50, 51, 52, 53, and 54. Restricted to undergraduate art history majors. Discussion of selected art topics with emphasis on related readings in music, literature, history and philosophy. Oral reports. Course grading will be on Passed/Not Passed basis only. Art History Staff

## PAINTING/SCULPTURE/GRAPHIC ARTS

Painting/Sculpture/Graphic Arts courses are supervised by the following faculty, augmented by visiting staff: painting and drawing, Amato, Brice, Elgart, Mullican, Nunes, Stussy and Valerio; printmaking, Brown; sculpture, Andrews; photography, Heineken.

**130. Life Drawing.** Studio, eight hours; five hours arranged. Prerequisites: courses 10A, 10B, or consent of instructor. Maximum three courses. Studies from the model.

**132. Drawing.** Studio, eight hours; five hours arranged. Prerequisite: consent of the instructor. Maximum two courses. Drawing as a terminal medium of artistic expression.

**133. Painting.** Studio, eight hours; five hours arranged. Prerequisites: courses 10A-10B, 20A-20B, or consent of the instructor. Maximum three courses. Varied media and subjects. Composition, interpretation, expression.

**135. Life Painting.** Studio, eight hours; five hours arranged. Prerequisite: course 133. Maximum three courses. Varied media. Composition, interpretation, expression.

**137. New Forms and Concepts.** Studio, eight hours; five hours arranged. Prerequisites: courses 10A, 10B, 20A, 20B or consent of instructor. May be repeated for a maximum of eight units. Varied forms and processes. Concept art, performance and investigation of a variety of media, including film and video.

**140. Print Making.** Studio, eight hours; five hours arranged. Prerequisites: courses 10A-10B, 20A-20B, 132, or consent of the instructor. Maximum three courses. Selected studies in engraving, etching, drypoint, aquatint, softground, lithography, woodcut, and mixed media. Traditional and experimental studies. Fine printing.

**145. Sculpture.** Studio, eight hours; five hours arranged. Prerequisites: courses 10A-10B, 25 or consent of the instructor. Maximum three courses. Modeling or carving. Clay, plaster, wood, stone, metals, and welding. Plaster casting.

**147. Photography.** Studio, eight hours; five hours arranged. Prerequisites: courses 10A-10B, 20A-20B, or consent of the instructor. Maximum three courses. Photography as a medium of artistic expressions.

## DESIGN

### I. Comparative Studies in Design

**161A. Ceramics.** Lecture, three hours; laboratory, to be arranged. The evolution of ceramic form through geographic, social, and technological influences. Mr. Saxe

**161B. Clothing.** Lecture, three hours; laboratory, to be arranged. Clothing and body ornamentation; symbolic significance and evolving forms within their social, cultural, and geographic context. Mrs. McCloskey

**161C. Graphics.** Lecture, three hours; laboratory, to be arranged. Symbols, signs and images, within social, cultural and historical contexts. Mr. Jennings, Mr. Neuhart

**161D. Glass.** Lecture, three hours; laboratory, to be arranged. The evolution of glass form and technology through geographic and sociological influences.

**161E. Industrialization.** Lecture, three hours; laboratory, to be arranged. Industry, design, and society; their changing relationships. Mr. Williams

**161F. Landscape.** Lecture, three hours; laboratory, to be arranged. The analysis of concepts affecting the aesthetic and ecological quality of the landscape. Mr. Roberts

**161G. Shelter.** Lecture, three hours; laboratory, to be arranged. An analysis of dwelling types and forms; the forces affecting them. Mr. Williams

**161H. Textiles.** Lecture, three hours; laboratory, to be arranged. Concepts of construction, ornamentation, expression, and utility. Mr. Kester in charge

**161J. Video Imagery.** Lecture, three hours; laboratory, to be arranged. Electronic audiographs in relation to pictorial forms; non-derivative "process level" characteristics and content-level perception. Mr. Kataoka, Mr. Neuhart

### II. Concept and Form in Design

**162A. Ceramics.** Lecture, two hours; laboratory, four hours. Prerequisites: courses 31A-31B, 32A-32B, 34A-34B, or equivalent. Introduction to creative development of ceramic materials and processes. Mr. Saxe

**162B. Ceramics.** Lecture, two hours; laboratory, four hours. Prerequisites: courses 31A-31B, 32A-32B, 34A-34B, 162A or equivalent. The interaction of ideas, structure, and process. May be repeated once. Mr. Saxe

**163A. Clothing.** Lecture, two hours; laboratory, four hours. Prerequisites: courses 31A-31B, 32A-32B, 34A-34B, or equivalent. Social, cultural, and technological influences on contemporary clothing. Mrs. McCloskey

**163B. Clothing.** Lecture, two hours; laboratory, four hours. Prerequisites: courses 31A-31B, 32A-32B, 34A-34B, 163A or equivalent. Communication through forms of costume and body adornment. May be repeated once. Mrs. McCloskey

**164A. Fiber Structure.** Lecture, two hours; laboratory, four hours. Prerequisites: courses 31A-31B, 32A-32B, 34A-34B, or equivalent. Design and technology of woven forms; essential elements, tools, and processes. Mr. Bassler, Mr. Kester

**164B. Fiber Structures.** Lecture, two hours; laboratory, four hours. Prerequisites: courses 31A-31B, 32A-32B, 34A-34B, 164A or equivalent. The derivation of non-loom processes utilizing pliable elements. May be repeated once. Mr. Bassler, Mr. Kester

**165A. Graphics.** Lecture, two hours; laboratory, four hours. Prerequisites: courses 31A-31B, 32A-32B, 34A-34B, or equivalent. The development of letterforms, typography, and reproduction technology. Mr. Jennings, Mr. Neuhart

**165B. Graphics.** Lecture, two hours; laboratory, four hours. Prerequisites: courses 31A-31B, 32A-32B, 34A-34B, 165A or equivalent. Empiric and systematic graphic concepts, including methods, symbols, and media technology. May be repeated once. Mr. Jennings, Mr. Neuhart

**166A. Glass.** Lecture, two hours; laboratory, four hours. Prerequisites: courses 31A-31B, 32A-32B, 34A-34B or equivalent. The development of forms in glass; off-hand methods including blowing, molding, and coldworking.

**166B. Glass.** Lecture, two hours; laboratory, four hours. Prerequisites: courses 31A-31B, 32A-32B, 34A-34B or equivalent. Theories of glass forming; colorants, lustres, acids, and surface delineation. May be repeated once.

**167A. Industrialized Materials.** Lecture, two hours; laboratory, four hours. Prerequisites: courses 31A-31B, 32A-32B, 34A-34B or equivalent. The influence of diverse media, structures, and systems on form development. Mr. Shapira

**167B. Industrialized Materials.** Lecture, two hours; laboratory, four hours. Prerequisites: courses 31A-31B, 32A-32B, 34A-34B, 167A or equivalent. Theories of newly developed technological materials and processes as conceptual influences. May be repeated once. Mr. Shapira

**168A. Landscape.** Lecture, two hours; laboratory, four hours. Prerequisites: courses 31A-31B, 32A-32B, 34A-34B or equivalent. The modification, conservation, and utilization of natural land elements. Mr. Roberts

**168B. Landscape.** Lecture, two hours; laboratory, four hours. Prerequisites: courses 31A-31B, 32A-32B, 34A-34B, 168A or equivalent. The specific relationship of modified natural elements to human requirements. May be repeated once. Mr. Roberts

**169A. Product.** Lecture, two hours; laboratory, four hours. Prerequisites: courses 31A-31B, 32A-32B, 34A-34B or equivalent. Theoretical evolution of form in industry; synthesis of function, aesthetics, mechanical, and material properties. Mr. Shapira, Mr. Williams

**169B. Product.** Lecture, two hours; laboratory, four hours. Prerequisites: courses 31A-31B, 32A-32B, 34A-34B, 169A or equivalent. Empiric resolution of form factors influencing concept interpretations for industry. May be repeated once. Mr. Shapira, Mr. Williams

**170A. Shelter.** Lecture, two hours; laboratory, four hours. Prerequisites: courses 31A-31B, 32A-32B, 34A-34B or equivalent. The determination of criteria for designing spatial enclosures. Mr. Shapira, Mr. Williams

**170B. Shelter.** Lecture, two hours; laboratory, four hours. Prerequisites: courses 31A-31B, 32A-32B, 34A-34B, 170A or equivalent. The definition of structure and space in relation to human needs. May be repeated once. Mr. Shapira, Mr. Williams

**171A. Textiles.** Lecture, two hours; laboratory, four hours. Prerequisites: courses 31A-31B, 32A-32B, 34A-34B, or equivalent. Surface modification through ornament. Miss Breitenbach

**171B. Textiles.** Lecture, two hours; laboratory, four hours. Prerequisites: courses 31A-31B, 32A-32B, 34A-34B, 171A or equivalent. Dyeing theories and processes; natural and synthetic colorants. May be repeated once. Mr. Bassler, Miss Breitenbach

**172A. Video Imagery.** Lecture, two hours; laboratory, four hours. Prerequisites: courses 31A-31B, 32A-32B, 34A-34B or equivalent. Introduction to electronic image-making; video-tape and "live" representation. Mr. Kataoka, Mr. Neuhart

**172B. Video Imagery.** Lecture, two hours; laboratory, four hours. Prerequisites: courses 31A-31B, 32A-32B, 34A-34B, 172A or equivalent. Electronic audiographic recording explored for its sensory potential; video-tape as record of process and content levels. May be repeated once. Mr. Kataoka, Mr. Neuhart

### III. Proseminars in Design

**192. Proseminar in Design: Resources.** Proseminar, three hours. Prerequisite: consent of adviser. Investigation of resources for creativity as an introduction to research. Concurrent enrollment in one course in Concept and Form recommended. Enrollment through Design faculty advisers. Can be repeated once. Design Staff

**193. Proseminar in Design: Senior Studies.** Proseminar, three hours. Prerequisite: consent of adviser. Members of the faculty will examine specific problems relevant to Design theory and performance. Topics for investigation will be announced in advance. Open to senior and advanced students through Design faculty advisers. May be repeated for a maximum of three courses. Design Staff

### PAINTING/SCULPTURE/GRAPHIC ARTS

**195. Proseminar in Painting/Sculpture/Graphic Arts.** Discussion, three hours. Prerequisites: courses 10A, 10B, 20A, 20B. Analysis and discussion in Painting, Sculpture, and Graphic Arts with variable topics such as the comparison and contrast of traditional and contemporary concepts and media, and relationships to other arts. May be repeated for a maximum of three courses. The Staff in Painting/Sculpture/Graphic Arts

### Special Studies for All Majors

**197. Honors Course.** Hours to be arranged. Prerequisite: 3.0 overall, 3.5 in major, consent of instructor, junior or senior standing. Individual studies for majors. Maximum two courses. The Staff

**199. Special Studies in Art. (½ to 2 courses)** Hours to be arranged. Prerequisites: 3.0 in major, consent of instructor, senior standing. Individual studies for majors. Maximum, two courses. The Staff

### Graduate Courses

Prerequisite for all courses: consent of the instructor. All courses may be repeated for credit upon recommendation of adviser. Not open to undergraduate students. See College of Fine Arts, Unit Requirement. Course 201 through 265: exact topics of both graduate lecture courses and seminars vary.

**201. Historiography of Art History.** Seminar, two hours. A critical study of the various approaches to art history through the centuries. The Staff in Art History

**202. Methodology of Art History. (½ to 2 courses)** Sections oriented to the development and refinement of specialized research skills appropriate to particular periods and areas in the history of art. The Staff in Art History

**203. Museum Studies. Seminar, two hours.** Course will focus on various aspects of museum activities: concepts and historical evolution of art museums and collecting; methodology of exhibitions; problems involved in acquisition and evaluation of works of art. The Staff in Art History

**204. Restoration, Preservation and Conservation.** Seminar, two hours. Course may not be repeated. Mr. Johnson

**205. Studies in Prints.** Seminar, two hours. Mr. Bloch

**206. Studies in Drawings.** Seminar, two hours. Mr. Bloch

**207. Studies in Prints.** Lecture, two to three hours. Mr. Bloch

**208. Studies in Drawings.** Lecture, two to three hours. Mr. Bloch

**210. Egyptian Art.** Seminar, two hours. Mr. Badawy

**211. Topics in Egyptian Art.** Lecture, two to three hours. Mr. Badawy

**212. Problems in Islamic Art.** Lecture, two to three hours.

**213. Problems in Islamic Art.** Seminar, two hours.

**216. Topics in African Art.** Lecture, two to three hours. Mr. Rubin

**217. Topics in Oceanic Art.** Lecture, two to three hours. Mrs. Klein, Mr. Rubin

**218. Topics in Pre-Columbian Art.** Lecture, two to three hours. Mrs. Klein

**219. Topics in Native North American Art.** Lecture, two to three hours. Mrs. Klein, Mr. Rubin

**220. The Arts of Africa, Oceania and Pre-Columbian America.** Seminar, two hours. Mrs. Klein, Mr. Rubin

**221. Topics in Classical Art.** Lecture, two to three hours. Miss Downey

**222A-222B. Greco-Roman Art.** Seminar, two hours. A detailed study of the sculpture and architecture of Syria and Mesopotamia in the Greco-Roman Period. Credit and letter grade will be given only on completion of the full seminar sequence. Miss Downey

**223. Classical Art.** Seminar, two hours. Miss Downey

**224. Topics in Medieval Art.** Lecture, two to three hours. Mrs. Kalavrezou-Maxeiner, Mr. Werckmeister

**225. Medieval Art.** Seminar, two hours. Mrs. Kalavrezou-Maxeiner, Mr. Werckmeister

**226A-226B. Medieval Art and Architecture.** Seminar, two hours. Credit and letter grade will be given only on completion of the full seminar sequence. Mrs. Kalavrezou-Maxeiner

**230. Italian Renaissance Art.** Seminar, two hours. Mr. Pedretti, Mrs. Weisz

**231. Leonardo and Renaissance Theory of Art.** Seminar, two hours. Mr. Pedretti

**232. Topics in Italian Renaissance Art.** Lecture, two to three hours. Mr. Pedretti, Mrs. Weisz

**233. Topics in Northern Renaissance Art.** Lecture, two to three hours.

**235. Northern Renaissance Art.** Seminar, two hours.

**240. Baroque Art.** Seminar, two hours.

**241. Topics in Baroque Art.** Lecture, two to three hours. Mr. Pedretti, Mrs. Weisz

**244. Topics in European Art from 1700-1900.** Lecture, two to three hours. Mr. Wark

**245. European Art from 1700 to 1900.** Seminar, two hours.

**246. Art and Architecture of Georgian England.** Seminar, two hours. Mr. Wark

**252. Topics in Modern Art.** Lecture, two to three hours. Mr. Kunzle

**253. Modern Art.** Seminar, two hours. Mr. Kunzle, Mr. Werckmeister

**254. Topics in American Art.** Lecture, two to three hours. Mr. Bloch

**255. American Art. Seminar, two hours.** Mr. Bloch

**259. Topics in Asian Art.** Lecture, two to three hours. Mrs. Klimburg-Salter, Mr. McCallum, Mr. Powers

**260. Asian Art.** Seminar, two hours. Mrs. Klimburg-Salter, Mr. McCallum, Mr. Powers

**265. Field Work in Archaeology. (½ to 2 courses)** Participation in Archaeological excavations or other archaeological research under supervision of the staff. The Staff in Art History

**271. Graduate Painting. (½ to 2 courses)** Hours to be arranged.

**272. Graduate Printmaking. (½ to 2 courses)** Hours to be arranged.

**273. Graduate Sculpture. (½ to 2 courses)** Hours to be arranged.

**274. Graduate Photography. (½ to 2 courses)** Hours to be arranged.

**279. Seminar in Art.** Seminar, two hours. Painting, Sculpture, Graphic Arts. Other forms and systems. Studies in concept, experience, process. The Staff in Painting/Sculpture/Graphic Arts

**280. Communication Imagery. (½ to 2 courses)** Laboratory, two to four hours. Exploration of graphic processes in visual systems. Design theory and procedures related to typography, letter form, photography and the graphic film as they communicate visually. Mr. Neuhart

**281. Image Transfer. (½ to 2 courses)** Laboratory, two to four hours. Advanced experimental work in print processes. Employment of the fixed image, such as offset lithography, offset or letter press, screen printing and emulsion printing, through photo/mechanical means. Mr. Jennings

**282. Electronic Imagery. (½ to 2 courses)** Laboratory, two to four hours. Electronic imagery. The recognition of the fugitive image in creative and recording processes such as video and the computer generated image. Mr. Kataoka

**283. Costume. (½ to 2 courses)** Seminar, two hours; laboratory, two hours. Advanced formulation and development of design ideas for contemporary fashion, dance, drama or ritual. Research on the evolution of style and modes of expression in historical and modern costumes. Mrs. McCloskey

**284. Ceramics. (½ to 2 courses)** Seminar, two hours; laboratory, two hours. Advanced research and application of ceramic theory and methodology. Emphasis on the development of a responsible personal aesthetic. Includes, but is not limited to, investigations of clay and glaze design technology, design for industry, clay as medium, and the historical importance of ceramics as a socially responsible discipline. Mr. Saxe

**285. Glass. (½ to 2 courses)** Laboratory, two to four hours. Formal investigation and research in glass methods and processes as a creative discipline.

**287. Design and Structure. (½ to 2 courses)** Laboratory, two to four hours. Exploration of form with emphasis on experimentation with materials and processes. Mr. Vasa

**288. Fiber Structures. (½ to 2 courses)** Laboratory, two to four hours. Advanced formative work in traditional and experimental processes of fabric construction utilizing fiber media. Mr. Bassler, Mr. Kester

**289. Textiles. (½ to 2 courses)** Laboratory, two to four hours. Advanced experimental work with the elements of fabric design, including surface manipulation and methods of fabrication, which may include but are not limited to dye and printing processes. Miss Breitenbach

**290A-290B-290C. Design Seminar—A Collaborative View.** Seminar, three hours. The Design Staff

**290A. Formalization Processes.** Critical examination of theoretical concepts underlying the design process, including the initiation of an idea, its interpretation and execution by the designer.

**290B. Design Programming.** Critical examination of idea development into model or procedural form for execution and/or production by others.

**290C. Visual Communication.** Critical examination of imagery in its social context.

**291. Landscape Design. (½ to 2 courses)** Laboratory, two to four hours. Articulation of landscape elements, including conservation and planning. Mr. Roberts

**292. Shelter. (½ to 2 courses)** Development of individual projects to investigate concepts of Shelter. Exploration of traditional and contemporary forms, methods, and materials. Mr. Shapira, Mr. Williams

**293. Interior Space Design. (½ to 2 courses)** The concept and practice of designing interior spaces. Evaluation of visual and functional needs for interior spaces, (ranging from personal to social spaces) two and three dimensional projects involving color, light, surface, materials, equipment, furniture, etc. Mr. Kester, Mr. Shapira, Mr. Williams

**294. Industrial Design. (½ to 2 courses)** Laboratory, two to four hours. Development of design strategies and process methods for industrial production. Mr. Shapira

**295. Exhibition Design.** (½ to 2 courses) Laboratory, two to four hours. Interpretation and presentation of materials for exhibition. Mr. Carter

#### Individual Study and Research

**596. Directed Individual Study or Research.** (½ to 2 courses) Prerequisite: consent of the instructor. The Staff

**597. Preparation for the Comprehensive Examination for the Master's Degree or the Qualifying Examination for the Ph.D.** (½ to 2 courses) Prerequisite: consent of the instructor. The Staff

**598. Research for and Preparation of the Master's Thesis.** (½ to 2 courses) Prerequisite: consent of the instructor. The Staff

**599. Research for and Preparation of the Doctoral Dissertation.** (½ to 2 courses) Prerequisite: consent of the instructor. The Staff

#### Related Courses in Another Department

**Classics 251A.** Seminar in Classical Archaeology: The Aegean Bronze Age.

**251B.** Seminar in Classical Archaeology: Graeco-Roman Architecture.

**251C.** Seminar in Classical Archaeology: Graeco-Roman Sculpture.

**251D.** Seminar in Classical Archaeology: Graeco-Roman Painting.

The Department of Art reserves the right to hold for exhibition purposes examples of any work done in classes and to retain for the permanent collection of its galleries such examples as may be selected.

#### UCLA FREDERICK S. WIGHT ART GALLERY

The UCLA Frederick S. Wight Art Gallery, adjacent to Dickson Art Center, presents a program of changing exhibitions of regional, national and international significance, including a range of historical, ethnic and contemporary forms of art. Included in this program are exhibitions by faculty and students of the Painting/Sculpture/Graphic Arts and Design areas, and exhibitions assembled from the extensive collections of the Museum of Cultural History, focusing on non-Western and folk art. The Grunwald Center for the Graphic Arts maintains a print study collection and presents a series of exhibitions related to the Art Department's program of advanced studies in the graphic arts and art history.

## ASIAN AMERICAN STUDIES (Interdepartmental)

(Office, 3232 Campbell Hall)

#### Special Program in Asian American Studies

For details of the program in Asian American Studies at the Undergraduate level, see "Special Program in Asian American Studies" under Colleges of Letters and Science.

#### Master of Arts in Asian American Studies

The Master of Arts in Asian American Studies is administered by an interdepartmental committee. Members of the Committee are: Hiroshi Wagatsuma (Anthropology) Chair; Hans Baerwald (Political Science); Ben Befu (Oriental Languages); Kenyon Chan (Education); David Farquhar (History); Lucie C. Hirata (Sociology); Charles Nakamura (Psychology).

The interdisciplinary Master of Arts Degree in Asian American Studies is designed to promote scholarly research of Asians in the United States through a variety of disciplinary perspectives. The program is intended to provide training to community-oriented professionals and to serve as a foundation for further specialization at the doctoral level. The program will normally require two years of study in a program planned by the individual and the Graduate Advisor. Research is being conducted on various Asian American groups from many disciplinary perspectives. There are a variety of opportunities for graduate students to participate.

#### Admission to the M.A. Program

In addition to the general requirements of Graduate Division, the applicant must have a demonstrated interest in Asian American Studies as well as a general background in the social sciences. Students must present a minimum of two full years of study in an Asian language at the university level or its equivalent to be awarded the Master's Degree in Asian American Studies. This requirement may be fulfilled prior to entering the program, but all candidates for the M.A. degree must pass a proficiency examination administered by the Asian American Studies Center and the Faculty Guidance Committee. All students who anticipate advancing to doctoral programs are encouraged to develop a thorough mastery of one or more Asian languages.

#### Requirements for the M.A. Degree in Asian American Studies

**A. General Requirements:** See the Graduate Division

**B. Course of Study**

1. A two-quarter seminar, Asian American Studies 200A-200B Critical Issues in Asian American Studies, is the only sequence in the program specifically required.

2. Candidates for the Master's Degree in Asian American Studies must have, in addition, satisfactorily completed nine courses of which only one can be an independent study course (500 series). At least five of the nine courses must be graduate level courses (200 series) while the other four can be upper division undergraduate courses. Three out of the five graduate courses must be selected from the following:

a. History 240—Race and Labor in California

b. Sociology 261—Ethnic Minorities

c. Anthropology 209—Asian Americans: Personality and Identity

**C. Thesis:** Candidates for the Master's Degree in Asian American Studies will be required to submit a thesis which is the result of scholarly research and original thinking.

**D.** An oral examination will be given by the candidate's Master's Degree Committee to the candidate on the problem examined in the thesis. The candidate must receive a "pass" on both the thesis and the oral examination in order to receive the degree.

#### INTERDISCIPLINARY COURSES

##### Upper Division

**100A-100B. Introduction to Asian American Studies.** This survey sequence is an introduction to Asian American Studies. The first quarter of the course will deal with the history of Asians in America. The second quarter will examine Asian American communities today. The Staff

**103. Asian Americans and the Law.** The course will survey major Federal and California case and legislative law directed specifically against Asian Americans, from 1850 to World War II and relocation. Major subject areas are Japanese relocation orders, Anti-Asiatic labor legislation, legal prohibitions against Asians' right to testify, case law on Asian women, and equal educational opportunity for Asians. Mr. Iwasaki, Ms. Wong

##### Graduate Courses

**200A-200B. Critical Issues in Asian American Studies. (2 courses)** Prerequisite: graduate standing. Consent of instructor. A two-quarter interdisciplinary seminar which attempts to (1) review systematically and critically the literature on Asian Americans, (2) identify gaps of knowledge and controversial issues in the field, and (3) develop plans of research and investigation that focus on these issues. Ms. Hirata, Mr. Wagatsuma

The following courses pertaining to Asian American Studies are offered by the departments listed. With the approval of the committee, other related courses may be included in a student's program.

**Anthropology 203.** Cultures of Asia.

**253.** Selected Topics of Cultures of Asian.

**Architecture and Urban Planning 213.** Comparative Community Political Systems.

**230.** Introduction to Urban and Rural Development Policy.

**231A.** Planning for Urban Regional Growth: Theories of Growth.

**231B.** Planning for Urban Regional Growth: Urban Development and renewal.

**History 182.** The Immigrant in America.

**183.** Racial Attitudes in America.

**185.** History of United States Labor.

**188.** History of California.

**189A-189B.** American Urban History.

**191A-191B-191C.** History of China.

**192.** Asians in American History.

**193.** Diplomatic History of the Far East.

**195A-195B-195C.** Japanese History.

**212.** Intellectual History of Recent China.

**214.** Social and Intellectual History of Recent Japan.

**240.** Race and Labor in California 1848-1945.

**240H.** Working Class History.

**279A-279B.** Seminar in Chinese History.

**281A-281B.** Seminar in Modern Japanese History.

**285A-285B.** Urban History.

**Political Science 135.** International Relations of East Asia.

**136.** International Relations of the Western Pacific.

**159.** Chinese Government and Politics.

**160.** Japanese Government and Politics.

**250C.** Chinese and East Asian Studies.

**250D.** Japanese and Western Pacific Studies.

**Sociology 124.** Ethnic and Status Groups.

**125.** Urban Sociology.

**129.** White Racism.

**134.** Comparative Social Institutions of East Asia.

**155.** Intergroup Conflict and Prejudice.

**216A-216B.** Survey Research Methods.

**234.** Sociology of Community Organization.

**261.** Ethnic Minorities.

**263.** Social Stratification.

**276.** Selected Topics in the Sociology of East Asia.

**292A-292B-292C.** Research Development.

## ASTRONOMY

(Department Office, 8979 Mathematical Sciences Building)

George O. Abell, Ph.D., *Professor of Astronomy.*

Lawrence H. Aller, Ph.D., *Professor of Astronomy.*

Harland W. Epps, Ph.D., *Professor of Astronomy.*

Miroslav Plavec, Ph.D., *Professor of Astronomy.*

Roger K. Ulrich, Ph.D., *Professor of Astronomy (Chairman of the Department).*

Daniel M. Popper, Ph.D., *Emeritus Professor of Astronomy.*

Ferdinand Coronti, Ph.D., *Associate Professor of Physics and Astronomy.*

Holland C. Ford, Ph.D., *Associate Professor of Astronomy.*

Michael A. Jura, Ph.D., *Associate Professor of Astronomy.*

Jonathan I. Katz, Ph.D., *Associate Professor of Astronomy and IGGP.*

Bruce H. Margon, Ph.D., *Assistant Professor of Astronomy.*

Richard E. Lingenfelter, B.A., *Professor of Geophysics and Astronomy in Residence.*

Donald E. Osterbrock, Ph.D., *Director of Lick Observatory.*

#### Classes for Non-Majors

Astronomy 3 and 4 are essentially nonmathematical courses open to the general university student. Astronomy 4 covers special topics to a somewhat greater depth and requires some preliminary elementary background in astronomy (e.g., Astronomy 3). Courses 8 and 80 are considered as honors classes in the Department.

Students who have had at least two courses in high school algebra and one course in trigonometry, are strongly advised to take, instead of Astronomy 3, the parallel course Astronomy 8. While the level of required mathematical skills in 8 is still elementary, the class is smaller and more challenging. Similarly, students who have already taken some college courses in physics and mathematics, should take Astronomy 80 instead of 4. In particular, declared or potential majors in astronomy or in physical and related sciences should take courses 8 and 80, not 3 or 4.

Astronomy 101 is a general survey course recommended to science majors who wish to get a good general picture of astronomy and astrophysics in one course. Astronomy 80 is on about the same level, but has the form of a seminar focused on several selected topics, and is recommended mainly to sophomores who already have had an astronomy class.

Students of junior and senior standing in physics or related sciences are invited to choose any of the classes 103, 106, 115, 117, 127, and 130.

#### Advising

Every student enrolled in the curriculum in astronomy is required to have each quarter a program approved by a departmental adviser.

#### Preparation for the Major

**Required:** Physics 8A-8E; Mathematics 31A, 31B, 31C, 32A, 32B, 32C; course 3 or the equivalent in either German, French, Russian or Spanish; Recommended: Astronomy 8, Chemistry 11A.

#### The Major

**Required:** Astronomy 101, 103, 106, 115, 117, 127, 130; Physics 105A-105B; 110A-110B; 115A-115B; 131A. **Mathematics:** at least one upper division course chosen from 130 through 152. **Recommended:** Astronomy 80, 104, 180; Earth and Space Sciences 101; Physics 108, 112A, 112B, 124, 131B.

#### Honors Program in Astronomy

Senior majors in Astronomy with a 3.40 grade point average in all Astronomy, Mathematics, and Physics courses are eligible for the Honors Program in Astronomy. In addition to completing all courses required for the major, the honors student must complete two quarters of 199. To receive honors and highest honors at graduation, the grade point average must remain 3.40 or higher and the work in 199 must reflect original research and be accepted by the departmental honors committee.

#### Requirements for the Master's Degree

**General Requirements.** See Master's Degrees. The Department offers work under The Comprehensive Examination Plan. This examination is given annually in fields specified by the Department. The requirements for the master's degree should normally be completed at the end of one year, and must be completed not later than two years after beginning graduate studies.

The record of each graduate student admitted from another institution will be evaluated in consultation with the student to determine whether undergraduate courses in physics or astronomy are required to strengthen the student's background. The student should have undergraduate preparation equivalent to our undergraduate major, which consists of the courses: Astronomy 101, 103, 106, 115, 117, 127, 130, Physics 105A-105B, 110A-110B, 115A-115B, and 131A.

#### Requirements for the Degree of Doctor of Philosophy

**General Requirements.** See Doctoral degrees. The candidate must obtain a master's degree. (See the preceding section.) All astronomy Ph.D. candidates are further required to serve one year as a teaching assistant.

A graduate student's annual evaluation is based on: (1) course grades, (2) research projects realized in the C-parts of graduate course (see below under Graduate Courses), (3) annual comprehensive examinations which establish his general level of knowledge in the core courses offered during the previous academic year. While certain minimum requirements must be satisfied in each of these three fields, a credit point system permits the student to make up partly for deficiencies in one field by outstanding results in another. These requirements should normally be satisfied within 9 quarters, and not later than within 12 quarters. When starting his work on a thesis, the candidate will also be required to pass an oral qualifying examination, conducted by his doctoral committee, that will test his preparation to conduct a specialized research problem.

The Department of Astronomy operates an off-campus observatory at Ojai, California, which features a 24-inch reflecting telescope and a 10-inch Schmidt telescope that are available to students in their independent study and research programs in connection with courses 199, 596A and 599.

#### Lower Division Courses

**3. Astronomy: The Nature of the Universe.** Lectures three hours, discussion one hour. Not open to students who have taken or are taking Astronomy 101. An essentially nonmathematical course for the general university student on the development of ideas in astronomy, and what has been learned of the nature of the universe, including recent discoveries and developments. The Staff

**4. Topics in Modern Astronomy.** Lectures four hours, discussion one hour. Prerequisite: course 3 or the equivalent. For the general university student with previous introduction to astronomy. Selected topics (such as evolution of the solar system and stars, and cosmology) are treated in some depth, but without formal mathematics, emphasizing their significance and relationships to other sciences. The Staff

**8. Introductory Astronomy and Astrophysics.** Lecture, three hours per week; laboratory, one hour per week. Introduction to astronomy and astrophysics for freshmen who are seriously interested in science. Course requires the ability to understand mathematical and physical concepts, but high school algebra and trigonometry classes provide sufficient qualification. Particularly recommended to declared or potential majors in astronomy or in physical and mathematical sciences.

Mr. Jura, Mr. Margon, Mr. Plavec

**10. Practice in Observing. (½ course)** Meets one evening a week for two and one-half hours. Prerequisite: knowledge of plane trigonometry and some previous or concurrent course in astronomy, or consent of the instructor. Practical work for beginners, including telescopic observations and laboratory exercises cognate to an introductory course in astronomy.

The Staff

#### Upper Division Courses

**80. Topics in Contemporary Astrophysics.** Meets three hours per week. Prerequisites: Physics 8A-8C, Mathematics 31A-31C, Astronomy 8 or consent of instructor. A seminar on contemporary topics in astrophysics, showing what the current problems are and how astrophysics works in solving them.

Mr. Jura, Mr. Margon

**101. General Astronomy and Astrophysics.** Meets four hours per week. Prerequisites: Physics 8A and Mathematics 31A-31B or their equivalents. Open to qualified sophomores as well as upper division students. Course 10 may be elected for observatory and laboratory work in connection with this course. A survey of the whole field of astronomy, designed primarily for students majoring in a physical science or mathematics. The Staff

**103. Gravitational Astronomy.** Meets four hours per week. Prerequisites: Physics 8A-8D; Mathematics 31A-31C and 32A-32B; Astronomy 101 or 8 recommended. Astronomical coordinates, transformations, precession, astronomical time keeping, celestial navigation. Two body orbit theory in the solar system, calculation of an ephemeris from orbital elements and an orbit from observations. Theory of least squares and data handling. Orbits of visual and spectroscopic binary stars; determination of stellar masses. Tidal, rotational, and relativistic perturbations of the gravitational potential. Mr. Abell, Mr. Epps

**104. Astronomical Optics.** Meets three hours per week. Prerequisite: Physics 105A. Geometrical optics, including ray tracing and optical aberrations commonly encountered in optical design. Interference, diffraction, dispersion, photoelectric emission

and other aspects of physical optics with particular emphasis placed on practical application in astronomical investigation.

Mr. Epps

**106. Stars, Stellar Systems, and Cosmology.** Meets three hours per week. Prerequisites: Physics 8A-8D; Mathematics 31A-31C and 32A-32B; recommended: Astronomy 8 or 101, 103. Properties of stars, stellar spectroscopy and photometry. Galaxy and external galaxies. Galactic and extragalactic distance scales. Introduction to cosmology. Mr. Abell, Mr. Ford, Mr. Plavec

**115. Physical Foundations of Astrophysics.** Lecture, four hours. Prerequisite: senior standing in astronomy or physics, or consent of instructor. Spectroscopy and spectral lines in stellar spectra. Theory of radiation and continuous stellar spectra. Astrophysics of the gaseous state of matter, ionization and excitation, and local thermodynamic equilibrium. Interaction between matter and radiation. Mr. Epps, Mr. Jura, Mr. Ulrich

**117. Stellar Atmospheres and Interstellar Matter.** Meets three hours per week. Prerequisite: senior standing in astronomy or physics, or consent of instructor; Astronomy 115 or its equivalent. Introduction to radiative transfer, stellar atmospheres and their models. Curve of growth analysis and abundance determinations. Atmosphere of the Sun. Physical conditions in the interstellar medium and aspects of star formation. Mr. Aller, Mr. Jura

**127. Stellar Interiors and Evolution.** Meets three hours per week. Prerequisites: senior standing in astronomy or physics, or consent of instructor. Recommended: Astronomy 115. Physical conditions in stellar interiors. Energy production in stars. Stellar evolution from star formation through the normally observed stages to white dwarfs, neutron stars, and black holes. Novae, supernovae, other variable stars. Synthesis of chemical elements in stars. Mr. Plavec, Mr. Ulrich

**130. High Energy Astrophysics.** Meets three hours per week. Prerequisites: Senior standing in astronomy or physics, or consent of instructor. Theory and observation pertaining to astronomical sources of high energy radiation. Theory of synchrotron radiation, Compton scattering; interaction of matter with compact objects. Solar flares, X- and gamma ray sources, the Crab nebula, nuclei of peculiar galaxies, quasars. Mr. Katz, Mr. Margon

**\*180. Senior Symposium on Topics in Modern Astronomy.** Meets three hours per week. Prerequisite: senior standing in astronomy or physics or consent of the instructor. Lectures by instructors in astronomy and related fields to supplement the regular course sequence. Topics may include: radio, infrared, UV and X-ray astronomy, observational cosmology, variable stars, planetary physics, pulsars and quasars. Mr. Ulrich

**199. Special Studies. (½ or 1 course)** Prerequisite: senior standing in astronomy or physics, with an outstanding record and consent of the instructor. Special studies with an individual faculty member. With prior approval, this course may be used to carry out a meritorious observing program at the UCLA Students' Observatory, or in special cases with the 24-inch reflector at the Department's Field Station in Ojai. The Staff

#### Graduate Courses

Prerequisite to graduate courses is by consent of the instructor. Graduate courses 201 through 227 are offered in alternate years. With the exception of the introductory graduate course 200, the regular graduate courses consist of three quarters according to the following scheme: level A (winter quarter, 4 units); a basic survey course presenting the minimum knowledge in the field expected for all students who wish to obtain the Ph.D. degree, but who do not necessarily plan to specialize in the field covered by the course; Level B (spring quarter, 6 units): advanced level for those considering the possibility of taking up a research project in the field. Level C (fall quarter, following academic year, 8 units): individual research projects supervised by the instructor in the form of a laboratory. The introductory courses are given in the winter quarters so that (1) full use may be made of the favorable fall weather for observational projects, (2) new graduate students may be acquainted with the program and with the department in the introductory course 200, which is offered every year. Courses 230 and 240 are equivalent to the B courses.

**200. Introduction to Graduate Study of Astronomy.** Prerequisite: to be taken by all newly entering graduate students. Surveys the various fields of astronomy and astrophysics, gives first acquaintance with working methods, and with the department. Basic astronomical nomenclature is surveyed, and the background in physics and mathematics is outlined as required in graduate courses. Mr. Epps

**\*16201A. Astrophysics of the Solar System.** Prerequisite: graduate standing or permission of instructor. The sun, solar phenomena, and solar-terrestrial relationships. The interplanetary medium and astronomical plasma physics, comets, meteorites, meteors, satellites and planets, planetary atmospheres. Origin and evolution of the solar system. Mr. Aller, Mr. Ulrich

**\*16204A-204B-204C. Observational Astronomy. (1 course, 1½ courses, 2 courses)** Positional astronomy, data reduction, telescopes, photometric, spectroscopic and radio instruments and techniques. Includes laboratory. Mr. Epps, Mr. Ford

**\*17208A-208B-208C. The Interstellar Medium. (1 course, 1½ courses, 2 courses)** Dynamics and physics of interstellar gas and dust. Radio observations of the interstellar medium. Diffuse and

planetary nebulae. Magnetic fields in space. Star formation. Topics in high energy astrophysics. Mr. Aller, Mr. Jura

**\*17217A-217B-217C. Stellar Photospheres. (1 course, 1½ courses, 2 courses)** Prerequisite: consent of the instructor. Physics of stellar photospheres and radiative transfer. The continuous and line spectra of stars. Chemical abundances in stars. Stars with extended and unstable atmospheres. Mr. Aller, Mr. Plavec, Mr. Ulrich

**\*17219A-219B-219C. Stellar Systems. (1 course, 1½ courses, 2 courses)** Statistical astronomy. Distance determination. Stellar motions and populations. Stellar dynamics. Structure of the Galaxy. Galaxies and clusters of galaxies. Distribution of matter in space. Cosmology. Mr. Abell, Mr. Ford

**\*16227A-227B-227C. Stellar Structure and Evolution. (1 course, 1½ courses, 2 courses)** Structure and evolution of the stars. Stellar energy sources and problems of nucleosynthesis. Theory of variable stars. Evolution of and mass exchange in binary stars. Final state of stellar evolution and degenerate stars. Supernova processes. Practical computation of stellar structure and evolution. Mr. Plavec, Mr. Ulrich

**230A-230B-230C. High Energy Astrophysics. (1, 1½, 2 courses)** Prerequisite: consent of the instructor. High energy radiation processes. Observational techniques of X- and Gamma-ray astronomy. Theory and observational results of X- and Gamma-ray sources, pulsars, radio galaxies, and quasars. Mr. Coroniti, Mr. Katz, Mr. Margon

**240. Modern Problems in Astronomy and Astrophysics.** Special topics offered by distinguished visiting professors. May be repeated for credit. Open to qualified graduate students in astronomy and in related fields (physics, meteorology, planetary and space physics).

**250. Seminar on Current Astronomical Research. (½ course)** The Staff

**M255. Cosmic Ray Physics.** (Same as Earth and Space Sciences M266.) Cosmic ray composition, origin, acceleration, propagation, interactions with interstellar matter, magnetic field and radiation field, role in interstellar heating, non-thermal galactic radio and galactic x- and gamma-radiation, interaction in the earth's atmosphere.

**M285. Origin and Evolution of the Solar System.** (Same as Earth and Space Sciences M285.) Dynamical problems of the solar system; chemical evidences from geochemistry, meteorites, and the solar atmosphere; nucleosynthesis; solar origin, evolution, and termination; solar nebula, hydromagnetic processes; formation of the planets and satellite systems. Content will vary from year to year. May be repeated for credit. Graded S/U. The Staff

#### Individual Study and Research

The following courses, 596A, 596L and 599, may be repeated by a student at the discretion of the Department.

**596A. Directed Individual Studies. (½ to 2 courses)** The Staff

**596L. Advanced Study and Research at the Lick Observatory. (½ to 3 courses)** Intended for graduate students who require observational experience as well as those working upon observational problems for their theses. The Staff

**599. Doctoral Research and Writing. (2 to 3 courses)**

## ATMOSPHERIC SCIENCES

(Department Office, 7127 Mathematical Sciences Building)

Akio Arakawa, D.Sc., *Professor of Atmospheric Dynamics.*  
James G. Edinger, Ph.D., *Professor of Meteorology.*  
Yale Mintz, Ph.D., *Professor of Meteorology.*  
Hans R. Pruppacher, Ph.D., *Professor of Atmospheric Physics.*  
George L. Siscoe, Ph.D., *Professor of Atmospheric Physics.*  
Richard M. Thorne, Ph.D., *Professor of Atmospheric Physics (Chairman of the Department).*  
Sekharipuram V. Venkateswaran, Ph.D., *Professor of Atmospheric Physics.*  
Morton G. Wurtele, Ph.D., *Professor of Atmospheric Dynamics.*  
Michio Yanai, D.Sc., *Professor of Atmospheric Dynamics.*  
Jorgen Holmboe, M.Sc., *Emeritus Professor of Meteorology.*  
Morris Neiburger, Ph.D., *Emeritus Professor of Meteorology.*  
Jacob G. Kurian, Ph.D., *Assistant Professor of Atmospheric Physics.*  
Max J. Suarez, Ph.D., *Assistant Professor of Atmospheric Dynamics.*

#### Preparation for the Major

The required courses are: Course 10, 40A-40B, Physics 8A-8E; Mathematics 31A-31B-31C and 32A-32B-32C.

#### The Major

The required courses are: Atmospheric Sciences 109A-109B; Physics 110A-110B, 112A, 131A-131B; two courses from Atmospheric Sciences 143, 144, 145, 151, and two courses from 152, 153, 154. In addition, students preparing for graduate studies in Dynamic and Synoptic meteorology should take as electives the following courses: Mathematics 135A, 135B, 140A and 140B; students preparing for graduate studies in Dynamics and Microphysics of Clouds and Precipitation should take as electives



the following courses: Physics 112B and 140 and Mathematics 140A, 135A and 135B; students preparing for graduate studies in Radiation, or Upper Atmospheric and Space Physics should take as electives the following courses: Physics 105A-105B, and 122.

#### Admission to Graduate Status

The Department recognizes the desirability of a wide variety of backgrounds of students concerned with study of the various aspects of the atmosphere. In addition to those holding bachelor's degrees in meteorology or atmospheric sciences, graduates with degrees in related disciplines — astronomy, chemistry, engineering, geophysics, mathematics and physics — are encouraged to apply for graduate status in the Department. Programs are arranged by consultation between the student and the Department's graduate advisers, and considerable flexibility is maintained so that maximum advantage may be taken of the candidate's previous education.

#### Requirements for the Master's Degree

For general requirements, see Graduate Division.

A bachelor's degree in one of the following: meteorology (atmospheric sciences), astronomy, chemistry, engineering, geophysics, physics or mathematics.

A study program, approved by the Departmental Graduate Advisers, to fill any deficiencies in the student's preparation for the general examination and to prepare the student in one of the fields of specialization: (1) Dynamic and Synoptic Meteorology, (2) Dynamics and Microphysics of Clouds and Precipitation, (3) Radiation, or (4) Upper Atmospheric and Space Physics.

Atmospheric Sciences 260 is required.

Knowledge of a foreign language is not required.

The Department grants the Master's degree either by the comprehensive examination plan or by the thesis plan. All students are required to attain a 3.0 or higher in one 150-series or graduate course in each of two fields other than their field of specialization. A student following the examination plan must pass an examination in his field of specialization. A student with an excellent academic record may petition the Department to follow the thesis plan.

#### Requirements for the Doctor's Degree

For the general requirements, see Graduate Division.

Knowledge of a foreign language is not required.

A student must pass the following examinations in no more than two attempts: (1) a written and, at the option of the Departmental guidance committee, an oral examination in his field of specialization and (2) an oral qualifying examination conducted by his Doctoral Committee.

After advancement to candidacy, the candidate must satisfactorily complete a dissertation which represents an original contribution to knowledge, and must pass a final oral examination conducted by his Doctoral Committee.

#### Lower Division Courses

**2. Air Pollution.** Lecture, three hours; discussion, one hour. A course for all students interested in the causes and effects of high concentrations of pollution in the atmosphere. Topics covered will include the nature and sources of gaseous and particulate pollutants, their transport, dispersion, modification and removal, with emphasis on atmospheric processes on scales ranging from individual sources to global effects; interaction with the biosphere and the oceans; stratospheric pollution. Mr. Wurtele

**3. Introduction to the Atmospheric Environment.** Lecture, three hours; discussion, one hour. A course specifically designed to satisfy in part the breadth requirement of students majoring outside the Physical Sciences. The nature and causes of weather phenomena, including winds, clouds, rain, lightning, tornadoes and hurricanes, solar and terrestrial radiation; phenomena of the higher atmosphere: the ionosphere and the auroras; causes of air pollution; proposed methods and status of weather modification. This course is not open to students who have received credit for 3L. Mr. Kuriyan, Mr. Edinger, Mr. Siscoe

**\*3L. Introduction to the Atmospheric Environment.** Lecture, three hours; laboratory, two hours. Same as Meteorology 3, with laboratory sessions to illustrate and apply the material of the lectures. This course is not open to students who have received credit for 3.

**10. Introduction to the Atmospheric Sciences.** Lecture, three hours; discussion, two hours. Prerequisites: Mathematics 31A-31B-31C and Physics 8A, 8B or consent of the instructor. An introductory course in atmospheric processes designed for science and engineering students. Topics will include the evolution of planetary atmospheres, their present composition and structure; atmospheric radiation and thermodynamics; elementary atmospheric dynamics; climate change; planetary ionospheres. Mr. Suarez

**40A. Basic Meteorology I.** Lecture, three hours; laboratory, six hours. Prerequisite: course 10. Terrestrial energy budget; general circulation; atmospheric motions; fronts and cyclones. Mesoscale dynamics, moist air thermodynamics, cumulus convection. Applications to weather forecasting and modification. (Meteorological instrumentation, observing techniques and the basic principles of map analysis will be covered in the laboratory). The Staff

**40B. Basic Meteorology II.** Lecture, three hours; discussion, one hour. Prerequisite: course 40A. Atmospheric chemistry. Microstructure and formation of clouds and precipitation. Atmospheric electricity. Scattering and absorption of radiation in the atmosphere. Upper atmospheric phenomena, ionospheric layer formation, aurora, exosphere escape. The Earth's radiation belts and magnetosphere, and its interaction with the solar wind. Mr. Pruppacher

#### Upper Division Courses

**M109A. Geophysical Fluid Dynamics.** (Same as Earth and Space Sciences M109A.) Lecture, three hours; discussion two hours. Prerequisite: Mathematics 32C; Physics 8D. Together with 109B, an introduction to fluid dynamics as applied to geophysical problems. Kinematics. Equations of fluid motion. Irrotational flow. Circulation theorems. Vorticity and vortices. Acoustic and gravity waves. Viscous flow. Mr. Yanai

**109B. Geophysical Fluid Dynamics.** Lecture, three hours; discussion, two hours. Prerequisite: course M109A or consent of the instructor. The Navier-Stokes equations. Rotating reference frames. Acoustic and gravity waves in a stratified atmosphere. Hydromagnetic waves. The quasi-static equilibrium. Planetary-scale oscillations. The quasi-geostrophic motion. Barotropic and baroclinic instabilities. Mr. Yanai

**\*143. Physical Oceanography.** Lecture, three hours; discussion or field trip, one hour. Prerequisite: course 40A. Physical structure of the oceans; observational techniques. Theory of waves, currents, swell and tides.

**144. Micrometeorology and Air Pollution Meteorology.** Lecture, three hours. Prerequisite: course 40A-40B or consent of the instructor. Wind and temperature structure in the surface layer; mesoscale weather and wind systems; turbulence and diffusion; evaporation; transport, diffusion and transformation of atmospheric contaminants. Mr. Edinger

**151. Dynamics of the Troposphere and Stratosphere.** Lecture, three hours; discussion two hours. Prerequisite: course 109B. The general circulation of the atmosphere. Global budgets of angular momentum, heat and water vapor. Interaction of the stratosphere with the troposphere. The planetary boundary layer. Moist convection. Frontal and mesoscale weather systems. Dynamics of the tropical atmosphere. Mr. Suarez

**152. Physics of Clouds and Precipitation.** Lecture, three hours; discussion, one hour. Prerequisite: Mathematics 32C and Physics 112A or Chemistry 110A or consent of instructor. The nature and structure of clouds and precipitation; phase changes of water in the atmosphere; condensation on nuclei; development of precipitation particles. Mr. Pruppacher

**153. Atmospheric Radiation.** Lecture, three hours. Prerequisite: Physics 110B, or consent of the instructor. Thermal radiation from the sun and planets. Transfer of thermal radiation through planetary atmospheres. Radiation budget. Scattering of electromagnetic radiation by atoms, molecules, dust and aerosols. Remote sensing. Meteorological optics. Mr. Kuriyan

**M154. Solar Terrestrial Physics.** (Same as Earth and Space Sciences M154.) Lecture, three hours; discussion, one hour. Prerequisite or concurrent: Physics 110B. Particle and electromagnetic emissions from the sun under quiet and under disturbed conditions. The solar wind. The magnetospheres and the ionospheres of the earth and other planets. Geomagnetic phenomena. Aurora and airglow. The Staff

**161A. Laboratory in Atmospheric Dynamics I.** Prerequisite: course 109B. Analysis of surface and upper-level weather charts. Analysis of fronts. Graphical computation of vorticity, vorticity advection. Graphical determination of large-scale vertical motion. Discussion of cyclone development. Mr. Edinger

**161B. Laboratory in Atmospheric Dynamics II.** Prerequisite: course 109B. Introduction to numerical weather prediction. Finite differencing. Numerical solution of boundary value problems. Linear and non-linear computational stability. Numerical integration of the barotropic vorticity equation. Mr. Arakawa

**\*165. Laboratory in Meteorological Observation.** Prerequisite: junior standing and consent of the departmental undergraduate adviser. Theory and application of instrumentation in field and laboratory. The material covered will be partly determined by the students' interests. Mr. Edinger

**199. Special Studies in Meteorology.** (½ or 1 course) Prerequisite: consent of the instructor. Special individual study. The Staff

#### Graduate Courses

##### DYNAMIC AND SYNOPTIC METEOROLOGY

**205. Instrumentation Laboratory.** Measurement of atmospheric variables in the field and the laboratory. Electronic techniques applied to data acquisition and recording. The material covered may be determined by students interest.

**\*206. Atmospheric Convection.** Lecture, three hours. Basic theory of Rayleigh convection. Experiments and theory of buoyant bubbles and plumes. Thermodynamics of moist air. Conditional instability. Structure of cloud- and subcloud-layers. Cumulus

dynamics. Meso- and cluster-scale organization of cumuliform clouds. Interaction of cumulus ensemble with the large-scale environment. Mr. Yanai

**208A. Atmospheric Turbulence.** Lecture, three hours. Kinematics of homogeneous and shear flow turbulence. Surface and planetary boundary layers including heat transfer and turbulent convection. Survey of field and laboratory observations and their interpretation by theory. Mr. Wurtele

**208B. Atmospheric Diffusion and Air Pollution.** Lecture, three hours. Nature and sources of atmospheric pollution; diffusion from point, line, and area sources; pollution dispersion in urban complexes; meteorological factors and air pollution potential; meteorological aspects of air pollution control. Mr. Edinger

**209A. Meteorological Fluid Dynamics I.** Lecture, three hours. An introduction to the fluid dynamics of the atmosphere. The basic kinematics and governing equations and their applications to incompressible homogeneous fluid motions. Vortex dynamics and Helmholtz instability. Inertia-gravity waves and geostrophic adjustment. Frontal wave instability. The Navier-Stokes equations. Viscous boundary layers. Mr. Arakawa

**209B. Meteorological Fluid Dynamics II.** Lecture, three hours. Prerequisites: course 209A or consent of instructor. Oscillations of a compressible, stratified and rotating atmosphere, with and without sphericity. Scale analysis and dynamics of quasi-geostrophic motion. Quasi-geostrophic wave instability. Vertical propagation of wave energy. Mr. Arakawa

**\*210. Dynamics of Planetary Circulations.** Lecture, three hours. Prerequisite: course 209B. Interaction between waves and mean zonal and meridional circulations. Vacillation. Regimes of thermally forced planetary circulations and their stability. From-togenesis. Quasi-geostrophic turbulence. Forced planetary waves. Mr. Suarez

**212A. Numerical Methods in Geophysical Fluid Dynamics.** Lecture: three hours. Prerequisite: course 209A or consent of instructor. Basic numerical methods for initial-boundary value problems in fluid dynamics, with an emphasis on applications to atmospheric and oceanographic problems. Finite difference methods and truncation error. Linear and nonlinear computational instability. Computational modes and computational boundary conditions. Spectral methods. Mr. Suarez

**\*212B. Numerical Modeling of the Atmosphere.** Lecture, three hours. Prerequisites: courses 209B and 212A. Physical and computational design of numerical weather prediction and climate simulation models. The basic dynamical models. Vertical, horizontal and time differencing. Parameterizations of sub-grid scale processes. Mr. Suarez

**\*214A, \*214B. Climatology.** Lecture, three hours. Prerequisites: course 209A. Observations of the atmospheric general circulation and the present climatic state. Global budgets of energy and angular momentum. The hydrologic cycle. Observations of past climates and history of climatic change. Feedback mechanisms determining the sensitivity of climate. Possible causes of climatic changes. Numerical experiments in climatic sensitivity. Mr. Suarez

**\*216A. Dynamics of the Tropical Atmosphere I.** Lecture, three hours. General circulation of the tropics. Zonally averaged fields. Zonally varying features. Inter-tropical convergence zone. Monsoon circulation. The role of cumulus convection in the tropical circulation. Formation and structure of tropical cyclones. Theory and numerical models of tropical cyclones. Mr. Yanai

**216B. Dynamics of the Tropical Atmosphere II.** Lecture, three hours. Planetary- and synoptic-scale wave disturbances in the tropics. Theory of equatorial waves. The energy cycle of tropical waves. Excitation mechanisms. Observation and theory of the quasi-biennial oscillation in the equatorial stratosphere. Mr. Yanai

**\*218. Dynamics of the Atmosphere-Ocean Systems.** Lecture, three hours. Mass, momentum and heat transfers between atmosphere and ocean; wind-driven ocean currents; thermohaline convection; dynamics of the Gulf Stream.

**\*219. Special Topics in Dynamic Meteorology.** (½ to 1 course) The content of this course varies from year to year. The Staff

##### DYNAMICS AND MICROPHYSICS OF CLOUDS AND PRECIPITATION

**\*221. Atmospheric Chemistry.** Lecture, three hours. Physical and chemical properties of atmospheric trace gases; size distribution and physical and chemical properties of atmospheric aerosol particles; wet and dry removal processes for atmospheric trace gases and atmospheric aerosol particles. Mr. Pruppacher

**223A. Cloud and Precipitation Physics I.** Lecture, three hours. Prerequisites: course 152 or consent of instructor. Microstructure of atmospheric clouds; structure of the three phases of water substance including surface effects; thermodynamic theory for equilibrium between the three phases of water substance including surface effects; theory of homogeneous and heterogeneous nucleation of water drops and ice crystal. Mr. Pruppacher

**223B. Cloud and Precipitation Physics II.** Lecture, three hours. Prerequisites: course 223A. Theory of the growth and evaporation of water drops and ice crystals by diffusion of water vapor; hydrodynamics of rigid bodies in a viscous medium, hydrodynamics of cloud drops, rain drops and atmospheric ice particles; growth of

cloud drops and atmospheric ice particles by collision.

Mr. Pruppacher

**\*1224. Atmospheric Electricity.** Lecture, three hours. Prerequisites: course 223B and Physics 110A-110B. Fair weather electricity; atmospheric ions; electric structure of stormy and nonstormy clouds; electric charge generation mechanisms in atmospheric clouds; physics of thunder and lightning; effect of electric fields and charges on cloud and precipitation formation.

Mr. Pruppacher

**\*1228A. Clouds and Radiation.** Lecture, three hours. Radiation budget of cloudy atmospheres including cloud-albedo feedback mechanisms; dependence of cloud radiative properties on microphysical parameters; test-bed modelling techniques of radiative effects of clouds; radiative dynamical interactions in cloudy atmospheres.

Mr. Venkateswaran

**\*1228B. Radar Meteorology.** Lecture, three hours. Radar detection of spherical and non-spherical particles; use of radar in studying size distributions of cloud and precipitation particles, precipitation intensity and amount, updraft velocities, horizontal wind speed and turbulence; radar observations of convective clouds, thunderstorms, tornadoes, hurricanes, squallines, and fronts; clear air echoes.

Mr. Pruppacher

## RADIATION

**235. Infrared Radiative Transfer.** Lecture, three hours. Prerequisites: course 153. Theory of radiative transfer. Approximate solutions to the equation of transfer. Absorption spectroscopy; band models; absorption by atmospheric gases; fluxes and heating rates. Satellite radiation measurements.

Mr. Kuriyan

**236. Scattering Processes in the Atmosphere.** Lecture, three hours. Prerequisites: course 153. Equation of transfer in a scattering medium. Stokes formalism; Rayleigh and Mie theories; polarization of skylight; scattering in a turbid atmosphere; aerosols and their effects on the radiation balance of the atmosphere. Experimental methods of determining aerosol parameters and their significance to meteorology.

Mr. Kuriyan

**\*1238. Radiative Transfer in the Earth's Atmosphere.** Lecture, three hours. Prerequisites: course 153. Critical review of methods available to calculate the transfer of radiation (visible, ultraviolet and infrared) through the atmosphere. Computations of fluxes and heating rates using various methods. The emphasis of the course will be to provide a familiarity with the available techniques in the literature.

Mr. Kuriyan

## UPPER ATMOSPHERIC AND SPACE PHYSICS

**240A. Solar System Magnetohydrodynamics.** (1½ courses) (Formerly numbered 240.) Prerequisite: course 154 or consent of instructor. Derivation of the MHD equations with two fluid aspects, generalized Ohm's law, small amplitude waves, discontinuities, shock waves, and instabilities. Applications to the statics and dynamics of the solar wind and planetary magnetospheres and to solar wind-magnetosphere-ionosphere coupling.

Mr. Siscoe

**240B. Solar System Plasma Physics.** (1½ courses) Prerequisite: course 154 or consent of instructor. Adiabatic charged particle dynamics; collective plasma phenomena; cold plasma wave theory, ray tracing; conceptual introduction to plasma instabilities and diffusion, violation of the adiabatic invariants.

Mr. Thorne

**\*1247. Radiation Belt Plasma Physics.** Prerequisite: course 240B or consent of instructor. Turbulent plasma instabilities, their relation to satellite observations and magnetospheric structure. Processes responsible for the source, loss and transport of energetic radiation belt particles.

Mr. Thorne

**249A-249B-249C. Special Topics in Solar Planetary Relations.** (½ to 1 course each) (Formerly numbered 249.) Selected topics of current research interest in the solar wind, magnetospheric or ionospheric physics.

Mr. Siscoe, Mr. Thorne, Mr. Venkateswaran

**255. Dynamics of the Stratosphere and the Mesosphere.** Lecture, three hours. Prerequisites: course 209B or consent of the instructor. Photochemistry and radiation regime of the middle atmosphere; propagation of waves of tropospheric origin; radiative and photochemical damping effects; excitation and propagation of atmospheric tides; wave-zonal wind interactions; internal instabilities; theories of circulation features including annual, semi-annual and quasi-biennial oscillations and the build-up and breakdown of polar vortex.

Mr. Venkateswaran

**\*1258. Theory of Planetary Atmospheres.** Lecture, three hours. Prerequisites: Background in fluid dynamics and electromagnetism required. Model planetary atmospheres, including evolution, structure, radiative balance and general circulation; ionospheres and magnetospheres. Comparison with the atmospheres of the terrestrial and outer planets.

## Seminars

**260. Seminar in Meteorology.** (½ course) The Staff

**261. Seminar in Atmospheric Dynamics.** (½ course) Mr. Arakawa, Mr. Mintz, Mr. Yanai

**262. Seminar in Cloud and Precipitation Physics** (½ course) Mr. Pruppacher

**263. Seminar in Atmospheric Radiation.** (½ course)

Mr. Kuriyan

**264. Seminar in Physics of the Upper Atmosphere.** (½ course).

Mr. Siscoe, Mr. Thorne, Mr. Venkateswaran

## Individual Study and Research

**596. Directed Studies for Graduate Students.** (½ to 1 course)

The Staff

**597. Preparation for the Master's Comprehensive Examinations and the Doctoral Qualifying Examinations.** (½ to 1 course)

The Staff

**598. Research and Preparation of the Master's Thesis.** (½ to 1 course)

The Staff

**599. Research on Doctoral Dissertation.** (½ to 2 courses)

The Staff

## Related Courses in Other Departments

**Astronomy** 101; 103A-103B; 104

**Chemistry** 110A-110B; 113; 114A; 123A-123B.

**Earth and Space Sciences** 101; M109A; M154.

**Engineering** 10, 103A; 117A-117B; M118; 124A; 125A-125B; 125L; 131A; 131C; 150A-150B; 181A; 192A-192B-192C.

**Mathematics** 135A-135B; 131A-131B-131C; 132; 140A-140B-140C; 142; 145A-145B; 150A-105B-105C; 152A-152B.

**Physics** 108; 110A-110B; 112A-112B; 115A-115B; M122; 131A-131B.

## Graduate Courses of Special Interest to Qualified Meteorology Majors

**Astronomy** 201A-201B-201C.

**Chemistry** 215; 223.

**Earth and Space Sciences** 202; 210; 214; 228; M250; 260; 265.

**Engineering** 218B; 224B; 231C; 250A-250C; 251A; 252A-252B; 259A.

**Mathematics** 250C; 265A-265B-265C; 266A-266B-266C; 267A-267B; 269A-269B-269C; 271A-271B-271C; M274A-274B; 276A-276B-276C.

**Physics** 210A-210B; 215A-215B; 222A-222B-222C; 231A-231B-231C.

## BACTERIOLOGY

(Renamed to Microbiology, effective July 1, 1978.)

(Department Office, 5304 Life Sciences Building)

R. John Collier, Ph.D., *Professor of Bacteriology.*

Frederick A. Eisinger, Ph.D., *Professor of Bacteriology.*

C. Fred Fox, Ph.D., *Professor of Molecular Biology in Bacteriology (Chairman of the Department).*

June Lascelles, Ph.D., *Professor of Bacteriology.*

Rafael J. Martinez, Ph.D., *Professor of Bacteriology.*

Donald P. Nierlich, Ph.D., *Professor of Bacteriology.*

M. J. Pickett, Ph.D., *Professor of Bacteriology.*

Sydney C. Rittenberg, Ph.D., *Professor of Bacteriology.*

William R. Romig, Ph.D., *Professor of Bacteriology.*

Eli E. Sercarz, Ph.D., *Professor of Bacteriology.*

John H. Silliker, Ph.D., *Adjunct Professor of Bacteriology.*

Jack G. Stevens, D.V.M., Ph.D., *Professor of Virology.*

Meridian Ruth Ball, Sc.D., *Emeritus Professor of Bacteriology.*

Gregory J. Jann, Ph.D., *Emeritus Professor of Bacteriology.*

Anthony J. Salle, Ph.D., *Emeritus Professor of Bacteriology.*

David R. Krieg, Ph.D., *Associate Professor of Bacteriology.*

Gary L. Wilcox, Ph.D., *Associate Professor of Bacteriology.*

Bernadine Wisniewski, Ph.D., *Assistant Professor of Bacteriology.*

Donald A. Kaplan, Ph.D., *Lecturer in Bacteriology.*

Catherine Kwan, Ph.D., *Lecturer in Bacteriology.*

Robert A. Mah, Ph.D., *Professor of Public Health.*

Alexander Miller, Ph.D., *Associate Research Bacteriologist.*

Robert E. Williams, M.S., *Assistant Research Bacteriologist.*

Raouf E. Yuja, M.D., *Assistant Clinical Professor of Hematology.*

## Preparation for the Major

**Biology** 4A-4B; **Chemistry** 11A-11B-11BL-11C-11CL, 21, 22, 24; **Mathematics** 3A-3B-3C (or 11A-11B-11C); **Physics** 6A-6B-6C (or 8A-8B-8C-8D).

## Pre-major

Students (new, transfer, or change of major) desiring to major in Bacteriology will first register as pre-bacteriology students. After a minimum of two quarters in this status, pre-bacteriology students may petition to change to the Bacteriology major on completion of the following: Ten of the 14 courses required in preparation for the major, completion of Bacteriology 101 with a grade of C or better. Students entering with 80 or more units credit, in order to specify pre-bacteriology as their major, must have completed general

chemistry, one year; Biology 4A-4B or equivalent; and one of the following: organic chemistry with laboratory, two courses; physics, one year; calculus, one year.

## The Major

The degree program in Bacteriology has as its goals not only the introduction of the student to general and medical bacteriology, but also to the inseparably associated subdisciplines of biochemistry, genetics, cellular physiology, immunology and molecular biology. To qualify a student for study in such broadly related subjects, a heavy concentration of courses in the basic sciences (chemistry, mathematics and physics) is required. The student is then prepared for the advanced discussion of specialized topics required of him/her in the upper division courses. These include, in addition to the broad survey of general and medical microbiology presented in Bacteriology 101, 102, and 103, courses in the subcellular structure and physiology of bacteria, genetics, and specialized courses in microbiology which include advanced laboratory training. In addition to the core program, the student may choose elective courses from a diversity of microbiology-related topics to complete the program. It is this combination of rigor in the study of fundamentals and diversity and flexibility in making up the actual bacteriology major that makes this program appropriate preparation for those planning careers in a laboratory of bacteriology or biochemistry, or for further studies leading to higher academic or professional degrees in such fields as microbiology, medicine, dentistry, biochemistry, pharmacology, immunology, genetics, cellular physiology, and molecular biology.

Bacteriology 101, 102, 103, 111, 112, M132, M185; Chemistry 152. One additional course chosen from Bacteriology upper division courses. Two or three (to make total of 11 full courses) additional upper division Bacteriology courses from departmental list or courses from other science departments chosen with the approval of the Department. In addition to requirements for graduation prescribed by the College of Letters and Science, the student is required to maintain a minimal grade-point average of 2.0 (C) in the Department of Bacteriology major. Additionally, a student must obtain a C or better in Bacteriology 101, 102, 103 before continuing with further departmental upper division courses. A student repeating one of these courses must obtain a grade of B or better to remain in the Major.

## Graduate Study

The Department of Bacteriology in The College of Letters and Science offers programs of study and research leading to the M.A. and Ph.D. degrees in Microbiology (see the Graduate Division). The general University regulations for admission to and requirements for these programs are described in the Announcement of the Graduate Division.

For admission to the graduate program in Microbiology, the student must have completed an undergraduate major in bacteriology or microbiology, or in a related field such as biology, chemistry, or biochemistry, with superior scholastic achievement. In addition to bacteriology, the following are also required in our undergraduate program: calculus; introductory physics; general biology; comparative genetics; general, organic, and biochemistry. A student may be admitted with background deficiencies to be remedied previous to or concurrent with the graduate program. Financial aid is available to qualified graduate students in the form of teaching assistantships, traineeships and research assistantships. More detailed information may be obtained by writing to the Graduate Adviser, Department of Bacteriology.

## Advisement

Each graduate and undergraduate student must confer with a departmental adviser upon entrance and at least once during every subsequent quarter. Departmental advisers are assigned in Life Science 5304.

## Lower Division Courses

**6. Introduction to Microbiology.** Lecture, three hours. For the nontechnical student; an introduction to the biology of microorganisms (bacteria, viruses, protozoa, algae, fungi), their significance as model systems for understanding fundamental cellular processes, and their role in human affairs.

The Staff (F,W,Sp)

**10. General Bacteriology.** Lecture, three hours; laboratory-discussion, six hours. Prerequisite: Biology 4A-4B, Chemistry 11A, 15. For Health Sciences students; not open for credit to students with credit in Bacteriology 101; does not substitute for Bacteriology 101 in the major. An introduction to the biology of bacteria and their role in diseases of man.

The Staff (Sp)

## Upper Division Courses

**101. Fundamentals of Bacteriology.** Lecture, three hours; laboratory, discussion, six hours. Prerequisites: Biology 4A-4B; Chemistry 21, 22. The historical foundations of the sciences; the structure, physiology, ecology and applications of bacteria.

Ms. Lascelles (Sp), Mr. Rittenberg (F)

**102. Introductory Virology.** Lecture, three hours; laboratory, four hours. Prerequisite: Bacteriology 101. Biological properties of bacterial and animal viruses; replication; methods of detection; interactions with host cells and multicellular hosts.

Mr. Romig, Mr. Stevens (W)

**103. Host-Parasite Interactions.** Lecture, four hours; discussion, one hour. Prerequisite: Bacteriology 101 and Chemistry 152. Biochemistry and biology of host-parasite interactions; host responses to invasion; mechanisms of virulence, bactericidal mechanisms; discussion on the immunity to infection by bacteria. Mr. Martinez (Sp)

**105. Bacterial Diversity.** Lecture, two hours; laboratory, six hours. Prerequisite: course 101. The biology of the major groups of bacteria, and the application of elective culture procedures. Mr. Rittenberg (Sp)

**106. Principles of Microbial Ecology.** Lecture, three hours. Prerequisites: Biology 4A-4B, Chemistry 22; Bacteriology majors must have completed Bacteriology 101. An introduction to the interactions of microbes and their environment, stressing the basic biological, biochemical, and physiological elements controlling growth in selected habitats and systems. Mr. Mah, Mr. Nierlich (W)

**108. Hematology. (½ course)** Prerequisite: senior standing and consent of the instructor. Diagnostic procedures used for the study of normal and pathological blood cells. Mr. Yuja (W)

**110. The Microbiology of Infection.** Lecture, three hours, laboratory, six hours. Prerequisite: Bacteriology 101, 102 and Chemistry 152, or consent of the instructor. The salient characteristics of bacteria, rickettsiae, and viruses, both pathogenic and adventitious, associated with diseases of man. Mr. Pickett (F)

**110C. The Laboratory Diagnosis of Infection. (½ course)** Laboratory, six hours. Prerequisite: Bacteriology 110. Techniques in the laboratory examination of clinical material. Mr. Pickett (W)

**111. Structure and Assembly in Bacteria.** Lecture, three hours, discussion, one hour. Prerequisite: Bacteriology 101 and Chemistry 152; or consent of instructor. A review of current knowledge of the structural organization of prokaryotic cells. Emphasis on isolation methods, chemical composition, structure and assembly of subcellular components, including membranes, walls, flagella, ribosomes and viruses. Mr. Collier, Mr. Eiserling, Ms. Wisniewski (W)

**112. The Biochemistry of Bacterial Growth.** Lecture, three hours. Prerequisites: Bacteriology 101, M132 or equivalent, Chemistry 152; or consent of instructor. A review of current knowledge of bacterial growth and reproduction, considered at the molecular level. Discussions of the synthesis of DNA, RNA, and protein, the regulation of metabolism, and general cellular physiology. Mr. Collier, Ms. Lascelles, Mr. Nierlich (Sp)

**113. Bacterial Metabolism.** Lecture, three hours; discussion, one hour. Prerequisite: Chemistry 152; or consent of instructor. The major patterns of energy generation and biosynthesis, and their regulation. Discussion sections on selected topics will be centered around readings from the current literature. Ms. Lascelles (W)

**119. Phage and Bacterial Genetics.** Lecture, three hours. Prerequisite: courses 102, M132, or consent of instructor. Genetics of bacteria and bacteriophage with emphasis on mechanisms of transmission and recombination, episomes and viral reproduction.

**M132. Comparative Genetics.** (Same as Biology M132.) Lecture, three hours; discussion, one hour. Prerequisites: Biology 4A-4B with grades of C or better, or consent of the instructor. Chemistry 22 or equivalent course in biochemistry, or consent of instructor. Mendelian principles; the gene: its structure, function, and chemistry, with emphasis on mutation, coding regulation, and transmission. Not open to students who have had Biology 134. The Staff

**151. Principles of Food Microbiology.** Lecture, three hours. Prerequisite: course 101 (or equivalent with consent of instructor). The course covers the fundamental principles of food microbiology. Emphasis is on basic microbiological principles as they apply to food products and processing. The approach is science-oriented rather than technology oriented. The course will have as a formal prerequisite Bacteriology 101, or its equivalent, which in turn has as prerequisites a year of general chemistry and a year of organic chemistry and Biochemistry. The course will consist of a series of formal lectures with an assigned text and readings in past and current research literature in food microbiology. Mr. Silliker (Sp)

**M185. Immunology.** (Same as Biology M185 and Microbiology and Immunology M185.) Lecture, three hours; discussion, one hour. Prerequisites: Chemistry 22, 24; course M132. Concurrent enrollment in Chemistry 152 or 156 is recommended. Introduction to experimental immunobiology and immunochemistry; cellular and molecular aspects of humoral and cell immune reactions. Mr. Clark, Mr. Sercarz (F)

**M186. Immunology Laboratory. (½ course)** (Same as Biology M186.) Laboratory, four hours. Prerequisites: course M185 and consent of instructor. This course will focus on a limited number of situations designed to train the student in organizing and evaluating immunological laboratory experiments. Must be taken concurrently with Biology M187. Mr. Clark, Mr. Sercarz (W)

**M187. Immunology Seminar. (½ course)** (Same as Biology M187 and Microbiology and Immunology M187.) Discussion, two hours. Prerequisites: course M185 and consent of instructor. Student presentation of selected papers from the immunology

literature, correlated with the lectures in M185 and designed to serve as a forum for the critical analysis of research papers.

Mr. Clark, Mr. Sercarz (W)

**188. Immunological Techniques. (½ course)** Laboratory, six hours. Prerequisites: course M185; consent of instructor. Practice in the technical areas of modern immunology and serology. Emphasis will be on critical evaluation of the strengths and limitations of the various techniques. For students who plan to go on in clinical microbiology or medical technology. Mr. Sercarz (W)

**195. Proseminar. (½ course)** Discussion, one hour. Prerequisite: senior standing and consent of instructor. Small groups of students and instructor discuss current research literature. Topic announced each quarter. Enrollment limited. The Staff (F,W,Sp)

**199. Special Studies in Bacteriology. (½ to 4 courses)** Prerequisites: open only to students with superior academic standing and consent of instructor and Department Chairman, based on written research proposal. Maximum enrollment for four quarters. The Staff (F,W,Sp)

## Microbiology

### Graduate Courses

**203. Advanced Microbial Genetics. (¾ course)** Lecture and discussion, three hours. Prerequisites: Bacteriology 101; Bacteriology M132; Chemistry 152 or equivalent; undergraduate seniors may enroll with consent of the instructor. Discussion of genetic and biochemical principles and techniques used in the construction of bacterial strains. Topics discussed will include transduction, conjugation, transformation, restriction endonucleases, and DNA cloning. Mr. Wilcox (Sp)

**204. Microbial Genetics.** Lecture, one hour; laboratory, nine hours. Prerequisite: consent of the instructor. Advanced methodology for the study of bacterial and viral genetics. Mr. Romig (W)

**M211. Advanced Immunology Workshops. (No Credit)** (Same as Microbiology and Immunology M211.) Lecture, one hour; discussion, two hours; laboratory, three hours. Prerequisite: consent of the instructor. Combined laboratory, lecture and seminar sessions covering specialized subjects and methods in immunology will be offered in intensive periods of two to three day duration at appropriate times. The Staff

**213. Membrane Molecular Biology.** Lecture, three hours; discussion, one hour. Prerequisites: Chemistry 152 or equivalent; Bacteriology 111, M132 and Chemistry 110A recommended but not required; undergraduate seniors may enroll with consent of instructor. The structural organization and properties of lipids and proteins in model and biological membranes, membrane isolation techniques, physical chemistry of lipid monolayers and bilayers, membrane transport, assembly of cellular and viral membranes, properties of membranes of tumor cells. Offered alternate years. Mr. Fox, Ms. Wisniewski

**214. Methods in Membrane Biology.** Lecture and discussion, three hours; laboratory, nine hours. Prerequisite: consent of instructor. Emphasis on the basic techniques for isolating and characterizing biological membranes and component molecules. Basic and advanced techniques of membrane biochemistry and biophysics. Offered alternate years, beginning Winter Quarter 1978. Ms. Wisniewski

**221U-221Z. Seminars and Symposia on Molecular Biology. (½ to 1 course each)** Lecture, two hours; discussion, three hours. Prerequisite: consent of instructor. Seminar courses which integrate topically with symposia organized and sponsored by the Molecular Biology Institute. These international symposia feature leading researchers in selected areas of molecular biology. Students registering for one of these seminars will receive an abstract booklet for the symposium and will use the abstracts as the starting point for weekly presentation on the topics to be treated at the symposium. The student will in this way prepare for participation in the symposium. Topics are announced each year on September 1 by the Department of Bacteriology and the Molecular Biology Institute. Mr. Fox and the Staff (W)

**222A-222I. Advanced Topics in Microbiology. (½ course each)** Lecture and discussion, two hours. The subject matter of this course will be in an advanced field of microbiology in which the instructor has special proficiency. The fields for each quarter will be announced in the Schedule of Classes. Course will be taught Fall, Winter and Spring. The Staff

**225. Biochemical Methods in Microbial and Cell Biology. (2 courses)** Lecture and discussion, three hours; laboratory, twelve hours. Prerequisite: consent of instructor. Emphasis will be on techniques for purification and characterization of proteins, including cell disruption, column chromatography, gel electrophoresis, ultracentrifugation, various optical methods, and use of radioisotopes. Mr. Collier, Mr. Wilcox (W)

**M226. Chromosome Structure and Regulation.** (Same as Biological Chemistry M226, Biology M226, Chemistry M226, and Microbiology and Immunology M226.) Lecture, three hours. Prerequisite: consent of instructor. Lectures and panel discussions on the structural and functional organization of eukaryotic chromosomes. Satisfactory/unsatisfactory grades are used for this course. Mr. Martinson, Mr. Tobin, Mr. Wall

**M230A. Structural Molecular Biology. (½ course)** (Same as Biology M230A and Chemistry M230A.) Lecture, two hours; discussion, one hour. Prerequisite: consent of instructor, based on a written research proposal. Fundamentals of electron microscopy of macromolecules and supramolecular structures, emphasizing quantitative microscopy, high resolution techniques, nucleic acid analysis, and studies on viruses and protein crystals. Not offered Fall 1978. Mr. Eiserling (F)

**M230B. Structural Molecular Biology. (½ course)** (Same as Biology M230B and Chemistry M230B.) Lecture, two hours; discussion, one hour. Prerequisites: Physics 6C, Mathematics 3C and consent of instructor. Selected topics from the following: principles of biological structure; structures of globular proteins and RNA's; structures of fibrous proteins, nucleic acids, and polysaccharides; harmonic analysis and Fourier transforms; principles of electron, neutron, and x-ray diffraction; optical and computer filtering; three-dimensional reconstruction. Mr. Eiserling (W)

**M230C. Structural Molecular Biology Laboratory. (½ course)** (Same as Biology M230C and Chemistry M230C.) Laboratory, 10 hours. Prerequisite: consent of instructor, based on a written research proposal. Laboratory: practical experience with electron microscopy of macromolecules and supramolecular structures, emphasizing quantitative microscopy, high resolution techniques, nucleic acid analysis, and studies on viruses and protein crystals. Mr. Eiserling (F)

**M230D. Structural Molecular Biology Laboratory. (½ course)** (Same as Biology M230D and Chemistry M230D.) Laboratory, ten hours. Prerequisite: course M230B concurrent. Methods in structural molecular biology, including experiments utilizing the following procedures: single crystal x-ray diffraction, low angle x-ray diffraction, electron diffraction, optical diffraction, optical filtering, three-dimensional reconstruction from electron micrographs, and model building. Mr. Eiserling (W)

**M239. Laboratory Techniques in Nucleic Acid Research. (2 courses)** (Same as Biology M239.) Lecture, two hours; discussion, one hour; laboratory, 12 hours (open lab). Prerequisite: consent of instructor. Procedures in the manipulation of nucleic acids, including: isolation of DNA and RNA and physical and chemical characterization by several means; characterization of circular DNA molecules by electron microscopy, gradient centrifugation and restriction enzyme analysis; *in vitro* transcription and hybridization analysis. Mr. Nierlich, Mr. Simpson (Sp)

**250. Seminar in Microbial Metabolism. (½ course)** Ms. Lascelles, Mr. Rittenberg

**251. Seminar in Regulation and Differentiation. (½ course)** Mr. Collier, Mr. Nierlich, Mr. Wilcox

**252. Seminar in Medical Microbiology. (½ course)** Mr. Pickett

**253. Seminar in Biochemistry of Host Defense Mechanisms. (½ course)** Lecture and discussion one hour. Prerequisite: consent of instructor. Discussion of the literature dealing with host defense mechanisms. The biochemical mechanisms of action of host defense will be stressed. May be taken for letter grade or S/U. Mr. Martinez

**255. Seminar in Bacterial Viruses. (½ course)** Mr. Krieg

**256. Seminar in Microbial Genetics. (½ course)** Mr. Eiserling, Mr. Romig

**M257. Seminar in Host-Parasite Relationships. (½ course)** (Same as Microbiology and Immunology M257.) Mr. Miller, Mr. Pickett

**M258A. Advanced Immunology.** Lecture, three hours; discussion, one hour. (Same as Microbiology and Immunology M258A; formerly numbered M258.) Prerequisite: the equivalent of Microbiology and Immunology 185 or Microbiology and Immunology 201 or consent of instructor. This two term lecture discussion course is designed to provide continuity between the basic immunology courses and the original research literature. The major aspects of the immune system will be intensively examined with emphasis on fundamental principles and on advances of the past five years. The first term will consist of lectures dealing with the development of B and T lymphocytes and the interaction of these two lymphocyte subpopulations in the production of immunoglobulin. In addition to the lectures there will be five discussion sessions for those enrolled in the course. To be offered in the Fall Quarter of each academic year. Grade or S/U. Mr. Fahey, Mr. Stevens (F)

**M258B. Advanced Immunology.** Lecture, four hours. (Same as Microbiology and Immunology M258B.) Prerequisite: the equivalent of Microbiology and Immunology 185 or Microbiology and Immunology 201 and Microbiology and Immunology M258A or consent of instructor. A continuation of M258A which will consider the details of antibody structure, T lymphocyte function and selected topics of broad immunological significance. To be offered in the Winter Quarter of each academic year. Grade or S/U. Mr. Ashman, Mr. Bonavida, Mr. Stevens (W)

**M260. Immunology Forum. (½ course)** (Same as Microbiology and Immunology M260.) Lecture, two hours. Prerequisite: Bacteriology M185. A broad range of current topics in immunology will be presented and discussed at an advanced frontier level. This is a continuing UCLA-wide, general graduate-level seminar involving faculty, postdoctoral immunologists, and graduate students from diverse departments. The Staff

**M263. Cellular Immunology Seminar.** (½ course) (Same as Microbiology and Immunology M263.) Prerequisite: consent of instructor. Critical discussions of the current literature in T and B cell immunology with emphasis on molecular mechanisms.

Mr. Sercarz

**285. Seminar in Biological Membranes.** (½ course) Lecture and discussion, one hour. Prerequisites: consent of instructor. A review of current research literature on molecular topics in membrane biology.

Mr. Fox (F)

**M293. Major Concepts in Oncology.** (Same as Dentistry M293, Microbiology and Immunology M293 and Pathology M293.) Lecture, three hours. Prerequisite: graduate standing or consent of instructor. Course required for graduate students contemplating research in oncology. Lecture. Topics include cancer pathophysiology, genetics; membranes, macromolecular synthesis and control, cell cycle, growth control; physical, chemical and viral oncogenesis, epidemiology of cancer; tumor immunology; principles of cancer surgery, radiation therapy and chemotherapy.

Mr. Baluda and the Staff

**M298. Seminar in Current Topics in Molecular Biology.** (½ course) (Same as Biological Chemistry M298, Biology M298, Chemistry M298, Microbiology and Immunology M298 and Molecular Biology M298.) Prerequisites: enrollment must be approved by the instructor and by the Graduate Adviser of the Interdepartmental Molecular Biology Ph.D. Committee. Each student enrolled conducts or participates in discussions on assigned topics.

The Staff

### Individual Study and Research

**596. Directed Individual Research.** (½ to 3 courses)

The Staff

**598. Research for Master's Thesis.** (½ to 3 courses)

The Staff

**599. Research for Doctoral Dissertation.** (½ to 3 courses)

The Staff

## BIOCHEMISTRY

### Undergraduate Biochemistry Major

The Biochemistry major is described in the Chemistry section. For further information consult the Chemistry Undergraduate Office, 2356 W. Young Hall.

### Graduate Study

Programs of study and research leading to the M.S. and Ph.D. degrees in the general area of biochemistry are offered in the Department of Biological Chemistry, School of Medicine, in the Division of Biochemistry, Department of Chemistry, and in the Department of Biology. More detailed information regarding admission requirements and opportunities for graduate studies in these programs may be obtained by writing to the graduate adviser in the department in which you are interested.

## BIOLOGICAL CHEMISTRY

(Department Office, 33-257 Center for the Health Sciences)

Robert J. DeLange, Ph.D., *Professor of Biological Chemistry.*

Robert M. Fink, Ph.D., *Professor of Biological Chemistry.*

Armand J. Fulco, Ph.D., *Professor of Biological Chemistry.*

Dohn G. Glitz, Ph.D., *Professor of Biological Chemistry.*

Isaac Harary, Ph.D., *Professor of Biological Chemistry.*

Ralph W. McKee, Ph.D., *Professor of Biological Chemistry.*

James F. Mead, Ph.D., *Professor of Biological Chemistry.*

John G. Pierce, Ph.D., *Professor of Biological Chemistry (Vice-Chairman of the Department).*

Sidney Roberts, Ph.D., *Professor of Biological Chemistry.*

Emil L. Smith, Ph.D., *Professor of Biological Chemistry (Chairman of the Department).*

Irving Zabin, Ph.D., *Professor of Biological Chemistry.*

Joseph F. Nyc, Ph.D., *Emeritus Professor of Biological Chemistry.*

John Edmond, Ph.D., *Associate Professor of Biological Chemistry.*

Harvey R. Herschman, Ph.D., *Associate Professor of Biological Chemistry.*

Bruce D. Howard, M.D., *Associate Professor of Biological Chemistry.*

David S. Sigman, Ph.D., *Associate Professor of Biological Chemistry.*

John E. Snoke, Ph.D., *Associate Professor of Biological Chemistry.*

Patrice J. Zamenhof, Ph.D., *Associate Professor of Biological Chemistry.*

William A. Coty, Ph.D., *Assistant Professor of Biological Chemistry.*

Kathleen Hercules, Ph.D., *Assistant Professor of Biological Chemistry.*

William T. Wickner, M.D., *Assistant Professor of Biological Chemistry.*

Roslyn B. Alfin-Slater, Ph.D., *Professor of Nutrition and Professor of Biological Chemistry.*

Samuel Eiduson, Ph.D., *Professor of Psychiatry in Residence and Professor of Biological Chemistry in Residence.*

George J. Popjak, M.D., D.Sc., *Professor of Psychiatry and Biological Chemistry.*

Marian E. Swendseid, Ph.D., *Professor of Nutrition and Professor of Biological Chemistry.*

Stephen Zamenhof, Ph.D., *Professor of Microbial Genetics and Professor of Biological Chemistry.*

### Requirements for Admission to Graduate Status

1. For general University requirements for the M.S. degree, see the Graduate Division.

2. Minimum departmental requirements: applicants must have received the bachelor's degree, preferably with an undergraduate major in chemistry. Students who have degrees in a biological science are also eligible. A previous course in biochemistry is not a prerequisite for acceptance as a graduate student. Minimum course requirements for admission normally include the following: general chemistry; quantitative chemistry; organic chemistry (including laboratory); physical chemistry (including laboratory); general physics; and mathematics through calculus. In some cases the requirement in physical chemistry or mathematics may be fulfilled during the first-year of graduate study. Courses in life sciences such as biology (similar to Introductory Biology IA-1B) or zoology or bacteriology and advanced quantitative analysis, qualitative organic analysis and advanced organic chemistry are recommended.

### Concurrent M.D. and Ph.D. Programs

Students may enroll in both the School of Medicine and the Graduate Division in order to fulfill some graduate degree requirements while obtaining the M.D. degree. This dual registration makes it possible for a medical student to utilize for graduate work one vacation period and the four elective quarters during the four-year medical curriculum and to offer this work in partial fulfillment of the requirements for the Ph.D. The Department of Biological Chemistry offers this opportunity to qualified applicants. There are various ways in which some financial support can be made available to students in the program after completion of one or two years of the medical curriculum. Contact Robert DeLange, the Department Adviser, for further information concerning the program.

### Requirements for the M.S. degree

1. General University Requirements.

2. Thesis Plan. Ten units from "core" courses M253, M255, M257, M261, M263, M267, and M269 following completion of a beginning course in biochemistry either before or after admission to graduate status. Completion of a satisfactory thesis based on laboratory research. Oral examination on thesis and a written qualifying examination if performance in core courses is not B or better. By arrangement in special cases a comprehensive examination may be substituted.

### Requirements for the Ph.D. degree

1. General University Requirements.

2. Ten units from "core" courses M253, M255, M257, M261, M263, M267, and M269 following completion of a beginning course in biochemistry either before or after admission to graduate status plus courses 220, 260 and 599 and other courses recommended on an individual basis. A reading knowledge of German, Russian or French plus a second language (programs of special subjects such as computer techniques may be substituted for the second language.)

The Department of Biological Chemistry in the Medical School and the Division of Biochemistry of the Chemistry Department offer coordinated programs leading to the M.S. and Ph.D. degrees. Although there is close cooperation between the two departments, a student must be formally admitted into the program of one department or the other. For more information concerning graduate study in biological chemistry, write to Robert J. DeLange, Graduate Adviser, Department of Biological Chemistry, School of Medicine, Center for Health Sciences, University of California, Los Angeles, California 90024.

### Upper Division Courses

**101A-101B-101C. Biological Chemistry.** Lecture, three hours. Prerequisite: organic chemistry. Required in the medical curriculum; consent of the instructor is required for nonmedical students.

The Staff

**101E. Biological Chemistry Laboratory.** Laboratory, seven hours. Required in the medical curriculum; consent of the instructor is required for nonmedical students. Experiments illustrating some of the procedures employed in clinical chemistry, enzymology and metabolic studies.

The Staff

**102A-102B. Biological Chemistry Lecture (Dental Students).** Lecture, three hours. Prerequisite: courses for admission to dental school. Required in the dental curriculum; consent of the instructor is required for nondental students. The biochemical properties and structures of living systems are considered with special emphasis on mineral metabolism and nutrition.

The Staff

**102C. Biological Chemistry Laboratory and Seminar (Dental Students).** (½ course) Laboratory, four hours. Required in the dental curriculum; consent of the instructor is required for nondental students. The laboratory, which consists of experiments designed to illustrate biochemical principles, involves studies on enzymes, metabolic processes, respiration and calcified structures. The seminars, which will be given by the students to small discussion groups, involve presentation of material from current research dealing with biochemical studies related to dentistry.

Mr. McKee, Mr. Snoke and the Staff

### Graduate Courses

**201A-201B. Biological Chemistry.** Lecture, three hours. Prerequisites: Organic chemistry, a course in undergraduate biochemistry other than a beginning survey course. Consent of instructor is required. A graduate level course in fundamentals of biochemistry, with emphasis on mammalian biochemistry. Structure, function and metabolism of major cell constituents.

The Staff

**220A-220B-220C. Biochemical Preparations.** (½ to 2 courses) Prerequisite: consent of the instructor. During the first two quarters, students will carry out supervised experiments utilizing a variety of laboratory techniques important in biochemical research. In the spring quarter (220C) each student will arrange to apprentice in the laboratories of one or more departmental faculty members. This apprenticeship program will allow the student to acquire in-depth laboratory experience in specific research areas and will facilitate an informed decision on his part in the selection of a thesis-research advisor.

**221. Functional Neurochemistry.** Lecture or recitation, three hours. Prerequisites: courses 101A-101B-101C or equivalent. Chemistry and metabolism of neural tissue with particular relationship to specialized function in the central nervous system.

Mr. Roberts and the Staff

**222. Biochemistry of the Synapse.** (½ course) Lecture or recitation, two hours. Prerequisite: course 221. Detailed analysis of the research literature dealing with biochemistry of the synapse. Metabolism, storage and release of transmitter; transmitter receptors and functions; neuronal plasticity.

Mr. Howard

**223. Current Topics in Neurochemistry.** (½ course) Lecture or recitation, two hours. Prerequisite: course 221. Detailed analysis of a circumscribed area of neurochemistry of current interest. One of the following topics may be presented: metabolic diseases affecting brain function, developmental neurochemistry, role of cyclic nucleotides in neural activity, biochemical differentiation of the nervous system, research methods in neurochemistry, brain specific macromolecules.

The Staff

**M226. Chromosome Structure and Regulation.** (Same as Biology M226, Chemistry M226, Microbiology M226, Microbiology and Immunology M226.) Lecture, three hours. Prerequisite: consent of instructor. Lectures and panel discussions on the structural and functional organization of eukaryotic chromosomes. Satisfactory/unsatisfactory grades are used for this course.

Mr. Martinson, Mr. Tobin, Mr. Wall

**M253. Macromolecular Structure.** (1½ courses) (Same as Chemistry M253.) Lecture or recitation, five hours. Prerequisites: Chemistry 110A; Chemistry 156; Chemistry 157A-157B or Biological Chemistry 101A-101B or 201A-201B or equivalent. Chemical and physical properties of proteins, nucleic acids and other macromolecular complexes with emphasis on theory and methodology; correlation of structure and biological properties; chemical synthesis and properties of polypeptides and polynucleotides.

Mr. Glitz and the Staff

**M255. Protein Dynamics and Function.** (Same as Chemistry M255.) Lecture or recitation, three hours. Prerequisites: Chemistry 110A; Chemistry 156; Chemistry 157A-157B or Biological Chemistry 101A-101B or 201A-201B or equivalent. Recommended: Chemistry-Biological Chemistry M253. Discussion of enzymes and enzymic catalysis, emphasizing mechanisms, actions of modifiers and inhibitors, and structural aspects of enzyme function; bioenergetics.

Mr. Sigman

**M257. Physical Chemistry of Biological Macromolecules.** (½ course) (Same as Chemistry M257.) Lecture, two hours. Prerequisite: Chemistry 110A or 22 or consent of the instructor. Theory of hydrodynamic, thermodynamic, optical and x-ray techniques used to study the structure and function of biological macromolecules.

The Staff

**259. Biochemical Endocrinology.** (½ course) Prerequisite: Biological Chemistry 101A-101B or 201A-201B, or Chemistry 153 or equivalent. A lecture course emphasizing aspects of the structures of peptide and steroid hormones, with cell receptors, the physical and chemical properties of hormone receptors, the molecular mode of action of peptide and steroid hormones, and the role of second and third messengers in hormone action.

Mr. Coty, Mr. Pierce, Mr. Roberts

**260A-260B-260C. Seminar in Biological Chemistry.** (½ course each) Lecture or recitation, one hour. Prerequisite: consent of the instructor. Oral reports by graduate students on topics selected from current biochemical literature. Graded S/U only.

The Staff

**M261. Advanced Chemistry and Biochemistry of Lipids.** (½ course) (Same as Chemistry M261.) Lecture, two hours. Prerequisites: courses 101A-101B or 201A-201B; Chemistry 157A-157B or equivalent. Knowledge of elementary chemistry and biochemistry of lipids essential. The biochemistry of lipids including chemical and physical characteristics of lipids and their metabolism.

Mr. Mead, Mr. Popjak

**262A-262B-262C. Seminar in the Biochemistry of Proteins.** (½ course each) Lecture or recitation, one hour. Prerequisites: courses 101A-101B-101C and consent of the instructor. An advanced seminar in the field of protein structure including current methods used in research and the relationships between the structure and function of proteins.

Mr. DeLange

**M263. Cellular Metabolism and Its Regulation.** (Same as Chemistry M263.) Lecture or recitation, three hours. Prerequisites:

Chemistry 156; Chemistry 157A-157B or Biological Chemistry 101A-101B or 201A-201B or equivalent. Recommended: Chemistry -Biological Chemistry M253. Analysis of regulatory controls involved in cellular energy and biosynthetic metabolism. Consideration of comparative aspects of metabolism in relation to physiological function. The Staff

**264. The Lipids in Physiology and Medicine.** (½ course) Lecture, two hours. Prerequisites: course M261 or equivalent with consent of instructor. Discussion of topics of interest concerning lipids in physiology and medicine, currently; the polyunsaturated fatty acids; the prostaglandins; biosynthetic control and functions of cholesterol; bile acids in physiology and disease; polar lipids in biomembrane structure and function; blood lipids and atherosclerosis; function of polar lipids in enzymes and transport; the hereditary sphingolipidoses; and lipid autoxidation and aging. Mr. Mead and Mr. Pobjak

**265. Seminar in the Biochemistry of Nucleic Acids.** (½ course) Lecture or recitation, one hour. Prerequisites: Chemistry or Biological Chemistry M253 or equivalent. Biochemistry and chemistry of nucleic acids and nucleotides. Mr. Glitz

**266A-266B-266C. Seminar in the Biochemistry of Differentiation.** (½ course each) Lecture or recitation, one hour. Prerequisite: consent of the instructor. A review of the current literature covering the chemical mechanisms underlying the developmental process including: control of gene expression, metabolism in developing systems, specific expression of function and control of enzyme synthesis, external parameters determining cellular expression in the whole organism and the single cell. Mr. Harary, Mr. Herschman

**M267. Macromolecular Metabolism and Subcellular Organization.** (1½ courses) (Same as Chemistry M267.) Lecture or recitation, five hours. Prerequisites: Chemistry 157A-157B or Biological Chemistry 101A-101B or 201A-201B or equivalent. Recommended: Chemistry-Biological Chemistry M253. Metabolism of nucleic acids and proteins; biosynthesis of complex lipids and polysaccharides; structure and properties of cellular organelles. The Staff

**M269. Developmental Biochemistry.** (½ course) (Same as Chemistry M269.) Lecture, two hours. Prerequisites: Biological Chemistry 267 or consent of instructor. This course will deal with the biochemical aspects of development, specific tissue and cell function, and differential gene expression. The biochemistry of cell division, macromolecular synthesis, chromatin function in gene expression, cell-cell interactions, membrane organization, and growth will be studied as they contribute to such topics as hormone induction, morphogenesis and viral transformation. Emphasis will be placed on the use of differentiating *in vivo* systems and cell culture as models. Mr. Harary, Mr. Herschman

**M298. Seminar in Current Topics in Molecular Biology.** (½ course) (Same as Biology M298, Chemistry M298, Microbiology and Immunology M298 and Molecular Biology M298.) Discussion, one hour. Prerequisite: enrollment must be approved by the instructor and by the Graduate Adviser of the Interdepartmental Molecular Biology Ph.D. Committee. Each student enrolled conducts or participates in discussions on assigned topics. May be repeated for credit. The Staff

### Individual Study and Research

**596. Directed Individual Study and Research.** (½ to 3 courses) Laboratory, by arrangement. Prerequisite: consent of graduate adviser. Graded S/U. The Staff

**597. Preparation for Examinations.** (½ to 1 course) Prerequisite: consent of the graduate adviser. Individual study for qualifying examination for Ph.D. or comprehensive examination for the master's degree. Graded S/U. The Staff

**598. Preparation of the Master's Thesis.** Prerequisite: consent of the graduate adviser. Preparation of research data and writing of master's thesis. The Staff

**599. Research for and Preparation of the Doctoral Dissertation.** (½ to 3 courses) Prerequisite: consent of the graduate adviser. Preparation of research data and writing Ph.D. dissertation. Graded S/U. The Staff

## BIOLOGY

(Department Office, 2203 Life Sciences Building)

Albert A. Barber, Ph.D., *Professor of Cell Biology.*  
George A. Bartholomew, Ph.D., *Professor of Zoology.*  
John N. Belkin, Ph.D., *Professor of Zoology.*  
Joseph Cascarano, Ph.D., *Professor of Cell Biology.*  
David J. Chapman, Ph.D., *Professor of Zoology.*  
Martin L. Cody, Ph.D., *Professor of Biology.*  
Nicholas E. Collias, Ph.D., *Professor of Zoology.*  
Wilbur T. Ebersold, Ph.D., *Professor of Biology.*  
Roger O. Eckert, Ph.D., *Professor of Biology.*  
Eric B. Edney, Ph.D., *Professor of Biology.*  
Franz Engelmann, Ph.D., *Professor of Zoology.*  
John H. Fessler, Ph.D., *Professor of Molecular Biology.*  
Malcolm S. Gordon, Ph.D., *Professor of Biology.*  
Alan D. Grinnell, Ph.D., *Professor of Biology.*  
Thomas R. Howell, Ph.D., *Professor of Zoology.*

Thomas W. James, Ph.D., *Professor of Cell Biology.*

J. Lee Kavanau, Ph.D., *Professor of Biology.*

James A. Lake, Ph.D., *Professor of Molecular Biology.*

George G. Laties, Ph.D., *Professor of Plant Physiology.*

F. Harlan Lewis, Ph.D., *Professor of Biology.*

O. Raynal Lunt, Ph.D., *Professor of Biology.*

Austin J. MacInnis, Ph.D., *Professor of Cell Biology.*

Leonard Muscatine, Ph.D., *Professor of Biology.*

Park S. Nobel, Ph.D., *Professor of Biology.*

Bernard O. Pinney, Ph.D., *Professor of Biology.*

Dan S. Ray, Ph.D., *Professor of Molecular Biology.*

Winston A. Salsler, Ph.D., *Professor of Molecular Biology.*

Charles A. Schroeder, Ph.D., *Professor of Botany.*

Richard W. Siegel, Ph.D., *Professor of Biology.*

Larry Simpson, Ph.D., *Professor of Cell Biology.*

Fritiof S. Sjostrand, M.D., Ph.D., *Professor of Molecular Biology.*

Clara M. Szege, Ph.D., *Professor of Biology.*

Henry J. Thompson, Ph.D., *Professor of Botany.*

J. Philip Thornber, Ph.D., *Professor of Molecular Biology.*

Peter P. Vaughn, Ph.D., *Professor of Zoology.*

Boyd W. Walker, Ph.D., *Professor of Zoology.*

Samuel G. Wildman, Ph.D., *Professor of Botany.*

David Appleman, Ph.D., *Emeritus Professor of Plant Physiology.*

Gordon H. Ball, Ph.D., *Emeritus Professor of Zoology.*

Jacob B. Biale, Ph.D., *Emeritus Professor of Biology.*

Frederick Crescitelli, Ph.D., *Emeritus Professor of Cell Biology.*

Karl C. Hamner, Ph.D., *Emeritus Professor of Botany.*

Arthur W. Haupt, Ph.D., *Emeritus Professor of Botany.*

Theodore L. Jahn, Ph.D., *Emeritus Professor of Zoology and Cell Biology.*

Mildred E. Mathias, Ph.D., *Emeritus Professor of Botany.*

Everett C. Olson, Ph.D., *Emeritus Professor of Zoology.*

Flora Murray Scott, Ph.D., *Emeritus Professor of Botany.*

Vladimir Walters, Ph.D., *Emeritus Professor of Zoology.*

Clifford F. Brunk, Ph.D., *Associate Professor of Cell and Molecular Biology.*

William R. Clark, Ph.D., *Associate Professor of Cell Biology.*

Robert Goldberg, Ph.D., *Associate Professor of Biology.*

George C. Gorman, Ph.D., *Associate Professor of Biology.*

Harumi Kasamatsu, Ph.D., *Associate Professor of Biology.*

John R. Merriam, Ph.D., *Associate Professor of Genetics.*

James G. Morin, Ph.D., *Associate Professor of Zoology.*

John D. O'Connor, Ph.D., *Associate Professor of Developmental Biology.*

Ayesha E. Gill, Ph.D., *Assistant Professor of Biology.*

Elma Gonzalez, Ph.D., *Assistant Professor of Cell Biology.*

Michael Grunstein, Ph.D., *Assistant Professor of Biology.*

Henry A. Hespeneide, Ph.D., *Assistant Professor of Biology.*

Judith A. Lengyel, Ph.D., *Assistant Professor of Biology.*

Kenneth A. Nagy, Ph.D., *Assistant Professor of Biology in Residence.*

Paul H. O'Lague, Ph.D., *Assistant Professor of Biology.*

Jane A. Peterson, Ph.D., *Assistant Professor of Biology.*

Allan J. Tobin, Ph.D., *Assistant Professor of Biology.*

Elaine M. Tobin, Ph.D., *Assistant Professor of Biology.*

Richard R. Vance, Ph.D., *Assistant Professor of Biology.*

Dan B. Walker, Ph.D., *Assistant Professor of Botany.*

Robert Barrett, Ph.D., *Lecturer in Biology.*

Jared M. Diamond, Ph.D., *Professor of Physiology.*

Jean B. Harrison, Ph.D., *Lecturer in Biology.*

James G. Miller, *Senior Museum Scientist, Ornithology and Mammalogy.*

J. William Schopf, Ph.D., *Professor of Geology.*

M. Ann Spence, Ph.D., *Associate Professor of Psychiatry and Biomathematics in Residence.*

David Verity, B.S., *Museum Scientist, Botanical Gardens and Herbarium.*

### Advising

All incoming students (Freshmen and Transfers) must see a departmental advisor before they register for classes. In addition, all students majoring in Biology must confer with a departmental advisor by the start of the junior year and again during the senior year.

### Pre-Biology Major

Students who have not completed all the courses required as preparation for the major are pre-Biology majors. Upon completion of these courses with a grade of C or better in each, students should petition to enter the Biology major in the Undergraduate Affairs Office.

### Preparation for the Major

1. Biology 4A-4B
2. Chemistry 11A-11B-11BL-11C-11CL: 21, 23, 25
3. Mathematics 3A-3B-3C or 31A-31B-31C
4. Physics 6A-6B-6C

### Requirements for the Major

1. Five courses from the core list, one from each of the following groups:

- a. Morphology Systematics: Biology 100, 105, 110, 153, Bacteriology 101
- b. Environmental Biology: Biology 111, 119, 120 plus 122 (both 120 and 122 must be taken to meet the core requirement); Bacteriology 105
- c. Genetics: Biology M132, 134
- d. Developmental and Molecular Biology: Biology 137, 138, 141, 144, 146

e. Physiology: Biology 158, 162, 166

2. Two additional upper division Biology courses

3. Four courses which may be chosen from upper division Biology or any upper division course in Bacteriology, Chemistry, Mathematics (except 100 through 107), Physics or the approved list which may be obtained in the Student Affairs Office. Biology 199's only (maximum of 4 units) may be applied toward the major.

Note: If both Bacteriology 101 and Bacteriology 105 are taken to fulfill core requirements, then only three additional courses may be elected from other departments to complete major requirements.

### Additional Requirements

1. A six unit course counts as only one course on the requirements for the major.
2. A maximum of four units of Biology 199 or eight units of Biology 190 may be used for fulfillment of the major.
3. Courses taken to fulfill requirements for preparation for the major and the major must be taken for a letter grade.
4. Biology majors must earn a C- or better in each core course, a 2.0 average in all upper division Biology courses, and a 2.0 average in the eleven courses comprising the major.

### Transfer Students

In order to be admitted as pre-Biology majors, transfer students who have 80 units or more must have completed one year of General Chemistry, Biology 4A-4B or its equivalent, and one of the following sequences:

1. one year of calculus;
2. one year of calculus-based physics; or
3. two courses in organic chemistry with laboratory

### Honors in Biology

Requirements for admission to candidacy for Honors in Biology are the same as those required for admission to the Honors Program of the College of Letters and Science. Highest Honors in Biology are awarded to those Biology majors who have a GPA of 3.60 overall and a 3.60 in the major at graduation and who have satisfactorily completed Biology 190.

### Graduate Study

The department offers M.A. and Ph.D. degrees in Biology with specialization in a wide spectrum of fields. Students who plan to enter a graduate school are urged to seek advice of staff members in their field of interest. Prospective applicants to this department are invited to visit the campus for this purpose.

The departmental requirements (including those in Chemistry, Physics, and Mathematics) for a bachelor's degree in Biology represent most of the background necessary as preparation for research leading to advanced degrees in Biology, but certain fields of study will require additional training in the basic sciences. Work in additional fields may be pursued by qualified students on a limited basis through directed individual studies at the Santa Catalina Marine Biological Laboratory. Consult the Student Affairs Office for additional information.

### Master's Degree

In addition to the general requirements of the Graduate Division, the department of Biology requires oral and/or written examinations of any candidate for the Master's degree. Although there is no formal foreign language requirement, a reading knowledge of a foreign language is a prerequisite for admission to certain seminars and advanced courses.

### Ph.D. Degree

In addition to the general requirements of the Graduate Division, every candidate for the Ph.D. degree is required to pass departmental examinations and to serve as a teaching assistant for at least one year. There is no standard language requirement; it is determined by the sponsor based on the needs of the candidate.

### Requirements for the Standard Credential in Secondary Teaching

Consult the UCLA Announcement of the Graduate School of Education.

### Lower Division Courses

**2. Principles of Biology.** Lecture, three hours; laboratory, one and one-half hours. Lecture: structure and chemical composition of cells, animal structure and diversity, cellular respiration, photosynthesis, major organ systems with emphasis on human, cell division, reproduction, development, ecology, population growth, genetics, evolution. Laboratory: structure and function of cells, morphology of plants and animals, circulatory and nervous systems, embryology, plant diversity and adaptation, human genetics. Offered for students other than majors in the biological sciences. Not open to students who have had Biology 1A-1B or 4A-4B. Ms. Harrison

**4A. Introductory Biology: Organismic & Population.** (Formerly numbered 1B). Lecture, three hours; discussion, two hours. Prerequisite: Chemistry 11A. Comparative morphology and embryology of chordates, invertebrates, and vascular plants; function of animal organ systems; growth, hormones,

gas exchanges, translocation in vascular plants; organism and community energetics; population growth and regulation.

The Staff

**4B. Introductory Biology: Molecular and Cellular.** (Formerly numbered 1A.) Lecture, three hours; discussion, two hours. Prerequisite: course 4A. Cell types, organelles, chemical composition, metabolism, photosynthesis, genetic code, Mendelian laws, mitosis, meiosis, differentiation and early development.

The Staff

**4L. Introductory Biology Laboratory.** (¼ course) Laboratory, three hours. Prerequisites: Biology 4A with grade of C- or higher, or consent of instructor. Course 4B must be taken concurrently or already have been passed with grade C- or higher. The light microscope, unicellular organisms, osmosis, cell growth, fertilization and early development, mitosis and meiosis, gross dissection of a vertebrate, microdissection of an invertebrate, plant morphology and reproduction.

The Staff

**10. Plants and Civilization.** Lecture, three hours; lecture-demonstration, one hour. The origin of crop plants; man's role in the development, distribution, and modification of food, fiber, medicinal and other plants in relation to their natural history. Designed for non-majors.

Mr. Schroeder (F,Sp)

**11. Field Botany.** Lecture, two hours; laboratory, six hours; required field trips. An introduction to the systematics, morphology, and ecology of the local flora (native and cultivated). Use of keys for identification; morphological characteristics of common families of vascular plants; plant communities and environmental factors affecting their distribution; emphasis on California. Designed for non-majors.

Mr. Thompson (Sp)

**12. Taxonomy and Ecology of Ornamental Plants.** Lecture, one hour; laboratory and field trips, six hours. The origin, classification and identification of the more important ornamental plants in southern California with special emphasis on their environmental requirements and adaptation. Designed for non-majors.

Mr. Lewis

**13. Evolution of Life.** Lecture, three hours; discussion, one hour. Limited to 100 students. Not open to Life Sciences majors. An introduction to biology within the framework of evolutionary theory. The relationships of evolutionary thought to other areas of knowledge and society. Natural selection and the origin of variation are examined in the context of genetics, molecular biology, physiology, phylogeny, population dynamics, behavior and ecology. Stress is laid upon the critical role of historical processes.

The Staff (F)

**20. Introduction to Human Heredity.** Lecture, two hours; discussion, one hour; laboratory, two hours. This course is not open to students with a previous college course in genetics, nor is it intended to satisfy the requirements of medical or dental schools. Man's inheritance and its biological basis will be introduced through lectures, readings and laboratory exercises with *Drosophila*. Topics will include prenatal development, Mendelizing factors, the role of chromosomes in heredity and the role of genes in disease and population structure.

The Staff (Sp)

**21. Field Biology.** Lecture, three hours; required field trips. Prerequisite: course 2. An introduction to the natural history and ecology, interrelationships, and classification of the common animals and plants with emphasis on western North America.

The Staff

**25. The Oceans.** Lecture, three hours; discussion, one hour. Not open to students in the sciences or to students who have taken Geology 15. Limited to 40 students. Physical and chemical processes that take place in the oceans with emphasis on their effects on organisms.

Mr. Walker (W)

**30. Biology of Cancer.** Lecture, four hours. An introduction to molecular, cellular and clinical aspects of cancer and a consideration of the sociological and psychological impact of cancer on the individual and society. Each lecture-discussion period will be given by an invited lecturer who is prominent in cancer research or treatment. (Credits may not be applied toward fulfillment of the Biology major.) P/NP

Mr. Clark

#### Upper Division Courses

Upper division standing and completion of Biology 1A-1B or 4A-4B or equivalent or consent of instructor are required for admission to all upper division courses.

**100. Introduction to Plant Biology.** (1½ courses) Lecture, four hours; laboratory, six hours. Prerequisite: completion of all courses listed under Preparation for the Major. An introduction to the biology of the plant world, emphasizing development, evolution and function. The course is designed to give the appropriate background for upper division experimental courses in plant biology.

Mr. Chapman, Mr. Phinney (Sp)

**101. Biology of Marine Plants.** Lecture, five hours; laboratory fifteen hours (five week intensive course). Prerequisites: Preparation for the Major and consent of instructor. An introduction to the general biology of marine algae: includes basics of structure reproduction, life histories, systematics and an introduction to the physiology and ecology of marine algae. Techniques in culture and laboratory investigation and utilization of algae. Course to be given at the *Catalina Marine Science Center*.

Mr. Chapman

**102. Biology of Marine Invertebrates.** Lecture, five hours; laboratory, fifteen hours (five week intensive course). Prerequisites: Preparation for the Major and consent of instructor. Morphology, systematics, life histories and natural history, ecology, behavior, and physiology of marine invertebrates; emphasis on local invertebrates of southern California and their habitats. Course to be given at the *Catalina Marine Science Center*.

Mr. Morin, Mr. Vance

**103. Taxonomy of Flowering Plants.** Lecture, two hours; laboratory and field trips, six hours. The evolution, systematics, and distribution of the families of flowering plants. Morphology, principles of taxonomy, phylogenetic systems, nomenclature, modern methods of investigation.

The Staff

**104. Biology of Marine Vertebrates.** Prerequisites: completion of preparation for the Major and consent of instructor. Selected aspects of the natural history, ecology, physiology and behavior of vertebrates living in marine environments. To be offered as a concentrated five week course for four units credit as part of the *Catalina Marine Biology Quarter*.

Mr. Gordon, Mr. Walker

**105. Biology of Invertebrates.** (1½ courses) Lecture, three hours; laboratory, six hours (includes field trips). Prerequisite: completion of all courses listed under Preparation for the Major. Introduction to the systematics, evolution, natural history, morphology and physiology of the invertebrates.

Mr. Morin, Mr. Muscatine (F)

**106A-106B. Experimental Marine Invertebrate Zoology.** (1½ courses each) Lecture, two hours; laboratory, 12 hours. Prerequisites: courses 105 and 166 (latter may be taken concurrently with 106A) or the equivalent and the consent of the instructor. Course 106A is a prerequisite to 106B. An advanced course on natural history, physiology, biochemistry of invertebrates with emphasis on independent laboratory and field investigations.

Mr. Morin, Mr. Muscatine

**107. Entomology.** Lecture, three hours; laboratory, six hours; field trips. An introduction to the morphology, ecology and classification of insects.

Mr. Belkin

**108. Terrestrial Arthropods.** Lecture, three hours; laboratory, six hours; several field trips. Prerequisite: course 107 or consent of the instructor. Systematics, distribution, and bionomics of hexapods and arachnids.

Mr. Belkin

**109. The Development of Evolutionary Theory.** Lecture, three hours; discussion, one hour. A study of the historical development of the physical and biological concepts which have led to current evolutionary theory. These concepts are considered in context of the social circumstances in which they originated. Enrollment limited to 80 students.

The Staff

**110. Vertebrate Morphology.** Lecture, three hours; laboratory, four hours. Prerequisite: completion of all courses listed under Preparation for the Major. A study of vertebrate morphology and evolution from the viewpoint of: comparative anatomy of adult forms, developmental anatomy, and paleontology. Laboratory study of selected vertebrates.

Ms. Peterson, Mr. Vaughn (F,W)

**111. Biology of Vertebrates.** Lecture, three hours; demonstrations, field trips, discussions, three hours. Prerequisite: completion of all courses listed under Preparation for the Major. The adaptations, behavior, and ecology of vertebrates.

Mr. Bartholomew, Mr. Howell (F,Sp)

**112. Ichthyology.** Lecture, two hours; laboratory, six hours; field trips. Prerequisite: courses 110 and 111. The systematics, ecology and behavior of fishes, with special emphasis on local marine forms.

Mr. Walker

**113. Herpetology.** (1 or 2 courses) Prerequisites: One of the following: Biology 111, 119, 120 or 122, and consent of the instructor. *Herpetology will be offered alternately as a 4-unit course to be given during a conventional academic quarter, or as an 8-unit course as part of the Field Biology Quarter.* The 4-unit course has lecture, three hours, laboratory, six hours, and approximately 4 weekend field trips. The systematics, distribution, physiology, behavior and ecology of amphibians and reptiles will be covered. The 8-unit course covers the same basic lecture and laboratory material in two intensive weeks. This is followed by an extended field trip where students will do individual field projects in behavior, physiological ecology, or field ecology.

Mr. Gorman

**114. Ornithology.** Lecture, two hours; laboratory, discussion, field trips, six hours. Prerequisite: course 111 and consent of the instructor. Limited enrollment. The systematics, distribution, physiology, behavior and ecology of birds.

Mr. Howell

**115. Mammalogy.** Lecture, two hours; laboratory and field trips, six hours. Prerequisite: course 111 or the equivalent and consent of the instructor. The evolution, ecology, behavior and physiology of mammals.

The Staff

**116. The Evolution of Mammalian Dentitions.** Lecture, two hours; laboratory, six hours. Prerequisite: consent of the instructor. Limited enrollment. The origin and adaptive radiation of mammalian teeth is considered with special emphasis upon morphological aspects of change relative to function. Tooth histology and embryology are studied. Laboratory work involves study of dental morphology and histology.

The Staff

**M117. Vertebrate Paleontology.** (Same as Earth and Space Sciences M117.) Lecture, three hours; laboratory, three hours. Prerequisite: course 110. Recommended: a course in general geology. Limited enrollment. The fossil record of the evolution of

the vertebrates, with emphasis on the morphology of primitive forms in the series from fish to mammal.

Mr. Vaughn

**M118. Paleobotany.** (Same as Earth and Space Sciences M118.) Lecture, three hours; laboratory, three hours. Prerequisite: one course in biological science or consent of instructor. Recommended: Earth and Space Sciences 2 or equivalent. Survey of morphology, paleobiology, and evolution of vascular and nonvascular plants during geologic time, and particular emphasis on major evolutionary events.

Mr. Schopf

**119. Principles of Ecology and Evolution.** Lecture, three hours; discussion, one hour. Prerequisites: completion of all courses listed under Preparation for the Major. This course is intended for students who are concentrating in areas other than ecology and evolution. A general survey of the principles of ecology, natural selection, evolution, and population biology. Biology 119 is not open to students who have already taken Biology 120 or 122.

Mr. Gorman, Mr. Hespeneheide

**120. Evolutionary Biology.** Lecture, three hours; laboratory, two hours. Prerequisites: completion of all courses listed under Preparation for the Major. Recommended for biology majors specializing in environmental and population biology. Introduction to the mechanics and processes of evolution with emphasis on natural selection, population genetics, speciation, evolutionary rates, and patterns of adaptation.

Mr. Cody, Mr. Hespeneheide (W)

**121. Seminar in Ecology.** (½ course) Discussion two hours. Prerequisites: course 119, 120 or 122 and consent of instructor. Undergraduate seminar in ecology; reading and discussion of current research, including preparation of review paper or annotated bibliography. May be repeated twice for credit.

Mr. Hespeneheide

**122. Ecology.** Lecture, three hours; laboratory, three hours. Prerequisites: completion of all courses listed under Preparation for the Major. Recommended for biology majors specializing in environmental and population biology. Introduction to population and community ecology, with emphasis on the growth and distribution of populations, interactions between species, and the structure, dynamics and functions of communities and ecosystems.

Mr. Cody, Mr. Vance (F)

**123. Ecology of Marine Communities.** (1 or 2 courses) Prerequisites: course 122, approval for scuba diving from UCLA diving officer, and consent of instructor; course 105 and 112 are recommended. *This course will be offered either as a full quarter course for 4 units credit or in the Field Biology Quarter as a concentrated five-week course for 8 units credit.* Field study of the natural history and ecology of marine organisms and communities. Field work will involve scuba diving. Part of the course will be devoted to an independent research project.

Mr. Morin, Mr. Ronan, Mr. Vance

**124. Field Ecology.** (1 or 2 courses) Lecture, two hours; laboratory or field trip, ten hours. Prerequisites: course 120 or 122 and consent of instructor. Field and laboratory research in ecology, the collection, analysis and write-up of numerical data, with emphasis on design and execution of field studies. *The course may either be given as a quarter-long course with weekend field trips, or as a single field trip conducted between quarters followed by lectures and tutorials for three weeks. When the course is given as part of the Field Biology Quarter, it will be 8 units and will last for five weeks (see above under Requirements for the Major).*

Mr. Cody

**125. Plant Population Ecology.** (1 or 2 courses) Lecture, two hours; laboratory, six hours; field trips. Prerequisite: course 119 or 120, and consent of instructor. *This course will be offered either as a full quarter course for 4 units credit or in the Field Biology Quarter as a concentrated five-week course for 8 units credit.* A study of ecological variation, structure, distribution and reproductive biology of plant populations emphasizing field studies of selected populations and ecosystems.

Mr. Cody

**M127. Soils, Plants, and Society.** (Same as Geography M127.) Lecture, four hours; field trip. Prerequisites: Chemistry 1A, 1B, 1C or equivalent or consent of instructor. A general treatment of: soil development and morphology and the physical and chemical properties of soils as they relate to plant growth and distribution; soil resources, management, conservation and cultural aspects. Soil profiles examined on the field trip are used to explain developmental phenomena.

Mr. Lunt

**128. Plant Physiological Ecology.** (1 or 2 courses) Lecture, three hours; laboratory and field, three hours. A study of plant-environmental interactions under natural conditions. Emphasis is on transpiration and photosynthesis, leaf temperatures, and water movement in the soil-plant-atmosphere continuum. Individual student projects. *When the course is given as part of the Field Biology Quarter it will be 8 units and the individual research project will be correspondingly expanded.*

Mr. Nobel

**129. The Behavior of Animals.** Lecture, three hours; discussion, three hours. Prerequisite: course 111 or consent of the instructor. Ecological significance, underlying mechanisms, and evolution of behavior, with special reference to animal sociology under natural conditions.

Mr. Collias

**130. Behavior Research Problems.** Lecture, three hours; laboratory, two hours. Prerequisite: consent of the instructor. Systems controls and non-obtrusive sensing procedures for behavior studies in the laboratory and field. Rationale, design, and limitations of laboratory studies of behavior.

Mr. Kavanau

**131. Insect Ecology. (1 or 2 courses)** Lecture, two hours; laboratory or field trip, eight hours. Prerequisites: course 119 or 120 or 122 and consent of instructor. Analysis of the ecological roles of insects in terrestrial communities, with emphasis on interactions with both plants and vertebrates. Students will perform group and individual field projects. *The course may either be given as a quarter-long course with weekend field trips or as part of the Field Biology Quarter. When given as part of the Field Biology Quarter, it will be 8 units and the amount of field work increased accordingly.*  
Mr. Hespeneide

**M132. Comparative Genetics.** (Same as Bacteriology M132.) Lecture, three hours; discussion/demonstration, one hour. Prerequisites: course 1A-1B or 4A-4B with grade of C or better, or consent of instructor; completion of Chemistry 22 or equivalent course in biochemistry, or consent of instructor. Mendelian principles; the gene: its structure, function, and chemistry, with emphasis on mutation, coding regulation, and transmission. Not open to students who have had Biology 134.  
Ms. Gill, Mr. Grunstein, Mr. Siegel (F,W,Sp)

**134. Human Genetics.** Either three hours of lecture and two hours of discussion or four hours of lecture and one hour of discussion. Prerequisite: completion of all courses listed under Preparation for the Major. A basic course in genetics using human examples. Not open to students who have had Bacteriology or Biology M132.  
Mr. Merriam, Ms. Spence (W)

**135. Population Genetics.** Lecture, three hours; discussion, one hour. Prerequisite: course M132. Basic principles of genetics of populations, dealing with the genetic structure of natural populations and the mechanisms of evolution. The course will cover equilibrium conditions and the forces altering gene frequencies, polygenic inheritance, and the methods of quantitative genetics.  
Ms. Gill

**136A-136B-136C. Seminar in Genetics. (½ course each)** Discussion, two hours. Prerequisite: course M132 or 134, and consent of the instructor. Undergraduate seminar in genetics; reading and group discussion of current research in genetics.  
Mr. Siegel (F,W,Sp)

**137. Morphogenesis.** Lecture, three hours; discussion, one hour. Prerequisite: completion of Prebiology Major. Study of embryonic development. Emphasis will be on the morphogenetic events in insect, avian, amphibian and mammalian species. The Staff

**138. Developmental Biology.** Lecture, three hours; discussion, one hour. Prerequisite: completion of all courses listed under Preparation for the Major and course M132 or 134, which may be taken concurrently. Synopsis of fundamental concepts in embryology and a survey of current topics in developmental biology.  
Ms. Lengyel, Mr. O'Connor, Mr. Tobin (F,W,Sp)

**139. Introductory Laboratory in Developmental Biology.** Lecture, two hours; laboratory, six hours. Prerequisites: course 138 and consent of the instructor. Introductory course in developmental biology including cell and organ culture and biochemical analysis of developing systems. The Staff

**140. Plant Development and Differentiation.** Lecture, two hours; laboratory, four hours. Prerequisites: Biology 4A-4B (or 1A-1B) or consent of instructor. A study of the ontogeny of the vascular plant body and comparisons of that development among the major plant taxa; discussion of the concepts of plant development.  
Mr. Schroeder

**141. Molecular Basis of Plant Differentiation and Development.** Lecture, three hours; discussion, one hour. Prerequisites: course 1A-1B, or 4A-4B; Biology M132 (can be taken concurrently). An in depth study of the basic processes of development and the molecular aspects of the developmental process as it relates to the plant kingdom. A variety of developing systems will be discussed (protists, fungi, lower and higher plants) with the goal of developing a unified concept of differentiation.  
Mr. Goldberg, Ms. Tobin (Sp)

**142A-142B-142C. Seminar on Topics in Developmental Biology. (½ course each)** Discussion, two hours. Prerequisite: course 138 and consent of the instructor. Undergraduate seminar on topics in developmental biology. Reading and group discussions of current research. Will be offered each quarter.  
Ms. Lengyel, Mr. O'Connor, Mr. Tobin

**144. Molecular Biology.** Lecture, three hours; discussion, one hour. Prerequisite: completion of all courses listed under Preparation for the Major and Biology M132. Course M132 is strongly recommended. A course in molecular biology emphasizing the synthesis, structure, function and interactions of biological macromolecules.  
Mr. Brunk, Mr. Fessler, Mr. Ray (F,W,Sp)

**145A-145B-145C. Molecular Biology Laboratory.** Laboratory, twelve hours. Prerequisite: consent of the instructor. It is highly desirable that the student have already taken course 144. A course in experimental molecular biology in which the student carries out original research under supervision. Space available is limited, and arrangements must be made in advance with the instructor.  
Mr. Salsler (F,W,Sp)

**146. Physicochemical Biology.** Lecture, four hours. Prerequisite: completion of all courses listed under Preparation for the Major. A physicochemical analysis of the physiology of cells and organelles with emphasis on membranes, thermodynamics of solute and water movement, light absorption, and subcellular energy transduction.  
Mr. Nobel (F)

**147. Biological Oceanography.** Lecture, five hours; laboratory, fifteen hours (five week intensive course). Prerequisites: completion of preparation for the Major and consent of instructor. Lecture: physical, chemical, and biological factors affecting the composition and distribution of plankton. Natural history of major phytoplankton and zooplankton taxa; production in marine food chains; adaptation to pelagic habitat. Laboratory: systematics, morphology of major plankton taxa; experimental studies of local marine plankton with emphasis on measurement of feeding, primary and secondary productivity, and nutrient flux. Course to be given at the Catalina Marine Science Center.  
Mr. Muscatine, Mr. Ronan

**149. Plant Biochemistry and Photosynthesis.** Lecture/discussion, four hours. Prerequisites: completion of all courses listed under Preparation for the Major. A survey course emphasizing plant-specific biochemistry, including photosynthesis; nitrogen fixation and metabolism; sulfur metabolism; respiration; plant pigments, lipids, proteins and nucleic acids; the cell wall; terpenes; alkaloids and flavonoids.  
Mr. Thornber

**150. Experimental Phycology and Mycology.** Lecture, three hours; discussion, one hour; laboratory, six hours. Prerequisites: course 100 or equivalent or consent of instructor. Study of algae and fungi emphasizing basic concepts in such topics as photobiological phenomena, physiology of growth, nutrition and reproduction; physiological ecology. Laboratory includes isolation and culture techniques and experiments designed to introduce students to a wide range of experimental uses of algae and fungi.  
Mr. Chapman

**153. Histology.** Lecture, three hours; laboratory, four hours. Prerequisite: completion of all courses listed under Preparation for the Major. An introduction to descriptive and functional histology, using light and electron microscope information. Discussion of histological research methods.  
Mr. Lake (Sp)

**154. Functional Ultrastructure of Cells and Tissues.** Lecture, three hours; discussion, one hour. Prerequisites: Biology 1A, 1B, or 4A-4B; Chemistry 21, 22, 24 or equivalent. Basic life processes at the supramolecular and molecular levels of cells. Functional significance of membrane structure, molecular basis of absorption, secretion and muscle contraction. Conventional and advanced methods in ultrastructural analysis, electron microscopy. Interpretations of structural information.  
Mr. Sjostrand

**155. Analytical Microscopy and Cytology.** Lecture, three hours; laboratory, three hours. Prerequisites: Physics 3A-3B-3C or 6A-6B-6C or equivalent or consent of instructor. A course designed for students in the biological sciences to acquaint them with quantitative cytology with emphasis on bright field, dark field, phase contrast, interference, polarization analysis, fluorescence microscopy and epillumination.  
Mr. James

**158. General and Cell Physiology. (1½ courses)** Lecture, three hours; laboratory, six hours. Prerequisite: completion of all courses listed under Preparation for the Major. The general physiology of cells and tissues with special emphasis on the physical and chemical nature of specialized activities.  
Mr. Casarano, Mr. James, Mr. Simpson (F,W)

**162. Plant Physiology.** Lecture, three hours; laboratory, one hour. Prerequisite: completion of all courses listed under Preparation for the Major. Water movement within the plant body and between the plant and its environment. Soil genesis, characteristics and plant-soil interrelations. Salt movement across membranes and through tissues. Hormonal control of growth and development. Photomorphogenesis. Photoperiodism and flowering. Photochemical and physiological aspects of photosynthesis.  
Mr. Laties, Mr. Thornber (F)

**163. Plant Physiology Laboratory.** Lecture, one hour; discussion, one hour; laboratory, eight hours. Prerequisite: course 162. Students will be introduced to the instrumentation used in Plant Physiology research by performing experiments based on the lecture material in 162. Subsequently, students working singly or in groups will undertake a research project of their own design. Limited enrollment. The Staff

**166. Animal Physiology. (1½ courses)** Lecture, three hours; laboratory, five hours. Prerequisite: completion of all courses listed under Preparation for the Major. Normally to be taken after course 158. An introduction to physiological principles with emphasis on organ systems and intact organisms.  
Mr. Eckert, Mr. Engelmann, Mr. Grinnell (F,Sp)

**168. Insect Physiology.** Lecture, two hours; laboratory, six hours. Prerequisite: course 158 or 166 or the equivalent. Survey of the physiology of insects with emphasis on functional adaptations.  
Mr. Engelmann

**169. Comparative Physiology.** Lecture, three hours; laboratory, four hours. Prerequisite: courses 158 and 166. A detailed analysis of selected aspects of invertebrate and vertebrate physiology.  
Mr. Gordon

**170. Physiological Ecology of Arthropods.** Lecture, three hours; discussion, one hour. Prerequisite: course 166 or equivalent. The physiology of terrestrial arthropods in relation to their distribution and function in natural environments.  
Mr. Edney

**171. Principles of Neurobiology.** Lecture, three hours; discussion, one hour. Prerequisite: course 166 or consent of instructor. An introduction to basic principles of neurobiology, including a description of the structure of neurons and nervous systems; the ionic mechanisms responsible for generating membrane potentials, action potentials, and synaptic potentials; the

properties of synaptic transmission, the information transduction and coding in sensory pathways, and the neural control of movement; development of and trophic interactions between cells of the nervous system.  
Mr. Eckert, Mr. Grinnell, Mr. O'Lague

**172A-172B. Introductory Laboratory in Neurophysiology.** Laboratory, eight hours each. Prerequisite: course 171 or consent of the instructor. Limited enrollment. Laboratory investigation of the function of central and peripheral nervous systems in invertebrates and vertebrates. Emphasis will be on electrophysiological approaches to basic neurophysiological problems. To be taken concurrently.  
Mr. Eckert, Mr. Grinnell, Mr. O'Lague

**173. Anatomy and Physiology of Sense Organs.** Lecture, three hours; discussion, one hour. Prerequisite: course 171 or the equivalent. The anatomy and physiology of the sense organs. Comparative aspects will be emphasized.  
Mr. Eckert, Mr. Grinnell, Mr. O'Lague

**177. Introductory General Endocrinology.** Lecture, three hours; discussion, one hour. Prerequisite: Biochemistry; course 158 or 166 or the equivalent. Principles of chemical integration in biological systems.  
Ms. Szego

**179. Invertebrate Endocrinology.** Lecture, three hours. Prerequisite: course 158 or 166 or consent of the instructor. A comprehensive treatment of invertebrate endocrinology.  
Mr. Engelmann

**180. Advanced Topics in General Endocrinology.** Lecture, three hours; discussion, one hour. Prerequisite: course 177. Detailed consideration of selected mechanisms in endocrine control of growth and differentiation.  
Ms. Szego

**181. Parasitology and Symbiosis. (1½ courses)** Lecture, three hours; laboratory, six hours. Prerequisites: courses 4A-4B. An introduction to the principles, biology, and evolution of infectiousness, symbiosis, and parasitism, emphasizing protozoan and helminth parasites, including those of man.  
Mr. MacInnis

**182. Experimental Parasitology.** Laboratory, eight hours. Prerequisite: consent of the instructor. Introduction to the use of parasites in experiments concerning basic biological problems and to problems concerning parasitism.  
Mr. MacInnis

**184. Mathematical Ideas in Biology.** Lecture, three hours; discussion, one hour. Prerequisite: one year of calculus and consent of the instructor. The use of mathematical ideas and analysis in the formulation and evaluation of theories of biological phenomena, such as growth, growth control, biological rate processes and applications of random walk theory. Coverage of topics will be tailored to specific student interests.  
Mr. Kavanau

**M185. Immunology.** (Same as Bacteriology M185 and Microbiology and Immunology M185.) Lecture, three hours; discussion, one hour. Prerequisites: Chemistry 22 and 24; course M132. Concurrent enrollment in Chemistry 152 or 156 is recommended. Introduction to experimental immunobiology and immunochemistry. Cellular and molecular aspects of humoral and cellular immune reactions.  
Mr. Clark, Mr. Sercarz

**M186. Immunology Laboratory. (½ course)** (Same as Bacteriology M186.) Laboratory, four hours. Prerequisite: course M185 (which may be taken concurrently) and consent of the instructor. This course will focus on a limited number of situations designed to train the student in organizing and evaluating immunological laboratory experiments. Must be taken concurrently with Bacteriology M187.  
Mr. Clark, Mr. Sercarz

**M187. Immunology Seminar. (½ course)** (Same as Bacteriology M187 and Microbiology and Immunology M187.) Discussion, two hours. Prerequisite: course M185 and consent of the instructor. Student presentation of selected papers from the immunology literature. Designed to serve as a forum for the critical analysis of research papers. Must be taken concurrently with Bacteriology M186.  
Mr. Clark, Mr. Sercarz

**188. Seminar on Biology and Society. (½ course)** Prerequisite: consent of the instructor. Investigations and discussions of current socially important issues involving substantial biological considerations, either or both as background for policy and as consequences of policy.  
Ms. Gill, Mr. Gordon, Ms. Tobin

**190A-190D. Honors Research in Biology. (½ to 1 course each)** Prerequisite: senior standing and permission of the Undergraduate Advisor. Individual research designed to broaden and deepen the student's knowledge of some phase of Biology. Must be taken for at least two quarters and for a total of at least two courses. Grade will only be given upon completion of 190B. Students may elect to enroll in additional research under 190C-D for a letter grade. A report on progress must be presented to the Undergraduate Advisor each quarter a 190 course is taken. A maximum of eight units of 190 may be used to fulfill the requirements for the Biology major.  
The Staff (F,W,Sp)

**199. Special Studies. (½ to 4 courses)** Prerequisite: consent of the instructor and the Undergraduate Adviser. This consent is based on a written proposal outlining the study or research to be undertaken. The proposal should be worked out in consultation with the instructor and submitted for approval to the Biology Undergraduate Adviser before the day instruction begins in that quarter. At the end of the quarter a report describing the progress of the study or research and signed by the student and the instructor must be presented to the Biology Undergraduate Adviser. No limit on credit, but students who wish to carry more than 8 units of 199 in any one quarter must obtain authorization

from the departmental chairman and the appropriate dean. Only one 199 course may be used to fulfill the requirements for the Biology major.  
The Staff (F,W,Sp)

### Graduate Courses

The consent of the instructor is required for admission to all graduate courses. Any additional prerequisites are stated in the course descriptions.

**202. Principles of Animal Taxonomy.** Lecture, three hours. Taxonomic concepts, principles, and methods. Mr. Belkin

**203. Marine Botany and Physiology. (2 courses)** Prerequisite: consent of instructor. *This course is given at the Santa Catalina Marine Biological Laboratory.* Structure, reproduction, life histories, systematics and biology of marine algae; techniques in culture and cytological investigation of algal material. Lecture and laboratory. The Staff

**204A-204B. Advanced Algae.** Prerequisites: consent of instructor. **204A:** lecture, four hours. A consideration of current research in experimental phycology. Topics include a discussion of the appropriate aspects of chemical and physical oceanography and limnology; algal physiology; experimental ecology of benthic and planktonic algae. **204B:** Lecture, three hours; laboratory, six hours. A course designed to introduce students to current concepts in algal systematics. The laboratory section is designed to teach students, by practical application to unknowns, how to identify algae by appropriate application of keys. Mr. Chapman

**205. Marine Invertebrate Biology. (2 courses)** *This course is given at the Santa Catalina Marine Biological Laboratory.* Functional morphology, life histories, and systematics of marine invertebrates of all major and most minor taxa; emphasis on the living animal and its habitat. The Staff

**206. Advanced Ichthyology.** Lecture, three hours; laboratory, three hours. Prerequisite: course 112 or consent of the instructor. The higher classification and functional morphology of fishes from an evolutionary point of view. Mr. Walker

**208. Advanced Vertebrate Morphology.** Lecture, two hours; laboratory, eight hours. Prerequisite: course 110 or the equivalent and consent of the instructor. Emphasizes a functional approach to evolution of the vertebrate locomotor, feeding, and circulatory systems. Laboratory includes comparative and experimental analyses of morphological adaptation. An independent project is required. May be taken twice for credit. Ms. Peterson

**210. Advanced Ornithology.** Lecture, two hours; laboratory, two hours; fieldwork, two hours. Prerequisites: course 114 or equivalent, and consent of instructor. Advanced study of topics in avian biology, including systematics, distribution, behavior, and ecology. Students will carry out individual study projects in laboratory, museum, or field. Mr. Howell

**211. Animal Sociology.** Lecture, two hours; discussion, two hours. Prerequisite: course 129, The Behavior of Animals, or equivalent. The description, analysis, physiology, ecology and evolution of different social systems in animals. Mr. Collias

**213. Community Ecology.** Lecture, three hours. Prerequisites: course 122 or equivalent, one year of calculus. Investigation of the structure and function of animal communities, in theory and in practice; includes the concepts of coexistence, competition, niche and diversity. Mr. Cody

**214. Physiological Ecology. (½ course)** Lecture, two hours. Prerequisite: course 111. A detailed consideration of the role of physiology and behavior in the autecology of organisms in natural environments. Mr. Bartholomew, Mr. Nagy

**215. Theoretical Ecology.** Lecture, three hours. Prerequisites: course 122, one year of calculus and consent of instructor. The use of mathematical models in studying ecological systems. A wide range of autecological and synecological models will be treated; relevant mathematical techniques, which include parts of basic calculus, differential equations, linear algebra and probability, will be reviewed as necessary. Mr. Vance

**217. Marine Ecology. (2 courses)** *This course is given at the Santa Catalina Marine Biological Laboratory.* Structure, diversity and energetics of marine communities; behavior, population dynamics, and biogeography of component species; associated oceanography and geology. Mr. Vance

**218. Oceanology. (2 courses)** *This course is given at the Santa Catalina Marine Biological Laboratory.* Ecology and dynamics of pelagic and benthic associations; physico-chemical properties of seawater and marine substrates and their biological significance; qualitative and quantitative methods of oceanology. The Staff

**219. Animal Behavior in Laboratory and Field.** Discussion, two hours; laboratory, six to eight hours. Prerequisite: course 129 and consent of the instructor. Limited Enrollment. Laboratory and field studies of selected problems in animal behavior. Mr. Collias

**220. Multigene Families.** Lecture, two hours; discussion, two hours. Prerequisites: Biology M132 and 144 (or equivalent) and consent of instructor. Analysis of the molecular structure, developmental regulation, and evolution of multigene families. Topics to be discussed will include the hemoglobins, immunoglobulins, histones, ribosomal RNAs, satellite DNAs, and histocompatibility antigens. Mr. Campbell, Mr. Tobin

**221. Genetic Analysis.** Lecture and discussion, three hours. Prerequisite: course M132 or equivalent. Examples of genetic analysis in eukaryotic organisms by means of mutation and chromosome changes. Readings in the literature will be provided. Topics to be presented include *Drosophila* chromosome behavior, techniques of gene localization, the one gene-one chromosome hypothesis, meiotic mutants, mosaic animals and cell lineage, behavior, and X-chromosome inactivation. Mr. Merriam

**222A-222F. Topics in Genetics.** Lecture. Prerequisite: course M132. Intensive study of selected topics. The Staff

**223A-223B. Advanced Genetics Laboratories.** Laboratory, nine hours. Prerequisites: Biology M132 or equivalent and consent of instructor. Original research with supervision in eukaryotic genetics; topics include transmission, developmental and behavioral genetics. 223A and 223B may be taken one time each for credit. 223A—Mr. Merriam, 223B—Mr. Siegel.

**224. Developmental Biology of Marine Organisms. (2 courses)** *This course is given at the Santa Catalina Marine Biological Laboratory.* Descriptive and experimental studies of developmental stages of marine plants and animals; patterns of reproductive biology; larval biology; metamorphosis. The Staff

**225. Special Topics in Development.** Lecture, three hours. Variable topics emphasizing the control of eukaryotic gene expression and morphogenesis. Special attention will be given to the role of hormones in the modulation of gene expression during development. Mr. O'Connor

**M226. Chromosome Structure and Regulation.** (Same as Biological Chemistry M226, Chemistry M226, Microbiology and Immunology M226, and Microbiology M226.) Lecture, three hours. Prerequisite: consent of instructor. Lectures and panel discussions on the structural and functional organization of eukaryotic chromosomes. Satisfactory/unsatisfactory grades are used for this course. The Staff

**227. Chromosome Structure and Replication.** Lecture, three hours. Prerequisites: course M132, Chemistry 153, or consent of instructor. A survey of biochemical and biophysical investigations of the structure and replication of chromosomal nucleic acids with emphasis on bacterial and viral systems. Mr. Ray

**228. Prokaryotic and Eukaryotic Gene Systems. (½ course)** Lecture, two hours. Prerequisite: consent of instructor. Presentations concerning current experimental approaches in the study of DNA replication, organization, transcription and translation. Mr. Grunstein, Mr. Ray

**229. Structural Macromolecules.** Lecture, three hours; discussion, one hour. Prerequisite: consent of the instructor. The comprehensive molecular biology of selected structural proteins and polysaccharides, including cellular synthesis, structure and physical properties, and integrated biological functions. Mr. Fessler

**M230A. Structural Molecular Biology. (½ course)** (Same as Bacteriology M230A and Chemistry M230A.) Lecture, two hours; discussion, one hour. Prerequisite: consent of instructor, based on a written research proposal. Fundamentals of electron microscopy of macromolecules and supramolecular structures, emphasizing quantitative microscopy, high resolution techniques, nucleic acid analysis, and studies on viruses and protein crystals. Not offered Fall 1978. Mr. Eisinger, The Staff

**M230B. Structural Molecular Biology. (½ course)** (Same as Bacteriology M230B and Chemistry M230B.) Lecture, two hours; discussion, one hour. Prerequisite: Physics 6C, Mathematics 3C and consent of instructor. Selected topics from the following: principles of biological structure; structures of globular proteins and RNA's; structures of fibrous proteins, nucleic acids, and polysaccharides; harmonic analysis and Fourier transforms; principles of electron, neutron and x-ray diffraction; optical and computer filtering; three-dimensional reconstruction. The Staff

**M230C. Structural Molecular Biology Laboratory. (½ course)** (Same as Bacteriology M230C and Chemistry M230C.) Laboratory, 10 hours. Prerequisite: consent of instructor, based on a written research proposal. Laboratory: practical experience with electron microscopy of macromolecules and supramolecular structures, emphasizing quantitative microscopy, high resolution techniques, nucleic acid analysis, and studies on viruses and protein crystals. Mr. Eisinger, The Staff

**M230D. Structural Molecular Biology Laboratory. (½ course)** (Same as Bacteriology M230D and Chemistry M230D.) Laboratory, 10 hours. Prerequisite: course M230B concurrent. Methods in structural molecular biology, including experiments utilizing the following procedures: single crystal x-ray diffraction, low angle x-ray diffraction, electron diffraction, optical diffraction, optical filtering, three dimensional reconstruction from electron micrographs, and model building. The Staff

**231. Advanced Topics in Molecular Biology.** Lecture, three hours; discussion, one hour. Prerequisite: consent of the instructor. Each offering of the course will treat a different topic of current interest in molecular biology. The topic will be covered in depth at a level appropriate to advanced graduate students. The course will include lectures, discussion and presentations by students. Mr. Brunk

**232. Experimental Molecular Developmental Biology. (2 courses)** Lecture, one hour; discussion, two hours; laboratory, 12 hours. Prerequisites: Biology 138, 144, and/or consent of instructor. A laboratory course in the biochemical expression and

regulation of differentiation in eucaryotes.

Mr. Fessler, Ms. Lengyel, Mr. Tobin

**233A-233B. Electron Microscopy of Cells. (2 courses each)** Lecture, four hours; laboratory, 20 hours; demonstration, three hours. Prerequisite: consent of instructor. Electron microscopic techniques applied to structure of cells and to molecular structure of cellular components. Intensive training in electron microscopy techniques and in the use of the electron microscope for high resolution electron microscopy. Mr. Sjostrand

**235. Advanced General Physiology.** Lecture, three hours. Prerequisite: course 158 or 161. Discussion of specific topics such as excitation, conduction, physiology of blood, muscle contraction, etc. Students will participate in giving reports. The Staff

**236. Experimental Cell Biology.** Lecture, two hours; discussion, one hour; laboratory, four hours. Prerequisite: course 158 and consent of the instructor. Theoretical and experimental analysis of systems utilized in the study of cellular metabolism and physiology: cell organelles, cell populations and organized tissues. Mr. Cascarano, Mr. James

**238. Structure, Function and Biogenesis of the Mitochondrion.** Lecture, three hours. Prerequisites: course 158, Chemistry 22, and consent of the instructor. Origin, maintenance and function of the mitochondrion as an example of a highly organized subcellular organelle in the eukaryotic cell. Mr. Simpson

**M239. Laboratory Techniques in Nucleic Acid Research. (2 courses)** (Same as Bacteriology M239.) Lecture, two hours; discussion, one hour; laboratory, 12 hours (open lab). Prerequisite: consent of instructor. Procedures in the manipulation of nucleic acids, including: isolation of DNA and RNA and physical and chemical characterization by several means; characterization of circular DNA molecules by electron microscopy, gradient centrifugation and restriction enzyme analysis; in vitro transcription and hybridization analysis. Mr. Nierlich, Mr. Simpson

**240. Physiology of Marine Animals. (2 courses)** *This course is given at the Santa Catalina Marine Biological Laboratory.* Lecture and laboratory studies on cellular, tissue, organ, and animal physiology; regulatory biology; metabolic characteristics of cells; energy transformations. The Staff

**241. Laboratory in Advanced Electrophysiology. (2 courses)** Laboratory, twelve hours. Prerequisite: course 172 or equivalent and consent of the instructor. In-depth involvement in individual research projects under staff guidance. Approximately two projects each quarter. Course may be repeated twice. Mr. Eckert, Mr. Grinnell, Mr. O'Lague

**242. Topics in Neurobiology.** Lecture, three hours. Prerequisite: course 171 or the equivalent and consent of the instructor. Selected current problems in neurobiology will be discussed in depth with emphasis on analysis of original papers. May be repeated for credit. Mr. Eckert, Mr. Grinnell, Mr. O'Lague

**244. Advanced Insect Physiology.** Lecture, two hours; laboratory, five hours. Prerequisite: course 168 or consent of the instructor. A detailed discussion of current problems in insect physiology. Advanced laboratory. Mr. Engelmann

**247A-247E. Advanced Plant Biology.** Lecture/discussion, four hours. Prerequisite: consent of instructor. Some background in plant biology is recommended. 247A. Control of growth and development in plants — Ms. Tobin, Mr. Phinney. 247B. Plant genetics — Mr. Goldberg. 247C. Organelle development and function in plants — Ms. Gonzalez. 247D. Photobiology — Mr. Thorber. 247E. Plant metabolic pathways — Mr. Chapman.

**248. Laboratory Techniques in Plant Biochemistry. (½ course)** Laboratory, six hours. Prerequisites: Biology 247 (taken concurrently) and Chemistry 153 or equivalent and consent of instructor. A laboratory course aimed at introducing graduate students to techniques used in plant biochemistry research. Limited enrollment. Mr. Chapman, Mr. Thornber

**249. Biochemistry of Parasitism.** Lecture, three hours. Biochemical and physiological aspects of parasite-host relationships. Mr. MacInnis

**251. Seminar in Plant Systematics. (½ course)** Mr. Thompson

**253. Seminar in Plant Structure. (½ course)** Mr. Phinney

**255. Seminar in Invertebrate Zoology. (½ course)** Mr. Muscatine, Mr. Morin

**256. Seminar in Entomology. (½ course)** Mr. Belkin

**258. Seminar in Ichthyology. (½ course)** Mr. Walker

**259. Seminar in Herpetology. (½ course)** Discussion, three hours. Prerequisites: course 113 or consent of instructor. Seminar in current approaches to herpetology. Main theme will vary from year to year in areas such as biogeography, ecology, behavior, environmental physiology. Mr. Gorman

**260. Seminar in Biology of Terrestrial Vertebrates. (½ course)** Mr. Bartholomew, Mr. Howell

**261. Seminar in Vertebrate Morphology. (½ course)** Prerequisite: course 110 or equivalent. Discussion of current problems in vertebrate morphology and evolution. Graded Satisfactory/Unsatisfactory. Ms. Peterson

**262. Seminar in Vertebrate Paleontology. (½ course)** Mr. Vaughn



- 264. Evolutionary Concepts. (½ course)** Lecture: three hours. Exploration in depth of evolutionary concepts, their diversity, biological interpretations and impact on social and humanistic patterns of today and the past. The Staff
- 265. Seminar in Biophysical Plant Ecology. (½ course)** Mr. Nobel
- 266. Seminar in Plant Ecology. (½ course)** Mr. Cody, Mr. Thompson
- 268. Seminar in Population Biology. (½ course)** Mr. Cody
- 269. Seminar in Animal Ecology. (½ course)** Discussion, three hours. Prerequisite: consent of instructor. A seminar to discuss specific topics in animal ecology and related fields; designed for advanced graduate students. The Staff
- 270. Seminar in Environmental Physiology. (½ course)** Mr. Bartholomew, Mr. Nagy
- 271. Seminar in Phycology and Mycology. (½ course)** Lecture, two hours. Prerequisites: course 100 or equivalent and consent of instructor. Advanced study in biology of algae and fungi. Topics in physiological ecology, physiology and biochemistry of algae and fungi, and their industrial uses. Algae and fungi as experimental organisms. Phylogeny and origin of eucaryote organisms. Evolutionary origin of chloroplasts. Mr. Chapman
- 272. Seminar in Marine Biology. (½ course)** Mr. Gordon, Mr. Muscatine, Mr. Morin
- 274. Seminar on Animal Behavior. (½ course)** Mr. Collias
- 275. Seminar on Behavior Research Problems. Lecture, three hours; laboratory, two hours. Prerequisite: course 130.** Mr. Kavanau
- 276. Seminar in Molecular Genetics. (½ course)** Graduate seminar will concentrate on a specific topic each quarter. Mr. Salszer
- 277. Seminar in Genetics. (½ course)** Mr. Ebersold, Mr. Merriam, Mr. Siegel
- 278. Information Processing in Eukaryote Cells. (Seminar) (½ course)** Discussion, three hours. Prerequisites: Chemistry 153, Biology 132, or equivalents; consent of instructor. Structure and organization of eukaryote DNA; nuclear RNA species; definition and properties of eukaryote mRNA; translation of mRNA; current related topics. Mr. Clark
- 279. Seminar in Developmental Biology. (½ course)** Mr. Tobin
- 280. Seminar on Chromosome Structure and Replication. (½ course)** Prerequisite: course 227. Current topics in the field of control and mechanism of DNA replication. Mr. Ray
- 281. Seminar in Molecular Biology. (½ course)** Prerequisite: consent of instructor. Mr. Brunk, Mr. Fessler, Mr. Ray
- 283. Seminar on Topics in Cell Biology. (½ course)** A discussion of various topics on the biology of eukaryotic cells. A different topic will be emphasized each year. The topics will include bioenergetics, motility, organelle DNA, membrane structure and function, oncogenic transformation, nuclear organization and function. Mr. Simpson
- 284. Seminar in Structural Macromolecules. (½ course)** Lecture, one hour; discussion, three hours. Prerequisites: courses 138, 144, and/or consent of instructor. In depth analysis of current problems in the biology, biochemistry, and molecular biology of structural macromolecules involving critical evaluation of recent findings and publications on the biosynthesis, structure, and biodegradation of these molecules. Mr. Fessler
- 285. Seminar in Protein Synthesis. (½ course)** Discussion, three hours. Prerequisites: course 144 and/or consent of instructor. A detailed analysis of our current understanding of the structural and functional events occurring during protein synthesis. Mr. Lake
- 286. Seminar in Plant Development. (½ course)** Lecture, one hour; discussion, two hours. Prerequisites: a course in plant physiology and at least one advanced undergraduate or graduate course in plant development or biochemistry, Chemistry 153 or equivalent. A graduate seminar that will concentrate on a specific topic in plant development each quarter. Mr. Phinney, Ms. Tobin
- 287. Seminar in Comparative Cell Physiology. (½ course)** Mr. Cascarano, Mr. James
- 288. Seminar on Plant Cell Biology. (½ course)** Prerequisite: course 162 is particularly recommended. Ms. Gonzalez
- 289. Seminar in Plant Physiology. (½ course)** Mr. Laties
- 290. Seminar in Comparative Physiology. (½ course)** Mr. Gordon
- 291. Seminar in Physiology and Biochemistry of Arthropods. (½ course)** Mr. Engelm
- 292. Seminar on Topics in Ultrastructure. (½ course)** The Staff
- 294. Seminar on Current Aspects of Photosynthesis. (½ course)** Mr. Chapman, Mr. Thornber, Mr. Wildman
- 295. Seminar in Neurophysiology. (½ course)** Mr. Eckert, Mr. Grinnell, Mr. O'Lague

**297. Seminar in Molecular Endocrinology. (½ course)**

Ms. Szego

**M298. Seminar in Current Topics in Molecular Biology. (½ course)** (Same as Biological Chemistry M298, Chemistry M298, Microbiology and Immunology M298, Microbiology M298 and Molecular Biology M298.) Prerequisite: enrollment must be approved by the instructor and by the Graduate Adviser of the Interdepartmental Molecular Biology Ph.D. Committee. Each student enrolled conducts or participates in discussions on assigned topics. May be repeated for credit. The Staff

**299. Seminar in Parasitology. (½ course)** Mr. MacInnis

**495. Preparation for the Teaching of Biology in Higher Education. (½ course)** Prerequisite: graduate standing and consent of instructor. Study of problems and methodologies in teaching biology, which includes workshops, seminars, apprentice teaching, and peer observation. Graded S/U. Mr. Morin

**501. Cooperative Program. (½ to 2 courses)** Prerequisites: Approval of UCLA Graduate Advisor and Graduate Dean. Approval of host campus instructor, Department Chairman and Graduate Dean. The course is used to record the enrollment of UCLA students in graduate courses taken under cooperative arrangements with neighboring institutions. To be graded S/U. The Staff

**Individual Study and Research**

The conduct of each of the courses listed below is supervised by a member of the faculty. He or she is identified by letter code as follows: AB, Albert A. Barber; GB, George A. Bartholomew; JB, John N. Belkin; CB, Clifford F. Brunk; DC, David J. Chapman; JC, Joseph Cascarano; MC, Martin L. Cody; NC, Nicholas E. Collias; WC, William R. Clark; WE, Wilbur T. Ebersold; RE, Roger O. Eckert; ED, Eric Edney; FE, Franz Engelmann; JF, John H. Fessler; EG, Ayesha E. Gill; BG, Robert Goldberg; LG, Elma Gonzalez; MG, Malcolm S. Gordon; GG, George C. Gorman; AG, Alan D. Grinnell; RG, Michael Grunstein; HH, Henry A. Hespenhede; TH, Thomas R. Howell; WJ, Thomas W. James; HK, Harumi Kasamatsu; LK, J. Lee Kavanau; AL, James A. Lake; GL, George G. Laties; JL, Judith A. Lengyel; HL, F. Harlan Lewis; RL, O. Raynal Lunt; AM, Austin J. MacInnis; JM, John R. Merriam; GM, James G. Morin; LM, Leonard Muscatine; KN, Kenneth A. Nagy; PN, Park S. Nobel; JO, John D. O'Connor; PO, Paul H. O'Lague; EO, Everett C. Olson; JP, Jane A. Peterson; BP, Bernard O. Phinney; DR, Dan S. Ray; WS, Winston A. Salszer; AS, Charles A. Schroeder; RS, Richard W. Siegel; LS, Larry Simpson; FS, Fritiof S. Sjostrand; CS, Clara M. Szego; HT, Henry J. Thompson; PT, J. Philip Thornber; AT, Allan J. Tobin; ET, Elaine M. Tobin; PV, Peter P. Vaughn; RV, Richard C. Vance; BW, Boyd W. Walker; DW, Dan B. Walker; SW, Samuel G. Wildman.

**596AA-596ZZ. Directed Individual (or Tutorial) Studies. (½ to 2 courses)** The Staff

**596F. Directed Individual (or Tutorial) Studies. (½ to 2 courses)** Directed individual (or tutorial) studies at the Santa Catalina Island Marine Laboratory. The Staff

**597AA-597ZZ. Preparation for Comprehensive Examination for the Master's Degree or Qualifying Examination for the Ph.D. (½ to 2 courses)** Prerequisite: consent of instructor. Course 597 may not be used to fulfill any course requirements for the Master's or Doctor's degrees, and is graded S/U.

**598AA-598ZZ. Master's Thesis Research and Writing. (½ to 2 courses)** The Staff

**599AA-599ZZ. Doctoral Dissertation Research and Writing. (½ to 2 courses)** The Staff

**BIOMATHEMATICS**

(Department Office, AV-111 Center for the Health Sciences)

Abdelmonem A. Afifi, Ph.D., *Professor of Biostatistics and Biomathematics.*

Virginia A. Clark, Ph.D., *Professor of Biostatistics and Biomathematics.*

Edward C. DeLand, Ph.D., *Adjunct Professor of Surgery and Biomathematics.*

<sup>16</sup>Wilfrid J. Dixon, Ph.D., *Professor of Biomathematics (Vice Chairman of the Department) and Professor of Biostatistics and Psychiatry.*

Olive Jean Dunn, Ph.D., *Professor of Biostatistics and Biomathematics.*

<sup>16</sup>Donald J. Jenden, B.Sc., M.B., B.S., *Professor of Pharmacology and Biomathematics.*

Robert J. Jennrich, Ph.D., *Professor of Biomathematics and Mathematics.*

Frank J. Massey, Ph.D., *Professor of Biostatistics and Biomathematics.*

Carol M. Newton, M.D., Ph.D., *Professor of Biomathematics (Chairman of the Department) and Professor of Radiological Sciences.*

Charles J. Stone, Ph.D., *Professor of Mathematics and Biomathematics.*

Robert M. Elashoff, Ph.D., *Associate Professor of Biomathematics and Biostatistics.*

Arthur Peskoff, Ph.D., *Adjunct Associate Professor of Biomathematics and Physiology.*

Mary Anne Spence, Ph.D., *Associate Professor of Biomathematics and Psychiatry in Residence.*

Jacqueline Benedetti, Ph.D., *Assistant Professor of Biomathematics in Residence.*

Eli Engel, M.D., Ph.D., *Adjunct Assistant Professor of Biomathematics.*

Harvey Frey, M.D., Ph.D., *Adjunct Assistant Professor of Biomathematics and Radiological Sciences.*

Kenneth L. Lange, Ph.D., *Assistant Professor of Biomathematics.*

Alan B. Forsythe, Ph.D., *Lecturer in Biomathematics and Dentistry.*

Michael A. Fox, Ph.D., *Lecturer in Biomathematics.*

James W. Frane, Ph.D., *Supervising Statistician.*

M. Ray Mickey, Ph.D., *Research Statistician and Lecturer in Biomathematics.*

Mary L. Ralston, Ph.D., *Assistant Research Statistician.*

Biomathematics relates to the biological domain, which comprises many and diverse sciences, such as mathematical physics relates to the physical. It also seeks to develop theoretical and computational vehicles for moving basic research findings rapidly and effectively into medicine. The Department of Biomathematics offers both methodologically-oriented and biologically subject-oriented course sequences in biomedical computation, modeling, and the relating of models to data and to experimental or treatment strategies. It is responsible for such training in the medical curriculum, and the department offers the M.S. and Ph.D. in Biomathematics.

**Admission to Graduate Status**

Candidates for admission to graduate status in the Department of Biomathematics must conform to the general admissions requirements set by the Graduate Division and have received the bachelor's degree in mathematics, one of the biological or physical sciences, or the premedical curriculum. Candidates also must submit results of the Aptitude and the Advanced Tests of the Graduate Record Examination. In general, at the time of admission, students must have completed two years of mathematics through second-year calculus and elementary organic chemistry and biochemistry (equivalent to Chemistry 21, 22, and 24).

Ideal course preparation should also include the equivalent of Mathematics 150A-150B-150C, 115, and 135A-135B-135C; 16 or more quarter units of biology; 12 quarter units of physics (preferably equivalent to the Physics 7 series); physical chemistry (equivalent to Chemistry 110A-110B); and some training in statistical and computer methods. In certain cases, at the discretion of the Department, students lacking some of this preparation but with exceptionally strong backgrounds in other areas pertinent to biomathematics may be admitted to graduate status, provided that deficiencies are removed by appropriate courses within a specified time after admission.

**Requirements for the Master's Degree**

Students entering graduate study in the Department of Biomathematics will normally be expected to pursue the Ph.D. degree only. Exceptional cases may be considered for the Master of Science Degree and must meet the general requirements set by the Graduate Division for this degree, (see Master's Degree). Students for this degree will be encouraged to follow the Comprehensive Examination Plan. Those permitted to undertake the Thesis Plan will conform to University regulations described under Thesis or Comprehensive Examination. Required courses include: Biomathematics 201, 202A and 203, and two other graduate-level courses in Biomathematics. No foreign language is required.

**Requirements for the Doctor's Degree**

Candidates for the doctorate in biomathematics must conform to the general requirements set by the Graduate Division for this degree (see candidate in Philosophy Degree). A reading knowledge of French, German or Russian is to be documented by an ETS score of over 500. It is highly recommended this requirement be fulfilled prior to admission to graduate study.

Individually designed curricula will ensure that each student has a strong background in both biology and mathematics. Required courses include Biomathematics 201, 202A, and 203, any courses required for the minor field, and two preceptorships, one of which is in teaching. Yearly comprehensive examinations will evaluate each student's background in mathematics and biology, and especially his biomathematical skill in relating these. Advancement to candidacy follows successful completion of the Biomathematics, Minor Field, and Specialty Qualifying examinations. A Final Oral Qualifying Examination precedes work in the dissertation, and an Oral Final Defense of Dissertation culminating in acceptance of the dissertation completes the candidate's examination requirements. All students entering the doctoral program are expected to have carefully read its more detailed description in Excerpts from the Biomathematics Graduate Degree Proposal, which is available at the departmental office.

Graduate Adviser: Carol M. Newton, M.D., Ph.D.

**Upper Division Courses**

**107. Introduction to Biomathematics in Genetics.** Prerequisite: introductory genetics course and consent of instructor. A presentation of mathematical modeling in biology with specific reference to analysis of family data in genetics. Topics include linkage and polygenic inheritance. Ms. Spence

**110. Elements of Biomathematics.** Prerequisite: calculus. Analysis of deterministic models including some general approaches to the study of homeostasis. Conditions under which deterministic and probabilistic descriptions of biological phenomena are appropriate. Both approaches will be applied to selected examples in epidemiology and enzyme kinetics. Ms. Newton and the Staff

**M153. Introduction to Computational Statistics.** (Same as Mathematics M153.) Prerequisites: Mathematics 150C or Mathematics 152B or the equivalent. Statistical analysis of data by means of package programs. Regression, analysis of variance, discriminant analysis, and analysis of categorical data. Emphasis will be on understanding the connection between statistical theory, numerical results, and analysis of real data. The Staff

**170A-170B-170C. Selected Biomathematical Topics for Researchers in Medicine and Biology.** Prerequisite: none for 170A; for 170B and 170C, elementary calculus. Basic techniques for examination of data, planning of experiments, comparison of theory and experiment. Commonly used models (e.g., compartment, transport) will be developed and used to illustrate the latter. Techniques include use of computer P/NP or letter grade. Ms. Newton

**171A-171B. Selected Topics for Dental Researchers. (½ course)** Prerequisites: Of particular interest to students in Dentistry. Instruction in critical and efficient reading of the dental literature, experimental designs, analysis of data using BMD programs, and some basic modeling techniques. Review of modern biomathematical techniques in craniofacial research and other areas of interest to dentistry. The Staff

**190HA-190HB. Honors Research in Biomathematics.** Prerequisites: upper division standing, permission of instructor and chairman. Individual research in some aspect of biomathematics designed to acquaint the student in depth with mathematical models and computer applications in biology. Must be taken for at least two quarters and for a total of at least two courses. A thesis is required for completion of the final course. The Staff

**199. Special Studies in Biomathematics. (½ to 2 courses)** Prerequisites: upper division standing and consent of the instructor. Special studies in biomathematics, including either reading assignments or laboratory work or both, designed for appropriate training of each student who registers in this course. The Staff

#### Graduate Courses

**200. Research Frontiers in Biomathematics. (½ course)** Prerequisite: consent of instructor. A series of presentations by the faculty on research frontiers in biomathematics. The Staff

**201. Deterministic Models in Biology.** Prerequisites: Linear algebra and differential equations. The conditions under which deterministic approaches can be employed are examined, and conditions where they may be expected to fail. Topics receiving special attention include compartmental analysis, enzyme kinetics, membrane theory, and the homeostatic control of physiological systems. Ms. Newton and The Staff

**202A-202B. Time Series Analysis.** Prerequisites: calculus, linear algebra and probability. Spectral representation, linear time invariant systems, ergodic theory, and prediction theory. Estimation of spectra, coherence, frequency response and bi-spectra. Statistical stability, hypothesis testing, and design. Use of the fast Fourier transform, complex demodulation, and instrumental variables. Biomedical and physical applications. The Staff

**203. Stochastic Models in Biology.** Prerequisite: Mathematics 150A or equivalent experience in probability. The mathematical description of biological relationships with particular attention directed to areas where the conditions for deterministic models are inadequate. Examples of stochastic models drawn from genetics, physiology, ecology and a variety of other biological and medical disciplines. Mr. Lange

**205. Three-Dimensional Potential Problems in Electrophysiology.** Prerequisites: Differential equations and electrostatics or consent of instructor. Subthreshold electrical properties of cells, microelectrode measurements of intracellular potentials, boundary conditions for current flow across membranes, eigenfunction expansions and singular perturbation analysis of intracellular and extracellular potential distribution in spherical and cylindrical cells. Mr. Peskoff

**206. Modeling of Cellular Systems. (½ course)** Study of recently reported characterizations of differentiating systems, labeling, etc. Deterministic, stochastic, and computer simulation models are developed from simple dividing cellular systems. Biological assumptions, indications for various approaches, and relationships to laboratory research and methods are emphasized. Ms. Newton

**M207. Modeling in Genetic Analysis.** (Same as Anthropology M222C.) Prerequisite: graduate standing, course M222B, or consent of instructor. Basic concepts of human genetics with emphasis on methods of computer-oriented genetic analysis. Topics include segregation analysis, genetic linkage, polygenic (quantitative) models, and population structure. Ms. Spence

**208. Modeling and Analysis of Neuroelectric Data.** For biologists (esp. neuroscientists), but open to other science majors. Mathematical and computer approaches for modeling and developing neural theory are applied to basic neurophysiological phenomena and neural models. Appropriate simulation and statistical techniques are also presented. The Staff

**209. Models of Steady-State Biochemistry. (½ course)** Prerequisite: undergraduate chemistry or biochemistry, mathematics through calculus, FORTRAN. This course will employ computer methods for study and simulation of detailed biochemical subsystems from physiology. Primary emphasis is upon steady-

state distributions of fluid and electrolytes across active membranes of systems chosen for their clinical or research interest. Mr. DeLand

**210. Introduction to Biomedical Computation.** Prerequisite: graduate standing. Basic concepts of data acquisition and machine computation, with special reference to biomedical applications. The Staff

**213. Biomedical Laboratory Computation.** Prerequisite: none, however, course 210 is highly recommended. Computational problems encountered in the direct processing of physiological data and in controlling laboratory experiments are analyzed. Experience will be acquired in implementing approaches to these problems on a small laboratory computer widely used in the biological sciences. The Staff

**215. Advanced Biomedical Computation.** Prerequisite: course 210 or equivalent programming experience. Biomedical computation enabling those having elementary FORTRAN programming to acquire skills applicable to biomedical research. Use of random-number generators, stochastic modeling, models with differential equations, package programs, specialized applications, interactive modeling on IBM-2250 graphics system. Individual term projects. Ms. Newton and The Staff

**M216. Computer and Biomathematical Applications in Radiological Sciences.** (Same as Radiological Sciences M216.) Prerequisites: Biomathematics 210 and elementary calculus are recommended. Computer and biomathematical methods will be presented that relate to dosimetry, treatment strategies, biological effects of radiation, and laboratory research in radiotherapy and radiobiology. Mr. Frey, Ms. Newton

**217. Biomedical Data Management for Health Care and Research.** Prerequisite: consent of instructor. This course is designed for students with either a background in biomedical data administration and a need to advance their understanding of modern techniques in data storage and retrieval, or those with a knowledge of computer science who wish to be exposed to the day-to-day use of data by medical centers and biomedical researchers. Mr. Fox

**220. Topics in Biological Control Theory.** Prerequisite: Calculus, up to differential equations. Biochemical, physiological and neurological phenomena are treated theoretically using the methodology of cybernetics. The problem of the nervous system and various approaches to understanding it are presented. Mr. Fox and The Staff

**M246. Probability Models and Statistical Methods in Genetics.** (Same as Anthropology M222B.) Prerequisite: graduate standing, two quarters of statistics, Mathematics 3A, Anthropology M222A. An introduction to probability models and statistical methods in genetics. Maximum likelihood methods for estimating genetics parameters will be introduced and discussed in detail. This course is a prerequisite for Anthropology M222C. The Staff

**M280. Computational Statistics.** (Same as Mathematics M280 and Public Health M244C.) Prerequisite: Mathematics 150A-150B-150C and 115 or the equivalent. An introduction to the theory and design of statistical programs; pivoting and other technologies used in stepwise regression, nonlinear regression algorithms, algorithms for balanced and unbalanced analysis of variance including the mixed model, iterative rescaling and other methods for loglinear models. Mr. Jennrich

**371A-371B. Selected Topics for Dental Researchers. (½ course)** Lectures are the same as for Biomathematics 171. In lieu of examinations and some of the homework, a term project may be completed. The Staff

**401. Biomathematics. (½ course)** Fundamentals of statistical estimation and inference. Emphasis on critical appraisal of current research literature. The Staff

**410. Biomedical Computing: Introduction.** Same lectures as Biomathematics 210. A term project is required in lieu of homework and examinations. To be graded S/U only. The Staff

#### Individual Study and Research

**596. Directed individual Study or Research in Biomathematics. (1 to 3 courses)** This course will serve for individual study on topics not yet covered by the offerings of the department. This course can be taken several times for credit when different topics are covered. A letter grade will be used. The Staff

## CHEMISTRY

(Department Office, 3010 W.G. Young Hall)

Frank A. L. Anet, Ph.D., *Professor of Chemistry.*  
Daniel E. Atkinson, Ph.D., *Professor of Chemistry.*  
Kyle D. Bays, Ph.D., *Professor of Chemistry.*  
Paul D. Boyer, Ph.D., *Professor of Chemistry.*  
Orville L. Chapman, Ph.D., *Professor of Chemistry.*  
Donald J. Cram, Ph.D., *Professor of Chemistry.*  
David S. Eisenberg, Ph.D., *Professor of Molecular Biology in Chemistry.*  
Mostafa A. El-Sayed, Ph.D., *Professor of Chemistry.*  
Paul S. Farrington, Ph.D., *Professor of Chemistry.*  
Christopher S. Foote, Ph.D., *Professor of Chemistry.*  
E. Russell Hardwick, Ph.D., *Professor of Chemistry.*

M. Frederick Hawthorne, Ph.D., *Professor of Chemistry.*  
Thomas L. Jacobs, Ph.D., *Professor of Chemistry.*  
Herbert D. Kaesz, Ph.D., *Professor of Chemistry.*  
Daniel Kivelson, Ph.D., *Professor of Chemistry.*  
Charles M. Knobler, Ph.D., *Professor of Chemistry.*  
William G. McMillan, Jr., Ph.D., *Professor of Chemistry.*  
John P. McTague, Ph.D., *Professor of Chemistry.*  
Malcolm F. Nicol, Ph.D., *Professor of Chemistry.*  
Howard Reiss, Ph.D., *Professor of Chemistry.*  
Verne N. Schumaker, Ph.D., *Professor of Molecular Biology in Chemistry.*  
Robert L. Scott, Ph.D., *Professor of Chemistry.*  
Roberts A. Smith, Ph.D., *Professor of Chemistry.*  
Robert V. Stevens, Ph.D., *Professor of Chemistry.*  
Kenneth N. Trueblood, Ph.D., *Professor of Chemistry.*  
John T. Wasson, Ph.D., *Professor of Geochemistry and Chemistry.*  
Charles A. West, Ph.D., *Professor of Chemistry.*  
Francis E. Blacet, Ph.D., D.Sc., *Emeritus Professor of Chemistry.*  
Clifford S. Garner, Ph.D., *Emeritus Professor of Chemistry.*  
Theodore A. Geissman, Ph.D., *Emeritus Professor of Chemistry.*  
Thomas L. Jacobs, Ph.D., *Emeritus Professor of Chemistry.*  
Willard F. Libby, Ph.D., *Emeritus Professor of Chemistry.*  
James D. McCullough, Ph.D., *Emeritus Professor of Chemistry.*  
William G. Young, Ph.D., D.Sc., *Emeritus Professor of Chemistry.*  
Mario E. Baur, Ph.D., *Associate Professor of Chemistry.*  
William M. Gelbart, Ph.D., *Associate Professor of Chemistry.*  
Eric J. Heller, Ph.D., *Associate Professor of Chemistry.*  
John M. Jordan, Ph.D., *Associate Professor of Molecular Biology in Chemistry.*  
Jerome V. V. Kasper, Ph.D., *Associate Professor of Chemistry.*  
Charles E. Strouse, Ph.D., *Associate Professor of Chemistry.*  
Jeffery I. Zink, Ph.D., *Associate Professor of Chemistry.*  
Mark L. Eleret, Ph.D., *Adjunct Assistant Professor of Chemistry.*  
John A. Gladyz, Ph.D., *Assistant Professor of Chemistry.*  
Jay D. Gralla, Ph.D., *Associate Professor of Chemistry.*  
Steven G. Clarke, Ph.D., *Assistant Professor of Chemistry.*  
Michael E. Jung, Ph.D., *Assistant Professor of Chemistry.*  
Harold G. Martinson, Ph.D., *Assistant Professor of Chemistry.*  
Joseph R. Murdoch, Ph.D., *Assistant Professor of Chemistry.*  
Emil Reisler, Ph.D., *Assistant Professor of Chemistry.*  
Robert M. Sweet, Ph.D., *Assistant Professor of Chemistry in Residence.*  
Richard L. Weiss, Ph.D., *Assistant Professor of Chemistry.*

Sandra I. Lamb, Ph.D., *Lecturer in Chemistry.*  
Lawrence H. Levine, Ph.D., *Lecturer in Chemistry.*  
Arlene A. Russell, M.A., *Lecturer in Chemistry.*  
George C. Kennedy, Ph.D., *Professor of Geochemistry and Geology.*

#### Admission to Courses in Chemistry

Regular and transfer students who have the prerequisites for the various courses are not thereby assured of admission to those courses. The Department may deny admission to any course if a grade D was received in a course prerequisite to that course, or if in the opinion of the Department the student shows other evidence of inadequate preparation.

A student may not repeat a chemistry course if he has credit for a more advanced course which has the first course as a prerequisite.

#### Preliminary Examination in Chemistry

Students who wish to enroll in course 11A or in course 13A must take the Chemistry/Mathematics Preliminary Examination in Chemistry during the enrollment period for the quarter in which they intend to enroll in these courses. Enrollment usually will be limited to students who have passed the examination. During 1978-1979, the Preliminary Examination is scheduled on September 18, 1978, for the Fall Quarter; January 3, 1979, for the Winter Quarter; and March 28, 1979, for the Spring Quarter. These dates may be changed. The time and location of the examination will be posted on the First Year Chemistry Bulletin Board located near Room 1054 in W.G. Young Hall (Chemistry Building) about two weeks before the announced date of the examination.

#### The Majors in Chemistry

There are three majors available to the student interested in Chemistry: the regular Chemistry major, the Biochemistry major, and the General Chemistry major. Each of these programs is outlined below. Students may contact Dorothy Seymour, Undergraduate Counselor, for help and advice in the Chemistry Undergraduate Office, Room 4016 W.G. Young Hall.

Courses taken to fulfill any of the requirements for any of the Chemistry Department's majors must be taken for a letter grade and not Pass/Not Pass.

#### CHEMISTRY MAJOR

For students who intend to pursue a career in chemistry.

#### Preparation for the Major

Required: Chemistry 11A, 11B, 11BL, 11C, 11CL (or 13A-13B), 21, 23, 25 (or 21, 22, 24); Physics 8A, 8B, 8C (8D, strongly recommended); Mathematics 31A, 31B, 31C, 32A, 32C. Another course, directly related to a student's career objectives, may be substituted for the fifth mathematics course upon approval of the Undergraduate Adviser. No specific foreign language is required; however, a reading knowledge of German (at least at the level of German 3) is strongly recommended for students planning to pursue graduate work in Chemistry.

**The Major**

Chemistry 110A, 110B, 113, 114, 133A, 133B, 133C, 173, and two other upper division or graduate courses in chemistry including at least one laboratory course selected from 136, 144, 154, 174, and 184.

**BIOCHEMISTRY MAJOR**

The major in Biochemistry is intended for students preparing for careers in biochemistry or in other fields requiring extensive preparation in both chemistry and biology.

**Preparation for the Major**

Chemistry 11A, 11B, 11BL, 11C, 11CL, (or 13A-13B), 21, 23, 25 (or 21, 22, 24); Mathematics 31A, 31B, 31C, and either 32A or 32C; three courses from Physics 6A\*, 6B, 6C, 8A, 8B, 8C, 8D; Biology 4A, 4B.

\*If physics courses from both the 6 and 8 series are taken, undue duplication must be avoided.

**The Major**

Chemistry 133A, 133B, 133C, 110A, 156, 157AB, and 154; plus one course from each of the following five categories: 1) Bacteriology/Biology M132 (or Biology 134); 2) Bacteriology 101; 3) One Course from Biology 137, 138, 140, 141, 153, 154, 158, 162, 166, Bacteriology 111, or 113; 4) One upper division or graduate level course in Biology, Bacteriology, or Biological Chemistry; 5) One upper division or graduate level course in Biology, Bacteriology, Chemistry, Biological Chemistry, Mathematics, or Physics.

**GENERAL CHEMISTRY MAJOR**

The major in General Chemistry is intended for students who wish to acquire considerable chemical background in preparation for careers outside chemistry. The requirements are accordingly quite flexible. It may be appropriate for some students who plan to enter professional schools, such as those of medicine, dentistry, or public health.

**Preparation for the Major**

Chemistry 11A, 11B, 11BL, 11C, 11CL, (or 13A-13B), 21, 23, 25 (or 21, 22, 24); Mathematics 31A, 31B, 31C, and either 32A or 32C; three courses from Physics 6A\*, 6B, 6C, 8A, 8B, 8C, 8D.

\*If physics courses from both the 6 and 8 series are taken, undue duplication must be avoided.

**The Major**

Six upper division courses in chemistry, including at least one in physical chemistry and at least two with laboratory work; six additional upper division courses. A 2.0 average is required in all upper division chemistry courses. The program should be coherent in terms of the student's interests and objectives, and must be based on a written proposal and approved by the Chemistry Undergraduate Adviser.

**Transfer Students**

Transfer students with more than 84 quarter units will be accepted into the Chemistry Department majors only if they have completed the equivalent of Chemistry 11A, 11B, 11BL, 11C, 11CL and Mathematics 31A-31B-31C. *Recommended: Organic Chemistry: one year of calculus-based physics.*

An entering transfer student who has satisfactorily completed a year course in general college chemistry should enter course 21. Transfer students should consult the Chemistry Undergraduate Office for assistance in planning their programs.

**Graduate Study**

The Department of Chemistry offers programs of study and research leading to the M.S. and Ph.D. degrees in chemistry and in biochemistry. Prospective candidates for advanced degrees in chemistry may specialize in the following fields: biochemistry, inorganic, organic, or physical chemistry.

A number of Chemistry Department faculty also serve as advisers for interdepartmental graduate programs in Environmental Science and Engineering, Geochemistry, and Molecular Biology.

The general University requirements for the M.S. and Ph.D. degrees are described in the Graduate Section. The M.S. in Chemistry makes use of the Thesis plan. The M.S. in Biochemistry may be obtained by the Thesis Plan or a Comprehensive Examination Plan. A student is not required to earn the M.S. degree before undertaking work for the Ph.D. degree. More detailed information regarding admission to and requirements for graduate study may be obtained by writing to Phyllis Jergenson, Graduate Counselor, Department of Chemistry, University of California, Los Angeles, California 90024.

**Lower Division Courses**

**2. Introductory Chemistry.** Lecture and discussion, four hours. This course is designed to meet part of the College of Letters and Science requirements for non-science majors and similar requirements in other colleges. The course deals with the concept of the submicroscopic world of Chemistry, and ranges from protons to proteins in subject matter. This course is not open to students who have received credit for Chemistry 11A.

Mr. Farrington, Mr. Hardwick (F,Sp)

**11A. General Chemistry.** Lecture, four hours; discussion, one hour. Prerequisites: High school chemistry or equivalent background and three years of high school mathematics. High school physics recommended. (Students lacking the prerequisites may qualify for admission by exceptional performance on the Chemistry/Mathematics Preliminary Examination.) All students who intend to take this course must take the Chemistry/Mathematics Preliminary Examination that is normally given within 10 days before instruction begins. Enrollment is usually limited to students who have passed that examination. Students appearing for the examination must be prepared to identify themselves. This course as well as some of the succeeding first-year courses (11B, 11BL, 11C, 11CL), or courses 13A and 13B, are required of all majors in chemistry and biochemistry and many other fields of science and technology. Atomic theory and stoichiometry; states of matter and phase equilibrium; gases; liquids and solutions; acids, bases, and salts; equilibria in gases and solutions; solubility and solubility equilibria; oxidation and reduction.

Mr. Baur, Mr. Elert, Mr. Trueblood (F,W,Sp)

**11AH. General Chemistry—Honors Sequence.** Lecture, four hours; discussion one hour. Prerequisites: high school chemistry or equivalent background and three years of high school mathematics. High school physics recommended. (Students lacking the prerequisites may qualify for admission by exceptional performance on the Chemistry/Mathematics Preliminary Examination.) All students who intend to take this course must take the Chemistry/Mathematics Preliminary Examination that is normally given within 10 days before instruction begins. Enrollment is usually limited to students who have passed that examination. An honors course parallel to course 11A.

Mr. Scott (F)

**11B. General Chemistry.** Lecture, three hours; discussion, one hour. Prerequisite: course 11A with grade C- or higher or consent of instructor. Thermochemistry and thermodynamics; electrochemistry; chemical kinetics; quantum theory and electronic structure of atoms; periodicity of chemical properties.

Mr. Heller, Mr. Kaesz, Mr. McTague (F,W,Sp)

**11BH. General Chemistry—Honors Sequence.** Lecture, three hours; discussion, one hour. Prerequisites: course 11AH with grade C or higher, or course 11A and consent of instructor. An honors course parallel to course 11B.

Mr. McMillan (W)

**11BL. General Chemistry Laboratory. (¼ course)** Laboratory, four hours. Prerequisites: course 11A with grade C- or higher, or consent of instructor. Course 11B must be taken concurrently or must already have been passed with a grade of C- or higher. Enrollment priority, if needed, will be given to those taking 11B concurrently. Use of the balance; volumetric techniques; equilibria; thermochemistry; and quantitative analysis using volumetric and potentiometric procedures; Beer's Law.

The Staff in Freshman Chemistry (F,W,Sp)

**11C. General Chemistry. (¾ course)** Lecture, two hours. Prerequisite: course 11B with grade C- or higher or consent of instructor. Bonding and molecular structure; descriptive inorganic chemistry, presented in terms of the principles discussed in courses 11A and 11B.

Mr. Elert, Mr. Kaesz, Mr. Zink (F,W,Sp)

**11CH. General Chemistry—Honors Sequence. (¾ course)** Lecture, two hours. Prerequisites: course 11BH with grade C or higher, or course 11C and consent of instructor. An honors course parallel to course 11C.

Mr. El-Sayed (Sp)

**11CL. General Chemistry Laboratory. (½ course)** Laboratory, eight hours. Prerequisites: course 11BL with grade C- or higher. Course 11C must be taken concurrently or must already have been passed with grade C- or higher. Enrollment priority, if needed, will be given to those taking 11C concurrently. Rates of reactions; quantitative volumetric analysis; qualitative inorganic analysis; inorganic synthesis; column chromatography; colorimetric analysis.

The Staff in Freshman Chemistry (F,W,Sp)

**13A-13B. General Chemistry, Accelerated Sequence. (1¼ course each)** Lecture and discussion, four hours; laboratory, four hours. Prerequisites: An outstanding high school record in at least three years of mathematics and one year of chemistry. High school physics strongly recommended. All students who intend to take this course must take the Chemistry/Mathematics Preliminary Examination which will normally be given within 10 days before instruction begins. Enrollment is usually limited to students whose preliminary exam scores are superior in both the mathematics and chemistry sections of the preliminary exam. Mathematics 31A (or 3A) should be taken concurrently with 13A. Chem 13A with grade C or higher is prerequisite for 13B. Lecture: Brief review of topics covered in Chemistry 11A followed by material similar to that in Chemistry 11B and 11C, only at a more intensive level. Laboratory: Use of the balance, molecular weights, use of volumetric equipment, equilibrium constants, electrochemistry, kinetics, qualitative inorganic analysis, inorganic synthesis. Chemistry 13A and 13B cover in two quarters approximately the same material as that in three quarters of Chemistry 11A, 11B, 11BL, 11C, 11CL.

The Staff in Freshman Chemistry (F)

**15. Organic and Biochemistry for Prenursing and Kinesiology.** Lecture and discussion, four hours. Prerequisite: course 11A with grade C- or higher. Recommended for students in certain areas of kinesiology and in the prenursing, pre-physical therapy and pre-dental hygiene curricula. An introduction to the structures and reactions of organic compounds, particularly with respect to their roles and their transformations in living systems. This course does not meet requirements for admission to medical or dental school, nor does it satisfy the requirements of any major in the College of

Letters and Science other than certain areas of Kinesiology.

Mr. Hardwick (W)

**15L. Chemistry Laboratory for Prenursing and Kinesiology. (¼ course)** Laboratory, four hours. Prerequisite: course 15 must be taken concurrently or must already have been completed with grade C- or higher. An introduction to quantitative work with aqueous solutions and to the preparation, isolation, and characterization of organic compounds, particularly some of those important in living systems. This course does not meet requirements for admission to medical or dental school.

Mr. Hardwick (W)

**21. Organic Structure and Reactions.** Lecture and discussion, four hours. Prerequisite: courses 11C and 11CL (11CL may be taken concurrently) with grades C- or higher, or consent of instructor. Structure, reactivity, and properties of organic compounds. The theory of functional groups, chemical bonds, molecular structure, and stereochemistry of organic compounds.

Mr. Cram, Ms. Lamb, Mr. Stevens (F,W,Sp)

**\*22. Elementary Biochemistry.** Lecture and discussion, five hours. Prerequisite: course 21 with grade C- or higher, or consent of the instructor. Metabolism; enzymes, cell constituents; properties and biosynthesis of nucleic acids and proteins.

**23. Bioorganic Structure and Reactions.** Lecture, three hours; laboratory, four hours. Prerequisite: courses 11CL and 21 with grades C- or higher, or consent of instructor. Organic structures and reactions of biochemical interest. The classes of compounds most important to biological functions: amino acids, carbohydrates, etc. Sulfur, phosphorous, and anhydride chemistry. Methods of separation, purification and analysis of organic compounds: extraction, crystallization, distillation, and chromatography.

Mr. Clarke, Ms. Lamb, Mr. Stevens

**\*24. Laboratory Methods of Organic and Biochemistry.** Lecture and quiz, two hours; laboratory, eight hours. Prerequisite: courses 11CL and 22, both with grades C- or higher, or consent of the instructor. Methods of separation, purification and analysis of organic compounds: extraction, crystallization, distillation, and chromatography. Purification and characterization of biological macromolecules; spectrophotometry; catalysis; enzyme kinetics, gel filtration and paper chromatography, viscosity; utilization of radioisotopes.

**25. Elementary Biochemistry.** Lecture, three hours; laboratory, four hours. Prerequisite: course 23 with grade C- or higher, or consent of instructor. Protein structure and function; enzyme catalysis; intermediary metabolism; cell constituents; properties and biosynthesis of nucleic acids and proteins. Purification and characterization of biological macromolecules; spectrophotometry; catalysis; enzyme kinetics; gel filtration and paper chromatography; viscosity; utilization of radioisotopes.

**96. Special Courses in Chemistry. (¼ to 1 course)** To be arranged. Prerequisite: consent of the Chemistry Undergraduate Adviser.

The Staff (F,W,Sp)

**Upper Division Courses**

**103. Environmental Chemistry.** Lecture, four hours. Prerequisites: courses 21, 22, 24 and consent of the instructor. Chemical aspects of air and water pollution, solid waste disposal, energy resources, and pesticide effects. Chemical reactions in the environment, and the effect of chemical processes on the environment.

Mr. Bayes (Sp)

**110A. Physical Chemistry: Chemical Thermodynamics.** Lecture and quiz, four hours. Prerequisites: courses 11C (or 13B), Physics 8B or 6C (may be taken concurrently), Mathematics 31C or, for life science majors, Mathematics 3C. (An understanding of partial differentiation such as that obtained in Mathematics 32A or 3C is very desirable.) Properties of gases; laws of thermodynamics; free energy; entropy; chemical potential and chemical equilibrium; thermodynamics of solutions.

Mr. McTague, Mr. Reiss, Mr. Trueblood (F,W,Sp)

**110AG. Physical Chemistry: Chemical Thermodynamics.** Lecture and quiz, four hours. Open only by consent of the Chemistry Graduate Adviser to graduate students who have not taken course 110A in this institution.

Mr. McTague, Mr. Reiss, Mr. Trueblood (F,W,Sp)

**110B. Physical Chemistry: Chemical Equilibrium, Electrochemistry, and Kinetics.** Lecture and quiz, four hours. Prerequisites: course 110A, Physics 8C. Introduction to statistical thermodynamics, kinetic theory of gases, chemical kinetics, phase equilibria, chemical equilibria in solutions, electrochemistry.

Mr. McMillan, Mr. Scott (W,Sp)

**110BG. Physical Chemistry: Chemical Equilibrium, Electrochemistry, and Kinetics.** Lecture and quiz, four hours. Open only by consent of the Chemistry Graduate Adviser to graduate students who have not taken course 110B in this institution.

Mr. McMillan, Mr. Scott (W,Sp)

**113. Physical Chemistry: Introduction to Quantum Chemistry.** Lecture and quiz, four hours. Prerequisite: courses 11C, Physics 6C or 8C, Mathematics 32C. An introduction to the principles and applications of quantum chemistry; atomic structure and spectra; harmonic oscillator; rigid rotor, molecular spectra.

Mr. Heller, Mr. Kasper (F,Sp)

**113G. Physical Chemistry: Introduction to Quantum Chemistry.** Lecture and quiz, four hours. Open only by consent of the Chemistry Graduate Adviser to graduate students who have not

taken course 113 at this institution.

Mr. Heller, Mr. Kasper (F,Sp)

**114. Physical Chemistry Laboratory.** Lecture, two hours; laboratory, eight hours. Prerequisites: courses 11C, 11CL, 110A, 110B, and 113 or consent of the instructor. Lecture: techniques of physical measurement, error analysis and statistics, special topics. Laboratory: spectroscopy, thermodynamic measurements, and chemical dynamics.

Mr. Bayes, Mr. Kasper, Mr. Strouse (F,W,Sp)

**115A-115B. Quantum Chemistry.** Lecture, four hours. Prerequisites: course 113, Mathematics 32C. Recommended: Knowledge of differential equations equivalent to Mathematics 135A or Physics 131 and of analytic mechanics equivalent to Physics 105A. Course 115A or Physics 115B is prerequisite for course 115B. Postulates and systematic development of non-relativistic quantum mechanics; expansion theorems; wells; oscillators; angular momentum; hydrogen atom; matrix techniques; approximation methods; time dependent problems; atoms; spectroscopy; magnetic resonance; chemical bonding. Students entering course 115A will normally be expected to take course 115B the following quarter. These two courses are designed for chemistry students with a serious interest in quantum chemistry.

Mr. Baur (115A-W; 115B-Sp)

**116. Quantum Theory of Chemical Structure.** Lecture, four hours. Prerequisite: course 113. Brief review of fundamental postulates. Expansions and approximation techniques; atoms; molecular orbital and valence bond approaches; ligand field theory, molecular spectroscopy. A terminal course which emphasizes principles, limitations, and chemical applications without a detailed discussion of mathematical and quantum mechanical techniques. Not open to students who have received credit for course 115B.

Mr. Bayes (W)

**121. Special Topics in Physical Chemistry.** Lecture, four hours. Prerequisite: course 110B (113 and Physics 8D recommended). Each offering of the course covers several topics that are of considerable research interest, and will be presented at a level suitable for students who have completed the Junior year courses in physical chemistry.

(Sp)

**123A-123B. Classical and Statistical Thermodynamics.** Prerequisite: course 110B. Rigorous presentation of the fundamentals of classical thermodynamics. Principles of statistical thermodynamics: probability, ensembles, partition functions, independent molecules and the perfect gas. Applications of classical and statistical thermodynamics selected from diatomic polyatomic gases, the solid and fluid states, phase equilibria, electric and magnetic effects, ortho-para hydrogen, chemical equilibria, reaction rates, the imperfect gas, non-electrolyte and electrolyte solutions, surface phenomena, high polymers, gravitation.

Mr. Gelbart, Mr. Knobler (F,W)

**125. Computers in Chemistry.** Lecture, three hours. Prerequisites: courses 110A, 110B, 113, and a working knowledge of FORTRAN IV or PL/1. Discussion of computer techniques, including matrix manipulation, solution of differential equations, data acquisition and instrumental control, and their applications to chemical problems in quantum mechanics, thermodynamics, and kinetics.

Mr. Kasper, Mr. Levine (F)

**133A. Intermediate Organic Chemistry.** Lecture and quiz, three hours; laboratory, four hours. Prerequisite: course 24 with grade C- or higher. Lecture: Structure, reactivity and spectroscopic properties of organic compounds. Laboratory: Methods of organic reactions, synthesis, isolation and characterization.

Mr. Jung, Mr. Murdoch (F,W)

**133AG. Intermediate Organic Chemistry. (½ course)** Lecture and quiz, three hours. Open only by consent of the Chemistry Graduate Adviser to graduate students who have not taken course 133A in this institution.

Mr. Jung, Mr. Murdoch (F,W)

**133B. Intermediate Organic Chemistry.** Lecture and quiz, three hours; laboratory, four hours. Prerequisite: course 133A with grade C- or higher. Lecture: Reactions, mechanisms and synthesis in organic chemistry; common classes of compounds and reactions. Laboratory: Methods of organic reactions, synthesis, isolation and characterization.

Mr. Jung, Mr. Murdoch (W,Sp)

**133BG. Intermediate Organic Chemistry. (½ course)** Lecture and quiz, three hours. Open only by consent of the Chemistry Graduate Adviser to graduate students who have not taken course 133B in this institution.

Mr. Jung, Mr. Murdoch (W,Sp)

**133C. Intermediate Organic Chemistry.** Lecture and quiz, three hours; laboratory, four hours. Prerequisite: course 133B with grade C- or higher. Lecture: Reactions, mechanisms and synthesis in organic chemistry; complex molecules and natural products; polymers. Laboratory: Methods of organic reactions, synthesis, isolation and characterization.

Mr. Jung, Mr. Murdoch (F,Sp)

**133CG. Intermediate Organic Chemistry. (½ course)** Lecture and quiz, three hours. Open only by consent of the Chemistry Graduate Adviser to graduate students who have not taken course 133C in this institution.

Mr. Jung, Mr. Murdoch (F,Sp)

**136. Organic Structural Methods.** Lecture, two hours; laboratory, eight hours. Prerequisites: courses 133A, 133B, 133C, or equivalent, with grades of C- or higher, or consent of instructor. A laboratory course in organic structure determination by chemical and spectroscopic methods; microtechniques.

Mr. Foote (F)

**143A. Structure and Mechanism in Organic Chemistry.** Lecture and discussion, three hours. Prerequisite: courses 133C (may be taken concurrently), 110B, 113, or equivalent, with grade of C- or higher, or consent of instructor. Mechanisms of organic reactions. Acidity and acid catalysis; linear free energy relationships; isotope effects. Molecular orbital theory; photochemistry; pericyclic reactions.

Mr. Chapman (F)

**143B. Mechanism and Structure in Organic Chemistry.** Lecture and discussion, three hours. Prerequisite: course 143A with grade C- or higher, or consent of instructor. Mechanisms of organic reactions, structure and detection of reactive intermediates.

Mr. Foote (W)

**144. Laboratory Methods in Organic Synthesis.** Lecture, two hours; laboratory, eight hours. Prerequisite: course 133C, or equivalent instruction including spectroscopic methods of organic chemistry, with grade of C- or higher or consent of instructor. Laboratory methods of synthetic organic chemistry including reactions under inert atmosphere, semimicro-scale reaction techniques, synthesis of natural products and molecules of theoretical interest.

Mr. Chapman (Sp)

**144G. Laboratory Methods in Organic Synthesis. (½ course)** Lecture, two hours. Consists of the lecture portion only of course 144. Open only by consent of the Chemistry Graduate Adviser to graduate students who have not taken course 144 in this institution and who do not wish to take the laboratory of course 144.

Mr. Chapman (Sp)

**152. Biochemistry.** Lecture, four hours. Prerequisite: course 22. Survey of biochemistry. May not be used in the Chemistry or Biochemistry major.

Mr. Boyer (F)

**154. Biochemical Methods.** Lecture and quiz, two hours; laboratory, eight hours. Prerequisite: course 25 (or 24); course 157A or 152 recommended. Applications of biochemical procedures to metabolic reactions; properties of living systems; enzymes; proteins; nucleic acids and other tissue constituents.

Mr. Gralla, Mr. Jordan, Mr. Schumaker, (F,W,Sp)

**156. Physical Biochemistry.** Lecture, four hours. Prerequisite: course 110A. Solution thermodynamics and electrochemistry of biochemical systems; enzyme kinetics; physical biochemistry of proteins and membranes.

Mr. Eisenberg, Mr. Reiser (F,Sp)

**157A. Biochemistry.** Lecture, four hours; discussion, one hour. Prerequisites: course 156, course 133B prerequisite or concurrent. Enzymes; metabolic pathways and their integration and regulation; biological energetics.

Mr. Atkinson (W)

**157B. Biochemistry.** Lecture, four hours; discussion, one hour. Prerequisite: course 157A. Biosynthetic metabolism; synthesis of nucleic acids and proteins, and control of these processes.

Mr. Atkinson (Sp)

**158. Seminar in Biochemistry. (½ course)** Discussion, one hour. Prerequisite: course 22. Small-scale discussions. Topics will vary between sections, and may include, for example, the historical and conceptual foundations of Biochemistry, relations of Biochemistry to medical and social problems, and surveys of areas of current research interest. Pass/Not Pass grades are used for this course. May be repeated for credit.

**173. Structural Inorganic Chemistry.** Lecture, three hours. Prerequisites: courses 113, 110A (may be taken concurrently); 133B recommended. Introductory survey of structure and bonding in inorganic compounds; molecular stereochemistry; donor-acceptor interactions; coordination compounds of the transition metals; elements of crystal field and ligand field theory.

Mr. Hawthorne, Mr. Zink (F,Sp)

**174. Inorganic and Metalorganic Laboratory Methods.** Lecture, two hours; laboratory, eight hours. Prerequisites: courses 24, 173 or consent of the instructor. Synthesis of inorganic compounds including air-sensitive materials; dry-box, vacuum line and high-pressure techniques; Schlenk methods; chromatographic and ion exchange separations.

Mr. Hawthorne, Mr. Kaesz (W)

**175. Inorganic Reaction Mechanisms.** Lecture and quiz, three hours. Prerequisites: courses 110A, 110B and 113 or consent of the instructor. Survey of inorganic reactions; mechanistic principles; electronic structure of metal ions; transition-metal coordination chemistry; inner- and outer-sphere and chelate complexes; substitution, isomerization and racemization reactions; stereochemistry; oxidation-reduction, free-radical, polymerization and photochemical reactions of inorganic species.

Mr. Hawthorne (Sp)

**176. Group Theory and Applications to Inorganic Chemistry.** Lecture, three hours. Prerequisites: courses 113, 173. Group theoretical methods; molecular orbital theory; ligand field theory; electronic spectroscopy; vibrational spectroscopy.

(F)

**184. Chemical Instrumentation.** Lecture and quiz, two hours; laboratory, eight hours. Prerequisite: course 110A. Theory and practice of instrumental techniques of chemical and structural analysis including atomic absorption spectroscopy, gas chromatography, mass spectrometry, nuclear magnetic resonance, polarography, x-ray fluorescence and other modern methods.

Mr. Kasper, Mr. Strouse, (F,Sp)

**190A-190ZZ. Undergraduate Thesis Research.** Prerequisite: two quarters of chemistry 199A-ZZ on related material and approval of the Undergraduate Adviser and Research Director. Final quarter of an integrated one-year research project. Can consist of experimental and/or theoretical research or, in some cases, a comprehensive review of a given area. A thesis

embodying the totality of the year's work is to be submitted, and an oral presentation will be made. This course is suggested, but not required, for those seeking departmental honors at graduation.

The Staff (F,W,Sp)

**196. Special Courses in Chemistry. (½ to 1 course)** To be arranged. Prerequisite: consent of the Chemistry Undergraduate Adviser.

The Staff (F,W,Sp)

**199A-ZZ. Directed Individual Study or Research for Undergraduate Students. (½ to 2 courses)** To be arranged with individual faculty members involved. Each faculty member has a unique letter designation, which is the same for the 199 and 599 series. Prerequisite: advanced Junior standing and 3.0 GPA in the major, or Senior standing, and consent of the Chairman of the Department of Chemistry. This consent must be based upon a written proposal outlining the study or research to be undertaken. The proposal should be worked out in consultation with the faculty member involved and submitted at the Chemistry Undergraduate Adviser's Office before the first day of the quarter. At the close of each quarter, a report describing the student's program of study or research and signed by the student and supervising faculty member must be submitted to the Chemistry Undergraduate Adviser, who should be consulted concerning the format of the report and deadlines for submission. A maximum of three 199 courses may be taken. Pass/Not Pass grades are used for this course. Approval of other than four units per quarter is allowed only under unusual circumstances.

The Staff (F,W,Sp)

## Graduate Courses

**207. Organometallic Chemistry.** Lecture and discussion, three hours. Prerequisite: course 143 (may be taken concurrently) or consent of instructor. Survey of synthesis, structure and reactivity (emphasizing a mechanistic approach) of compounds containing carbon bonded to elements selected from the main group metals, the metalloids and the transition metals; olefin  $\pi$ -complexes and metal carbonyls; applications in catalysis and organic synthesis.

**213. Advanced Quantum Chemistry.** Lecture, four hours. Prerequisites: course 115B, Physics 131. Topics in quantum chemistry selected from molecular structure, collision processes, theory of solids, symmetry and its applications, and theory of electromagnetic radiation.

Mr. McMillan (W)

**215. Molecular Spectra, Diffraction and Structure.** Lecture and quiz, four hours. Prerequisites: course 115B, Physics 131. Selected topics from electronic spectra of atoms and molecules; vibrational, rotational and Raman spectra; magnetic resonance spectra; x-ray, neutron and electron diffraction; coherence effects.

Mr. El-Sayed (F)

**218. Physical Chemistry Student Seminar. (½ course)** Seminars are presented by staff, outside speakers, postdoctoral fellows and graduate students. Each student doing research in physical chemistry is required to give a seminar on a timely and significant topic outside his immediate research specialty, ordinarily during the second year of graduate study. Satisfactory/unsatisfactory grades are used for this course. May be repeated for credit.

The Staff in Physical Chemistry (F,W,Sp)

**221A-221Z. Advanced Topics in Physical Chemistry. (½ to 1 course each)** Lecture, two to four hours. Prerequisite: consent of the instructor. Each course will encompass a recognized specialty in physical chemistry, and will be taught by a staff member whose research interests embrace that specialty.

The Staff in Physical Chemistry

**223. Statistical Mechanics.** Lecture and quiz, four hours. Prerequisites: courses 115B, 123B, Physics 131. Fundamentals of statistical mechanics; classical equations of state; coulomb systems; phase transitions; quantum statistical mechanics; quantum corrections to the equation of state; density matrix; second quantization.

Mr. Baur (Sp)

**225. Chemical Kinetics.** Lecture and quiz, four hours. Prerequisites: courses 115A, 123A, 123B. Theories of chemical reactions and their applications to experimental systems; general kinetic postulates; theories of elementary reactions; energy transfer processes; experimental studies.

Mr. Kasper (Sp)

**M226. Chromosome Structure and Regulation.** (Same as Microbiology M226, Biology M226, Biological Chemistry M226 and Microbiology and Immunology M226.) Prerequisite: consent of instructor. Lectures and panel discussions on the structural and functional organization of eukaryotic chromosomes. Satisfactory/unsatisfactory grades are used for this course.

**228. Chemical Physics Seminar. (½ course)** Seminars will be presented by staff, outside speakers, postdoctoral fellows and graduate students. Satisfactory/unsatisfactory grades are used for this course. May be repeated for credit.

The Staff in Chemical Physics (F,W,Sp)

**M230A. Structural Molecular Biology. (½ course)** (Same as Bacteriology M230A and Biology M230A.) Lecture and discussion, three hours. Prerequisite: consent of instructor based on a written research proposal. Fundamentals of electron microscopy of macromolecules and supramolecular structures, emphasizing quantitative microscopy, high resolution techniques, nucleic acid analysis, and studies on viruses and protein crystals.

Mr. Eisenberg, Mr. Eiserling, Mr. Kasamatsu

**M230B. Structural Molecular Biology. (½ course)** (Same as Bacteriology M230B and Biology M230B.) Lecture and discussion, three hours. Prerequisites: Physics 6C, Mathematics 3C and

consent of instructor. Selected topics from the following: principles of biological structure; structures of globular proteins and RNA's; structures of fibrous proteins, nucleic acids, and polysaccharides; harmonic analysis and Fourier transforms; principles of electron, neutron, and x-ray diffraction; optical and computer filtering; three-dimensional reconstruction.

Mr. Eisenberg, Mr. Eiserling, Mr. Lake

**M230C. Structural Molecular Biology Laboratory.** (½ course) (Same as Bacteriology M230C and Biology M230C.) Laboratory, 10 hours. Prerequisite: consent of instructor, based on a written research proposal. Laboratory: practical experience with electron microscopy of macromolecules and supramolecular structures, emphasizing quantitative microscopy, high resolution techniques, nucleic acid analysis, and studies on viruses and protein crystals. Not offered Fall 1978.

Mr. Eisenberg, Mr. Eiserling, Mr. Kasamatsu

**M230D. Structural Molecular Biology Laboratory.** (½ course) (Same as Bacteriology M230D and Biology M230D.) Laboratory, 10 hours. Prerequisite: course M230B concurrent. Methods in structural molecular biology, including experiments utilizing the following procedures: single crystal x-ray diffraction, low angle x-ray diffraction, electron diffraction, optical diffraction, optical filtering, three-dimensional reconstruction from electron micrographs, and model building.

Mr. Eiserling, Mr. Lake, Mr. Sweet

**232. Stereochemistry and Conformational Analysis.** Lecture and discussion, three hours. Prerequisite: course 143 (may be taken concurrently) or consent of instructor. Molecular symmetry, chirality, prochirality, stereochemistry in vinyl polymers, atropisomerism, diastereomeric interactions in solution, conformations of acyclic and cyclic molecules.

**236. Spectroscopic Methods of Organic Chemistry.** Lecture and discussion, three hours. Prerequisite: course 143 (may be taken concurrently) or consent of instructor. Proton and carbon-13 nuclear magnetic resonance; photoelectron, ultraviolet, infrared, and Raman spectroscopy; optical rotatory dispersion and circular dichroism; mass spectrometry.

**241A-241Z. Special Topics in Organic Chemistry.** Lecture and discussion, three hours. Prerequisite: course 143 (may be taken concurrently), or equivalent, or consent of instructor. Each course will encompass a recognized specialty in organic chemistry, generally taught by a staff member whose research interests embrace that specialty.

**242. Organic Photochemistry.** Lecture and discussion, three hours. Prerequisite: course 143 (may be taken concurrently) or consent of instructor. Interactions of light with organic molecules, mechanistic and preparative photochemistry.

**244. Strategy and Design in Organic Synthesis.** Lecture and discussion, three hours. Prerequisite: course 143 (may be taken concurrently) or consent of instructor. The theory behind the planning of syntheses of complex molecules from simpler ones. Organic reactions and their use in the synthetic process. The reasoning and art involved in organic synthesis.

**245. Applications of Electronic Theory in Organic Chemistry.** Lecture and discussion, three hours. Prerequisite: course 143 (may be taken concurrently) or consent of instructor. A review of molecular orbital theory; introduction to alternative theoretical methods; aromaticity and homoaromaticity; Hückel and Möbius conjugation; Woodward-Hoffmann theory of concerted pericyclic reactions; the estimation of through-bond and through-space interactions; an introduction to photoelectron spectroscopy; related special topics.

**246. Bio-Organic Chemistry.** Lecture and discussion, three hours. Prerequisite: course 143 (may be taken concurrently) or consent of instructor. Organic chemical models for biological processes; synthetic models for enzymic complexation, catalysis and inhibition; models for transport; solid support chemistry; mechanisms for differential complexation.

**247. Organic Colloquium.** (½ course) Seminars in organic chemistry and related areas will be presented by outside speakers, department faculty, and postdoctoral and graduate students. Satisfactory/unsatisfactory grades are used for this course. May be repeated for credit.

The Staff in Organic Chemistry

**248. Organic Chemistry Student Seminar.** (½ course) Seminars are presented by staff, outside speakers, postdoctoral fellows and graduate students. Each student doing research in organic chemistry is required to give a seminar on a timely and significant topic outside his immediate research specialty, ordinarily during the second year of graduate study. Satisfactory/unsatisfactory grades are used for this course. May be repeated for credit.

The Staff in Organic Chemistry

**249. Problems in Advanced Organic Chemistry.** (½ course) Problems in organic reaction mechanisms, synthesis, structure determination, stereochemistry, spectroscopy, electronic theory, photochemistry, and organometallic chemistry are discussed, with an emphasis on current literature. Intended primarily for first and second year graduate students as preparation for cumulative exams. Satisfactory/unsatisfactory grades are used for this course. May be repeated for credit.

The Staff in Organic Chemistry

**251A-251Z. Advanced Topics in Biochemistry.** (½ course) Lecture, two hours. Prerequisite: consent of the instructor. Each course will encompass a recognized specialty in biochemistry, and

will be taught by a staff member whose research interests embrace that specialty.

The Staff in Biochemistry

**252. Experimental Techniques in Cell Culture and Animal Virology.** Lecture, two hours; laboratory, eight hours. Prerequisite: satisfactory completion of a course in General Genetics, Chemistry 152 or equivalent and consent of the instructor. Experimental methods used in molecular biological and biochemical analysis of processes in higher eukaryotes with emphasis on animal cells: model systems for studying differentiation, development, chemical and virus induced malignant transformation; characterization of cell and viral nucleic acids; tumor production, explanation and analysis.

**M253. Macromolecular Structure.** (1½ courses) (Same as Biological Chemistry M253.) Lecture and quiz, four hours. Prerequisites: Chemistry 110A; Chemistry 156; Chemistry 157A-157B or Biological Chemistry 101A-101B or 201A-201B or equivalent. Chemical and physical properties of proteins, nucleic acids and other macromolecular complexes with emphasis on theory and methodology; correlation of structure and biological properties; chemical synthesis and properties of polypeptides and polynucleotides.

The Staff in Biochemistry and Biological Chemistry (F)

**254. Advanced Biochemical Methods.** Lecture and quiz, two hours; laboratory, eight hours. Prerequisite: course 156, Chemistry 157A, Chemistry 157B recommended (may be taken concurrently), or consent of the instructor. Theoretical and practical basis of metabolic, chromatographic, kinetic, electrophoretic, ultracentrifugal, isotopic and other techniques as applied to biochemical systems.

Mr. Eisenberg, Mr. Schumaker (W)

**M255. Protein Dynamics and Function.** (Same as Biological Chemistry M255.) Lecture and quiz, four hours. Prerequisites: Chemistry 110A; Chemistry 156; Chemistry 157A-157B or Biological Chemistry 101A-101B or 201A-201B or equivalent. Recommended: Chemistry-Biological Chemistry M253. Discussion of enzymes and enzymic catalysis, emphasizing mechanisms, actions of modifiers and inhibitors, and structural aspects of enzyme function; bioenergetics.

Mr. Boyer (Sp)

**M257. Physical Chemistry of Biological Macromolecules.** (½ course) (Same as Biological Chemistry M257.) Lecture, two hours. Prerequisite: Chemistry 22 and Chemistry 110A. Theory of hydrodynamic, thermodynamic, optical and x-ray techniques used to study the structure and function of biological macromolecules.

Mr. Schumaker (F)

**257L. Hydrodynamic and Optical Characterization of Biopolymers.** Lecture, two hours; laboratory, eight hours. Prerequisite: course M257 completed or concurrent. A laboratory course covering a variety of hydrodynamic and optical techniques, and including an individual project dealing with: sedimentation velocity, sedimentation equilibrium, buoyant density gradient centrifugation, capillary and rotating cylinder viscometry, circular dichroism, or intensity fluctuations of scattered laser light.

**258. Biochemistry Student Seminar.** (½ course) Seminars are presented by graduate students on topics of current biochemical interest. Satisfactory/unsatisfactory grades are used for this course. May be repeated for credit.

The Staff in Biochemistry (F,W,Sp)

**259. Mechanisms in Regulation of Transcription.** Lecture, three hours. Prerequisite: one of the following courses, M253 or M267, or consent of instructors. Prokaryotic operons; initiation and termination; DNA regulatory sequences and regulator protein-DNA interactions; RNA polymerases; regulation of eukaryotic transcription; hormones, differentiation, the cell cycle; role of chromatin structure in mediating regulation.

**M261. Advanced Chemistry and Biochemistry of Lipids.** (½ course) (Formerly numbered Biological Chemistry 261 and same as Biological Chemistry M261.) Lecture, two hours. Prerequisites: Chemistry 157A-157B or Biological Chemistry 101A-101B or 201A-201B, or equivalent. Knowledge of elementary chemistry and biochemistry of lipids essential. The biochemistry of lipids including chemical and physical characteristics of lipids and their metabolism.

Mr. Howton, Mr. Mead, Mr. Poppak

**262. Biological Energy Transductions.** Prerequisite: course M253. Molecular basis of energy-transducing processes, including oxidative and photosynthetic phosphorylation, other energy-linked oxidative functions, membrane active transport, muscle contraction, and special sensory functions.

**M263. Cellular Metabolism and Its Regulation.** (Same as Biological Chemistry M263.) Lecture, two hours. Prerequisites: Chemistry 156; Chemistry 157A-157B or Biological Chemistry 101A-101B or 201A-201B or equivalent. Recommended: Chemistry-Biological Chemistry M253. Analysis of regulatory controls involved in cellular energy and biosynthetic metabolism. Consideration of comparative aspects of metabolism in relation to physiological function.

Mr. Atkinson, Mr. West and the Staff in Biological Chemistry (W)

**266. Seminar in Techniques for the Study of Gene Regulation.** (½ course) Prerequisite: course 259 or consent of instructors. A seminar to discuss specific experimental approaches being taken in the study of gene regulation. Emphasis will be on the specific biochemical techniques being used to study regulatory protein-DNA interactions in diverse biological model systems.

**M267. Macromolecular Metabolism and Subcellular Organization.** (1½ courses) (Same as Biological Chemistry M267.) Lecture, two hours. Prerequisites: Chemistry 157A-157B or Biological Chemistry 101A-101B or 201A-201B or equivalent; Recommended: Chemistry-Biological Chemistry M253. Metabolism of nucleic acids and proteins; biosynthesis of complex lipids and polysaccharides; structure and properties of cellular organelles.

Mr. Zabin

**268. Biochemistry Research Seminar.** (½ course) Seminars are presented by staff, outside speakers, postdoctoral fellows and graduate students on topics of current biochemical research interest. Satisfactory/unsatisfactory grades are used for this course. May be repeated for credit.

The Staff in Biochemistry (F,W,Sp)

**M269. Developmental Biochemistry.** (½ course) (Same as Biological Chemistry M269.) Prerequisite: Chemistry M267 or consent of instructor. This course will deal with the biochemical aspects of development, specific tissue and cell function, and differential gene expression. The biochemistry of cell division, macromolecular synthesis, chromatin function in gene expression, cell-cell interactions, membrane organization, and growth will be studied as they contribute to such topics as hormone induction, morphogenesis and viral transformation. Emphasis will be placed on the use of differentiating in vivo systems and cell culture as models.

**271A-271Z. Advanced Topics in Inorganic Chemistry.** (½ to 1 course each) Lecture, two to four hours. Prerequisite: consent of the instructor. Each course will encompass a recognized specialty in inorganic chemistry, and will be taught by a staff member whose research interests embrace that specialty.

The Staff in Inorganic Chemistry

**273. Nuclear Chemistry.** Lecture and quiz, four hours. Prerequisite: consent of the instructor. Radioactivity; nuclear reactions; interactions of nuclear radiation with matter; nuclear detection methods; preparation, isolation and identification of radionuclides; chemical effects of nuclear transformations; isotope effects; application of isotopes in chemistry. (Sp)

**276. Physical Methods for the Characterization of Inorganic Compounds.** Lecture, three hours. Prerequisite: course 176 or consent of instructor. Applications of spectroscopic techniques including IR, Raman, visible, UV, NMR, ESR, and NQR to the elucidation of structure and bonding in inorganic and organometallic compounds.

Mr. Strouse (W)

**278. Inorganic Chemistry Student Seminar.** (½ course) Seminars are presented by staff, outside speakers, postdoctoral fellows and graduate students. Each student doing research in inorganic chemistry is required to give a seminar on a timely and significant topic outside his immediate research specialty, ordinarily during the second year of graduate study. Satisfactory/unsatisfactory grades are used for this course. May be repeated for credit.

(F,W,Sp)

## Individual Study and Research

**596A-596Z. Directed Individual Study or Research.** (½ to 4 courses) To be arranged with the member of the faculty who will direct the study or research. The member of the faculty directing the study or research will be identified by the same two-letter code used to identify his 599 research course. Prerequisite: consent of the Chemistry Graduate Adviser. With the consent of the Chemistry Graduate Adviser, courses of directed individual study, but not research courses, may be used to fulfill the departmental requirement for the Master's degree of three courses selected from courses 115A, 115B, 123A, 123B, 143, or any graduate level course. Graded on a satisfactory/unsatisfactory basis.

The Staff (F,W,Sp)

## Courses in Related Fields

**597. Preparation for the Doctoral Qualifying Examination or the Master's Comprehensive Examination.** (½ to 2 courses) Prerequisite: consent of the Chemistry Graduate Adviser. Course 597 may not be used to fulfill any of the course requirements for the Master's or Doctor's degrees. Graded on a satisfactory/unsatisfactory basis. The Chemistry Graduate Adviser (F,W,Sp)

**598A-598Z. Research for and Preparation of the Master's Thesis.** (½ to 4 courses) Each member of the faculty supervises research of master's students and holds research group meetings, seminars, and discussions with the students that take his master's research course which is identified by the same two-letter code used to identify his 599 research course. Research courses in the 596A-Z, 598A-Z, and 599A-Z series may be used to fulfill not more than six of the nine quarter courses required for the M.S. Degree.

The Staff (F,W,Sp)

**599A-599Z. Research for and Preparation of the Doctoral Dissertation.** (½ to 4 courses) Each member of the faculty supervises research of doctoral students and holds research group meetings, seminars, and discussion with the students that take his doctoral research course. Each faculty member has his own doctoral research course identified by a two letter code as follows: F.A.L. Anet, 599FA; D.E. Atkinson, 599DA; M.E. Baur, 599MB; K.D. Bayes, 599KB; P.D. Boyer, 599PB; D.J. Carram, 599DC; D.S. Eisenberg, 599SE; M.A. El Sayed, 599ME; P.S. Farrington, 599FF; C.S. Foote, 599CF; W.M. Gelbart, 599WG; J.A. Gladysz, 599JG; J.D. Gralla, 599DG; E.R. Hardwick, 599RH; M.F. Hawthorne, 599FH; J.V. Heller, 599HE; J.M. Jordan, 599JG; H.D. Kaesz, 599KH; J.V.V.

Kasper, 599JK; D. Kivelson, 599DK; C.M. Knobler, 599CK; H.G. Martinson, 599HM; W.G. McMillan, 599WM; J.P. McTague, 599PM; J.R. Murdoch, 599JM; M.F. Nicol, 599NM; E. Reiser, 599ER; H. Reiss, 599HR; V.N. Schurmaker, 599VS; R.L. Scott, 599RS; R.A. Smith, 599AS; R.V. Stevens, 599ST; C.E. Strouse, 599CS; K.N. Trueblood, 599KT; J.T. Wasson, 599JW; R.L. Weiss, 599RW; C.A. West, 599CW; J.L. Zink, 599JZ. (F,W,Sp)

Many courses of interest to Chemistry and Biochemistry majors are listed under Physics, Biology, and Bacteriology. Outside the College of Letters and Science, the attention of students is directed to Engineering 238D, Atomic and Molecular Collisions and Engineering 232D, Molecular Dynamics.

## CLASSICS

(Department Office, 7349 Bunche Hall)

Philip Levine, Ph.D., *Professor of Classics*.  
Bengt T.M. Lofstedt, Ph.D., *Professor of Mediaeval Latin*.  
Jan Puhvel, Ph.D., *Professor of Classics and Indo-European Studies*.  
Milton V. Anastos, Ph.D., *Emeritus Professor of Byzantine Greek and History*.  
Frederick M. Carey, Ph.D., *Emeritus Professor of Classics*.  
Paul A. Clement, Ph.D., *Emeritus Professor of Classics and Classical Archaeology*.  
Herbert B. Hoffleit, Ph.D., *Emeritus Professor of Classics*.  
Albert H. Travis, Ph.D., *Emeritus Professor of Classics*.  
Steven Lattimore, Ph.D., *Associate Professor of Classics and Classical Archaeology (Chairman of the Department)*.  
Bernard Frischer, Ph.D., *Assistant Professor of Classics*.  
Michael W. Haslam, Ph.D., *Assistant Professor of Classics*.  
\_\_\_\_\_, *Assistant Professor*.  
\_\_\_\_\_, *Assistant Professor*.

Helen F. Caldwell, M.A., *Senior Lecturer in Classics, Retired*.  
Barbara E. Kilian, M.A., *Lecturer in Classics*.  
Evelyn V. Mohr, M.A., *Lecturer in Classics*.

### Major Fields in the Department

The student may take the major in Greek, in Latin, or in the Classics (i.e., Greek and Latin). Students considering a major in the Department should consult the adviser as soon as possible in their University career, but in no case later than the point at which they are about to take upper division courses.

### Preparation for the Major

Required: Greek 1, 2, 3 and Latin 1, 2, 3, or the equivalent.

### The Major

**Greek:** Required: (1) nine upper division courses in Greek, including Greek 110; (2) one upper division course in Latin; (3) Classics 142 and either Classics 141 or 143; (4) two courses in Greek or Roman History (History 112A-112B, 113A-113B, 111B, 111C); (5) two additional courses in one or two of the related areas, classical archaeology (Classics 151A-151B-151C), classical mythology (Classics 161, 162), Greek and Roman religion (Classics 166A-166B), ancient philosophy (Philosophy 101, 102, Greek 121, 122, 123, 124), Byzantine civilization (Classics M70, M170A, M170B, History 123A-123B-123C), medieval Latin literature (Latin 131, 133), medieval history (History 121A-121B). Total required: 16 courses.

**Latin:** Required: (1) nine upper division courses in Latin, including Latin 110; (2) one upper division course in Greek; (3) Classics 143 and either Classics 141 or 142; (4) two courses in Greek or Roman history (History 112A-112B, 113A-113B, 111B-111C); (5) two additional courses in one or two of the related areas, classical archaeology (Classics 151A-151B-151C), classical mythology (Classics 161, 162), Greek and Roman religion (Classics 166A-166B), ancient philosophy (Philosophy 101, 102, Greek 121, 122, 123, 124), Byzantine civilization (Classics M70, M170A, M170B, History 123A-123B-123C), medieval Latin literature (Latin 131, 133), medieval history (History 121A-121B). Total required: 16 courses.

**Classics (Greek and Latin):** Required: (1) fourteen upper division courses, seven in Greek and seven in Latin, including Greek 110 and Latin 110; (2) two courses in the history of Graeco-Roman literature in English translation (Classics 141, 142, 143); (3) two courses in Greek or Roman history (History 112A-112B, 113A-113B, 111B, 111C). Total required: 18 courses. Additional courses in related areas are recommended (see under Requirement 5 of the Greek or Latin major).

**Note:** Students in any of the three majors are permitted to take Greek 200A-200B-200C and Latin 200A-200B-200C. Two of these courses may be counted as replacing one course in Requirement 3 of the Greek and Latin majors and Requirement 2 of the Classics major, as well as two courses in Requirement 1 of all three majors, thereby reducing the total number of required courses by one.

### JOINT MAJOR FIELDS WITH OTHER DEPARTMENTS

**English-Greek**  
**Preparation for the Major**

English 2, 10A, 10B, 10C; Greek 1, 2, 3.

### The Major

(1) Seven courses selected from English 140-190 in consultation with an adviser in the Department of English; (2) seven upper division or graduate courses in Greek, including 100 and either 101A or 101B, chosen in consultation with an adviser in the Department of Classics; of these seven courses at least two will be in poetry and two in prose. Total required: 14 courses.

**English-Latin**  
**Preparation for the Major**

English 2, 10A, 10B, 10C; Latin 1, 2, 3.

### The Major

(1) Seven courses selected from English 140-190 in consultation with an adviser in the Department of English; (2) seven upper division or graduate courses in Latin, including 105A and 113, chosen in consultation with an adviser in the Department of Classics; of these seven courses, at least two will be in poetry and two in prose. Total required: 14 courses.

### Admission to Graduate Status

A candidate for admission to graduate status in the Department must meet, in addition to general University requirements, the minimum requirement of a Bachelor of Arts degree from this University, or its equivalent, with a major in the Classics (Greek and Latin) or in Greek or in Latin (for the M.A. in Greek or in Latin only). Candidates deficient in formal preparation may in exceptional cases be granted provisional admission.

### Special Requirements for the Secondary Teaching Credential in Latin

Students preparing for this credential are required to take Latin 110 and Latin 370. Latin 370 may not be counted as part of the minimum course requirements for the M.A. degree.

### Requirements for the Master's Degree in Classics

**General University Requirements.** The Department follows the comprehensive examination plan.

**Foreign Language.** During the first year of study, the student must pass the standard reading examination set by the Graduate Division in French or German. Completion of French 5 or German 5 in this University with a minimum grade of C, or the equivalent, is acceptable in lieu of such examination.

**Program of Study.** Nine courses, including Greek 210 and Latin 210, at least one course from Greek 200A-200B-200C and one from Latin 200A-200B-200C, and one further 200-series course in each literature (chosen from 201-229). The remaining three courses are selected in consultation with the Graduate Adviser from the upper division and graduate offerings of the department, or exceptionally from other departments or programs in related fields such as archaeology, Indo-European studies, linguistics, ancient history, and ancient philosophy. In addition, the student must complete the Reading Lists in Greek and Latin authors established for the M.A. degree in Classics.

**Comprehensive Examinations.** Three written two-hour examinations in (1) sight translation from Greek and Latin, (2) translation of passages from works on the Reading Lists, and (3) the history of Greek and Latin literature.

### Requirements for The Master's Degree in Greek or in Latin

The General University and Foreign Language requirements are identical with those for the M.A. in Classics.

**Program of Study.** Seven upper division or graduate courses in Greek (Latin), including Greek (Latin) 210, at least two courses from Greek (Latin) 200A-200B-200C, and one further 200-series course in Greek (Latin) literature (chosen from 201-229). Two further upper division or graduate courses are chosen in consultation with the Graduate Adviser. Total: 9 courses.

**Comprehensive Examinations.** Three written two-hour examinations in (1) sight translation from Greek (Latin), (2) translation of Greek (Latin) passages from the Greek (Latin) part of the Reading Lists for the Master's degree in Classics, and (3) the history of Greek (Latin) literature.

### Requirements for the Doctor's Degree

**Admission to the Doctoral Program.** Prerequisite for admission is an M.A. degree in Classics, with distinction, from this University, or its equivalent. In cases of doubtful equivalency the Department may allow provisional admission and require the candidate pass with distinction during the first year of residence a set of tests identical with the M.A. comprehensive examination.

### General Requirements

**Foreign Language.** French or German, in addition to and in the same manner as the language studied for the M.A. degree in Classics (see above).

**Program of Study.** At least one year of full-time graduate study (normally 8-9 courses) is required in preparation for the qualifying examinations. The student may elect to specialize in Classical Literature and Philology or in one of the following areas: Classical Linguistics, Ancient History, Ancient Philosophy, Classical Archaeology, Patristic or Byzantine Studies, Mediaeval Latin Studies. The choice of formal courses and seminars is determined in consultation with the Graduate Adviser and the individual Guidance Counselor so as to balance general competency and area specialization: e.g., if all of the M.A. courses were in Classical Literature and Philology, specialists in other areas may

concentrate entirely on those areas; if courses in the area of specialization were included in the M.A. electives, further graduate courses in the literatures are indicated. In addition, all students must complete the Doctoral Reading Lists in Greek and Latin authors which are additional to the M.A. lists and differ somewhat depending on area specialization.

**Qualifying Examinations for Advancement to Doctoral Candidacy and Conferment of the C.Phil. Degree.** Three written three-hour examinations, supervised by the student's departmental guidance committee, in translation and interpretation of (1) Greek and (2) Latin texts, partly from the Reading Lists and partly at sight, and (3) on the area of specialization. The oral examination, conducted by the Doctoral Committee, covers both the area of specialization and the general field of Classical studies.

**Dissertation.** A dissertation must be submitted, on a subject approved by the candidate's doctoral committee and normally relating to his Special Field. The dissertation must be the result of original research and constitute a significant contribution to knowledge.

**Final Examination.** This oral examination, administered by the doctoral committee, covers primarily the dissertation and its relation to the field in which the subject lies.

### Courses Which Do Not Require a Knowledge of Greek or Latin

Classics 10, 20, M70, 141, 142, 143, 151A, 151B, 151C, 161, 162, 166A, 166B, 168, M170A, M170B, 230A, 251A, 251B, 251C, 251D, 252, 253, 254, 255, 260, 268; Greek 40; Latin 40.

## Classics

### Lower Division Course

**10. Survey of Classical Greek Culture.** Lectures, many illustrated, on Greek life and culture from the age of Homer to the Roman conquest. Discussion of art, literature, philosophy, and mythology. Readings in the Greek authors are suggested, but not required. A knowledge of Greek is not required. Mr. Lattimore

**20. Survey of Roman Civilization.** A study of life and culture of Rome from the time of its foundation to the end of antiquity. A survey of art, literature, and political thought of the Romans. Selections from Latin authors are read in translation. A knowledge of Latin is not required. Mr. Frischer

**M70. Survey of Mediaeval Greek Culture.** (Formerly numbered 145A. Same as History M70.) Classical roots and mediaeval manifestation of Byzantine civilization; political theory, Roman law, pagan critique of Christianity, literature, theology, and contribution to the Renaissance (including the discovery of America).

The Staff

### Upper Division Courses

**141. A Survey of Greek Literature in English.** A study of classical Greek literature, exclusive of the drama, with readings in English. The Staff

**142. Ancient Drama.** A study of the major Greek and Latin dramas in translation. Mr. Haslam

**143. A Survey of Latin Literature in English.** A study of classical Latin literature, exclusive of the drama, with readings in English. The Staff

**151A. Classical Archaeology: Graeco-Roman Architecture.** A general introduction to the study of Aegean, Greek, and Roman architecture. Mr. Lattimore

**151B. Classical Archaeology: Graeco-Roman Sculpture.** A general introduction to the study of Aegean, Greek, and Roman sculpture. Mr. Lattimore

**151C. Classical Archaeology: Graeco-Roman Painting.** A general introduction to the study of Aegean, Greek, and Roman painting. Mr. Lattimore

**151D. Classical Archaeology: The Aegean Bronze Age.** The course is a survey of the prehistoric art and archaeology of the Greek lands. A knowledge of Greek is not required. The Staff

**161. Introduction to Classical Mythology.** The origins of classical myth; the substance of divine myth and heroic saga; the place of myth in religion; a survey of the study of classical mythology. Mr. Lattimore, Mr. Puhvel

**162. Classical Myth in Literature.** The use of myth in the principal authors and genres of Greek and Roman literature with examples of its influence in later literatures. Mr. Lattimore

**166A. Greek Religion.** A study of the religion of the ancient Greeks. Mr. Lattimore

**166B. Roman Religion.** A study of the religion of the ancient Romans. The Staff

**168. Introduction to Comparative Mythology.** Prerequisite: course 161 or consent of the instructor. The religious, mythical, and historical traditions of Greece and Rome compared with each other and with those of other ancient Near Eastern and European societies. Mr. Puhvel

**M170B. Byzantine Civilization.** (Formerly numbered 145C.) (Same as History M122B.) Literature, relations with Rome, and the Renaissance. The Staff

**180. Introduction to Classical Linguistics.** Prerequisites: Greek 3 and Latin 3. Basics of the comparative grammar of Greek and Latin in relation to one another and in the frame of Indo-European linguistics. Mr. Puhvel

**199. Special studies in Classics. (½ to 2 courses)** Prerequisites: senior standing and consent of the instructor.

### Graduate Courses

**200. History of Classical Scholarship.** The Staff

**230A-230B. Language in Ancient Asia Minor.** Prerequisite: consent of the instructor. Survey of the language situation in Anatolia in the second and first millennia B.C. Readings in Hittite, Palaic, Luwian, Hieroglyphic, Lycian, and Lydian texts. Anatolian-Greek relationships and survivals in Classical and Hellenistic times. Mr. Puhvel

**240. Etruscology.** Prerequisite: consent of the instructor. A survey of scholarly research on Etruscan language and culture, with analysis of epigraphic material. Mr. Puhvel

**246. Greek and Latin Meter.** Prerequisite: consent of instructor. A comprehensive study of meter as it functions in classical poetry. Mr. Haslam

**251A. Seminar in Classical Archaeology.** The Aegean Bronze Age. Mr. Lattimore

**251B. Seminar in Classical Archaeology.** Graeco-Roman architecture. Mr. Lattimore

**251C. Seminar in Classical Archaeology.** Graeco-Roman sculpture. Mr. Lattimore

**251D. Seminar in Classical Archaeology.** Graeco-Roman painting. Mr. Lattimore

**252. Topography and Monuments of Athens.** Detailed studies in the topography and monuments of Athens combining the evidence of literature, inscriptions, and actual remains. Mr. Lattimore

**253. Topography and Monuments of Rome.** Detailed studies in the topography and monuments of ancient Rome combining the evidence of literature, inscriptions, and actual remains. Mr. Frischer, Mr. Lattimore

**260. Seminar in Roman Religion.** Prerequisite: consent of the instructor. The Staff

**268. Seminar in Comparative Mythology.** Prerequisite: course 168 and consent of the instructor. Advanced study of selected topics in comparing Greek and Roman traditions with other ancient Near Eastern and European societies. Mr. Puhvel

**271. Computer Techniques in Classical Studies.** Survey of computer techniques in the study of the ancient world with emphasis on Greek and Latin literary texts. Students will learn enough computer programming to work on a project of their own during the course. The Staff

**287. Graduate Colloquium in Classical Literature.** Reading, research and discussion of selected topics from Greek and Roman Literature. May be repeated for credit. The Staff

### Individual Study and Research

**596. Directed Individual Study or Research. (½ to 2 courses)** The Staff

**597. Study for the M.A. Comprehensive Examination or the Ph.D. Qualifying Examination. (½ to 2 courses)** The Staff

**599. Research for the Doctoral Dissertation. (½ to 2 courses)** The Staff

## Greek

### Lower Division Courses

**1. Elementary Greek.** Lecture, five hours per week. The Staff

**2. Elementary Greek.** Lecture, five hours per week. Prerequisite: course 1. The Staff

**3. Elementary Greek.** Lecture, five hours per week. Prerequisite: course 2. The Staff

**10. Elementary Modern Greek.** An introduction designed to teach the student to pronounce correctly, understand, speak, and write with some facility the language of everyday life. Comparisons with Ancient Greek are made. Not intended for native or near-native speakers of Modern Greek. The Staff

**11. Intermediate Modern Greek.** Prerequisite: course 10 or consent of the instructor. Drill in pronunciation and grammatical patterns. Building-up of vocabulary. Easy readings in literature. The Staff

**12. Advanced Modern Greek.** Prerequisite: course 11 or consent of the instructor. Conversation and composition. A survey of the structure of the language. The Staff

**40. The Greek Element in English.** A knowledge of Greek is not required. A study of the derivation and usage of English words of Greek origin: analysis into their component elements directed toward understanding of form and meaning. Mrs. Killian, Mrs. Mohr

### Upper Division Courses

Note: Greek 3 is prerequisite to 100. Greek 100 is prerequisite to 101-107 and 111-124, and prerequisite or corequisite to 110.

**100. Readings in Greek Prose.** Prerequisite: course 3. Plato's *Apology* or a text of comparable difficulty is read. The Staff

**101A. Homer: *Odyssey*.** Mrs. Mohr

**101B. Homer: *Iliad*.** Mrs. Mohr

**102. Lyric Poets.** Selections from Archilochus to Bacchylides. Mr. Haslam, Mrs. Mohr

**103. Aeschylus.** Mr. Haslam

**104. Sophocles.** Mr. Haslam, Mr. Lattimore

**105. Euripides.** Mr. Frischer, Mr. Haslam, Mrs. Mohr

**106. Aristophanes.** The Staff

**107. Theocritus.** Mr. Frischer, Mr. Lattimore

**110. The Study of Greek Prose.** Work in sight reading and grammatical analysis of Attic prose texts; writing the Attic prose. Mr. Haslam

**111. Herodotus.** The Staff

**112. Thucydides.** Mr. Haslam, Mr. Lattimore

**113. Attic Orators.** Mr. Haslam

**121. Plato.** The Staff

**122. Plato: *Republic*.** Mr. Haslam

**123. Aristotle: *Poetics and Rhetoric*.** Mr. Haslam

**124. Aristotle: *Ethics*.** The Staff

**130. Readings in the New Testament.** Prerequisite: Greek 3. Mr. Haslam

**150. Readings in Modern Greek.** Prerequisites: course 3 or course 12 or consent of the instructor. Study of Modern Greek literature and its development since the Middle Ages through analysis of texts in the original. The Staff

**151. Advanced Readings in Modern Greek.** Prerequisites: course 150 or consent of the instructor. The Staff

**160. Greek Drama: Study and Performance. (2 courses)** Prerequisite: consent of the instructor. Intensive critical study of a dramatic work in Greek, culminating in its performance in the original language and manner of presentation. May be repeated for credit whenever a different play is studied and performed. Mrs. Mohr

**199. Special Studies in Greek. (½ to 2 courses)** Prerequisite: senior standing and consent of the instructor. The Staff

### Graduate Courses

The 200-series courses which are designated A and B (e.g., 201A-201B) are double courses. Course A is a pre-seminar and is normally prerequisite to course B, a seminar.

**200A-200B-200C. History of Greek Literature.** Prerequisite: consent of the instructor. Lectures on the history of Greek literature, supplemented on the part of the student by the independent reading of Greek texts in the original. Mr. Haslam

**201A-201B. Homer: *The Iliad*.** Mr. Haslam

**202A-202B. Homer: *The Odyssey and the Epic Cycle*.** Mr. Haslam

**203. Hesiod.** The Staff

**204. Homeric Hymns.** Mr. Haslam

**205. Seminar in Aeschylus.** Mr. Haslam

**206A-206B. Sophocles.** Mr. Haslam, Mr. Lattimore

**207A-207B. Euripides.** Mr. Frischer, Mr. Haslam

**208A-208B. Aristophanes.** The Staff

**209. Seminar in Hellenistic Poetry.** Mr. Frischer

**210. Advanced Greek Prose Composition.** Prerequisite: course 110 or the equivalent. Mr. Haslam

**211A-211B. Herodotus.** The Staff

**212A-212B. Thucydides.** Mr. Haslam, Mr. Lattimore

**213. Seminar in Greek Historiography.** The Staff

**214. Demosthenes.** The Staff

**215. Early Greek Orators.** Studies in the works of Antiphon, Andocides, and Lysias. Mr. Lattimore

**216. Menander.** Prerequisite: a reading knowledge of Classical Greek is required.

**221. Seminar in the Presocratic Philosophers.** Mr. Frischer

**222A-222B. Plato.** The Staff

**223A-223B. Aristotle.** The Staff

**224. Seminar in Post-Aristotelian Philosophy.** Mr. Frischer

**230. New Testament Greek.** The Greek New Testament, as a work of Greek literature, with special emphasis on the information it gives about the culture on the whole, and the language in particular, of the society for which it was produced. The Staff

**231A-231B-231C. Seminar in Patristic and Byzantine Literature.** Prerequisite: consent of the instructor. Course does not need to be taken in the A-B-C sequence. The Staff

**233. Byzantine Poetry.** A study of the main representatives of both religious and secular poetry. The Staff

**240A-240B. History of the Greek Language.** Prerequisite: consent of the instructor. 240A covers the linguistic history of Classical Greek. In 240B Post-Classical, Mediaeval, and Modern Greek are discussed. The Staff

**241. Greek Epigraphy.** A survey of Greek historical inscriptions, chiefly Attic. The Staff

**242. Greek Dialects and Historical Grammar.** Prerequisite: consent of the instructor. The linguistic situation in early Greece. Readings in Classical Greek dialectal texts. Greek grammar in the context of common Greek and Indo-European linguistics. Mr. Puhvel

**243. Mycenaean Greek.** Prerequisite: consent of the instructor. Script, language, and grammar of the Linear B inscriptions; their relevance to Ancient Greek linguistic and cultural history. Mr. Puhvel

**244. Greek Papyrology.** Prerequisite: consent of the instructor (some reading knowledge of Greek required). An introduction to Greek papyri, considered both as historical documents and as carriers of literature. Mr. Haslam

**245. Greek Palaeography.** Studies in the development of the book hand in Greek manuscripts earlier than the invention of printing. The Staff

### Individual Study and Research

**596. Directed Individual Study or Research. (½ to 2 courses)** The Staff

**597. Study for the M.A. Comprehensive Examination or the Ph.D. Qualifying Examination. (½ to 2 courses)** The Staff

**599. Research for the Doctoral Dissertation. (½ to 2 courses)** The Staff

## Latin

### Lower Division Courses

**1. Elementary Latin.** Lecture, five hours per week. The Staff

**1G. Elementary Latin for Graduate Students. (No Credit)** Offered concurrently with Latin 14, being identical in scheduling and content.

**2. Elementary Latin.** Lecture, five hours per week. Prerequisite: course 1. The Staff

**2G. Intermediate Latin (Intensive). (No Credit)** Prerequisite: Latin 14 or Latin 2 with grade B or better, or consent of instructor. Review of grammar; reading of selected portions of Latin Prose ranging from Classical to Medieval, with emphasis on historical texts.

**3. Elementary Latin.** Lecture, five hours per week. Prerequisite: course 2. The Staff

**14. Elementary Latin (Intensive). (2 courses)** The intensive course in Latin will cover all the declensions of nouns and adjectives, all conjugations in the indicative mood and the primary uses of the subjunctive mood. Emphasis will be given to the development of the ability to read easy selections of classical prose. Mrs. Killian

**15. Intermediate Latin (Intensive). (2 courses)** Prerequisites: Latin 14 or Latin 2 with grade B or better, or consent of instructor. Review of grammar; reading of selected portions of Latin prose ranging from Classical to Medieval, with emphasis on historical texts.

**40. The Latin Element in English.** A knowledge of Latin is not required. A study of the derivation and usage of English words of Latin origin: analysis into their component elements directed toward understanding of form and meaning. Mrs. Killian, Mrs. Mohr

### Upper Division Courses

Note: Latin 3 is prerequisite to Latin 104, 105A, 107, 111, 113. One of the latter is normally prerequisite to all other 100-series courses in Classical Latin authors.

**101. Plautus.** Mr. Löfstedt, Mrs. Mohr

**102. Terence.** Mr. Löfstedt

**103. Lucretius.** Mr. Frischer

**104. Ovid.** Mrs. Killian, Mrs. Mohr

**105A. Vergil: Selections from Aeneid I-VI.** Mr. Levine, Mrs. Mohr

**105B. Vergil: Advanced Course.** Mrs. Mohr

**106. Catullus.** Mr. Levine

**107. Horace: Odes and Epodes.** Mr. Levine

**108. Roman Elegy.** Selections from Catullus, Tibullus, and Propertius. Mr. Frischer, Mr. Levine

109. **Roman Satire.** Selections from the *Epistles of Horace*, the *Satires of Juvenal*, and the *Epigrams of Martial*.

Mrs. Killian, Mr. Levine

110. **The Study of Latin Prose.** Work in sight reading and grammatical analysis of classical prose texts; writing of classical prose. The Staff

111. **Livy.** Mrs. Mohr

112. **Tacitus.** The Staff

113. **Cicero: The Orations.** Mrs. Mohr

114. **Roman Epistolography: Cicero and Pliny.** The Staff

115. **Caesar.** Mr. Frischer

116. **Petronius.** Mr. Löfstedt, Mrs. Mohr

117. **Sallust.** Mrs. Killian

118. **Seneca.** A selection of Seneca's works will be read in Latin, supplemented by further readings in translation. Mr. Löfstedt

130. **Introduction to Mediaeval Latin.** Prerequisite: course 3, or course 15, or consent of the instructor. Reading of easy prose texts, with interest centered on basic language training. Mr. Löfstedt

131. **Mediaeval Latin Prose.** Prerequisite: course 130 or consent of the instructor. Extensive reading of selected texts in prose; interest is centered on the idiosyncrasies of Mediaeval Latin. Mr. Löfstedt

133. **Mediaeval Latin Poetry.** Prerequisite: one upper division language course in Latin or consent of the instructor. Emphasis varies from year to year between Christian and secular poetry. Mr. Löfstedt

150. **Roman Drama: Study and Performance.** Prerequisite: consent of the instructor. Intensive critical study of a dramatical work in Latin, culminating in its performance in the original language and manner of presentation. May be repeated for credit whenever a different play is studied and performed. Mrs. Mohr

199. **Special Studies in Latin. (½ to 2 courses)** Prerequisite: senior standing and consent of the instructor. The Staff

#### Graduate Courses

The 200-series courses which are designated A and B (e.g., 203A and 203B) are double courses. Course A is a pre-seminar and is normally prerequisite to course B, a seminar.

200A-200B-200C. **History of Latin Literature.** Prerequisite: consent of the instructor. Lectures on the history of Latin literature, supplemented on the part of the student by the independent reading of Latin texts in the original. Mr. Frischer, Mr. Levine

201. **Seminar in the Roman Epic: Ennius to Silius Italicus.** The fragments of Ennius and selected readings from the minor epic poets (Lucan, Valerius Flaccus, Statius, Silius Italicus). The Staff

202. **Seminar in Catullus.** A detailed consideration of the entire Catullan corpus. Mr. Levine

203A. **Elegiac Poetry.** Mr. Frischer, Mr. Levine

203B. **Propertius.** Mr. Levine

204A-204B. **Vergil's Aeneid.** Mr. Haslam

205. **Seminar in Vergil's Bucolics.** Mr. Frischer

206. **Horace.** The Staff

207. **Roman Comedy.** Prerequisite: consent of the instructor. Survey of the history of Roman Comedy. Reading of one comedy by Plautus or Terence with interest centered on language and meter. Mr. Löfstedt

208. **Ovid.** Prerequisite: a reading knowledge of Classical Latin is required. A detailed study of the poetic works of Ovid: readings in the original with discussion of the secondary literature and scholarship. The course may be repeated for credit as the content varies. The Staff

210. **Advanced Latin Prose Composition.** Prerequisite: course 110 or the equivalent. Mr. Levine

211A-211B-211C. **Seminar in the Roman Historians.** A study of considerable portions of the writings of:

211A. Sallust. The Staff

211B. Livy. Mr. Frischer

211C. Tacitus. Mr. Frischer

220A. **Cicero's Rhetorical Works.** The Staff

220B. **Cicero's Orations.** The Staff

221A. **Cicero's Philosophical Works.** Mr. Levine

221B. **Cicero: De Natura Deorum.** Mr. Frischer, Mr. Levine

222. **Seminar in Roman Stoicism.** Prerequisite: a reading knowledge of Greek and Latin.

223. **Lucretius.** Mr. Frischer

224. **Seminar in the Roman Novel.** Petronius' *Satyricon* and Apuleius' *Metamorphoses*: a study of the literary problems. The Staff

225. **Lucan.** A detailed study of Lucan, *Bellum Civile*: readings in the original, discussion and reports on important literary and historical aspects.

231A-231B. **Seminar in Mediaeval Latin.** Prerequisite: at least one upper division course in Latin or consent of the instructor. Studies in various areas of the language and literature of Mediaeval Latin. With instructor's permission, may be repeated for credit. Mr. Löfstedt

232. **Vulgar Latin.** Prerequisite: consent of the instructor. History and characteristics of popular Latin; its development into the early forms of the Romance languages. Mr. Löfstedt

240. **History of the Latin Language.** Prerequisite: consent of the instructor. The development of Latin from the earliest monuments until its emergence in the Romance languages. Mr. Löfstedt

242. **Italic Dialects and Latin Historical Grammar.** Prerequisite: consent of the instructor. The linguistic situation in early Italy. Readings in Oscan, Umbrian, and early Latin texts. Latin grammar in the context of Italic and Indo-European linguistics. Mr. Puhvel

243. **Seminar in Latin Palaeography.** Studies in the development of the book hand in Latin manuscripts earlier than the invention of printing. Mr. Levine

244. **Seminar in Textual Criticism.** Studies in the preparation of a critical edition of a Latin author. The Staff

#### Professional Courses in Method

370. **The Teaching of Latin.** Prerequisite: graduate standing or consent of the instructor. Techniques for teaching; organization of courses; review of the content of the curriculum offered in junior and senior high schools. Mrs. Killian

495. **College Teaching of Latin. (½ course)** Prerequisite: current service as a teaching assistant and consent of the instructor. Methodology of instruction, in conjunction with classroom practice. Mrs. Killian

#### Individual Study and Research

596. **Directed Individual Study or Research. (½ to 2 courses)** The Staff

597. **Study for the M.A. Comprehensive Examination or the Ph.D. Qualifying Examination. (½ to 2 courses)** The Staff

599. **Research for the Doctoral Dissertation. (½ to 2 courses)** The Staff

#### Related Courses in Other Departments

**Ancient Near East (Near Eastern Languages)** 170. Introduction to Biblical Studies.

171. Old Testament: Hebrew and Septuagint Texts.

172. Semitic Background of the New Testament.

Art 103A. Greek Art.

103B. Hellenistic Art.

103C. Roman Art

222A-222B. Greco-Roman Art.

History 111A-111B-111C. History of the Ancient Mediterranean World.

112A-112B. History of Ancient Greece.

113A-113B. History of Rome.

121A. The Early Middle Ages.

121B. The Later Middle Ages.

123A-123B-123C. Byzantine History.

222A-222B. Studies in Medieval Latin. Literary History.

250A-250B. Seminar in Ancient History.

252A-252B-252C. Seminar in Byzantine History.

**Indo-European Studies** M132. European Archaeology: The Bronze Age.

140. Introduction to Indo-European Mythology.

M150. Introduction to Indo-European Linguistics.

210. Indo-European Linguistics: Advanced Course.

280A-280B. Seminar in Indo-European Linguistics.

**Philosophy** 101A. Plato — Earlier Dialogues.

101B. Plato — Earlier Dialogues.

102. Aristotle.

## COMMUNICATION STUDIES (INTERDEPARTMENTAL)

Donald E. Hargis, Ph.D., *Professor of Communication Studies*  
Paul I. Rosenthal, Ph.D., *Associate Professor of Communication Studies*  
Patrice French, Ph.D., *Assistant Professor of Communication Studies and Psychology.*

L. Geoffrey Cowan, LL.B., *Lecturer in Communication Studies.*

Sara E. Puck, Ph.D., *Lecturer in Communication Studies.*

#### UNDERGRADUATE CURRICULUM

The major in Communication Studies is an interdisciplinary program leading to the degree of Bachelor of Arts. For details of the curriculum see College of Letters and Science.

#### Lower Division Course

10. **Introduction to Communication Studies.** An introduction to the fields of mass communication and interpersonal communication. Study of modes, media, and effects of mass communication, interpersonal processes, and communication theory. The Staff

#### Upper Division Courses

100. **Communication Theory.** Prerequisites: course 10, Linguistics 1, Sociology 1, Psychology 10. Analysis of the fundamental nature of human communication; its physical, linguistic, psychological and sociological bases. Study of theoretical models explicating the process and constituents of the communicative act. Ms. French

101. **Freedom of Communication.** Analysis of legal, political and philosophical issues entailed in the rights of free expression, access to an audience, and access to information. Study of court decisions governing freedom of communication in the United States. Mr. Cowan, Mr. Rosenthal

120. **Principles and Types of Group Communication.** Prerequisite: course 100. Analysis of the purposes, principles, and types of small group communication. Particular emphasis upon the organization of and participation in problem-solving discussion. Ms. Puck

130. **Cultural Factors in Interpersonal Communication.** Prerequisite: course 100. Study of cultural factors as they affect the quality and processes of interpersonal communication; exercises in the participation, analysis, and criticism of inter-ethnic and interracial communications in the small-group configuration. Ms. Puck

140. **Theory of Persuasive Communication.** Prerequisite: course 100. The dynamics of communication designed to influence human conduct; analysis of the structure of persuasive discourse; integration of theoretical materials drawn from relevant disciplines of the humanities and social sciences. Mr. Rosenthal

142. **Rhetorical Theory.** Prerequisite: course 100. Survey of the major classical and neoclassical treatises on rhetoric. Analysis of the theories of Plato, Aristotle, Cicero, Quintilian, St. Augustine, Blair, Whately, Campbell, and other leading works in the theory of rhetoric. Mr. Hargis

150. **Analysis of Communication Content.** Prerequisite: course 100. Study of methodologies for the qualitative and quantitative analysis of the content of communications. Ms. French

152. **Analysis of Communication Effects.** Prerequisite: course 100. Survey of experimental and field research on the effects of communications. Study of source, message, and environmental factors affecting audience response. Ms. Puck

160. **Political Communication.** Prerequisite: courses 100 and 101. Study of the nature and function of communication in the political sphere; analysis of contemporary and historical communications within established political institutions; state papers; deliberative discourses; electoral campaigns. The Staff

165. **Agitational Communication.** Prerequisite: courses 100 and 101. Theory of agitation; agitation as a force for change in existing institutions and policies in a democratic society. Intensive study of selected agitational movements and the technique and content of their communications. The Staff

170. **Legal Communication.** Prerequisite: courses 100 and 101. Study of the trial and appellate processes as systems of communication. Analysis of the elements of the juridical process as they affect the quality of communication content. Study of the rules of evidence, jury behavior, and the structure of legal discourse. Mr. Rosenthal

175. **Criticism and the Public Arts.** Prerequisites: course 10 or consent of instructor. An introduction to methods and problems of criticism in the public arts. Several types of critical methods will be studied: formalistic, analogue, pragmatic, and aesthetic criticism. Topics include the definition of art and criticism, the aesthetic media, genre and resources of film, television, theatre and public discourse, the varieties of critical method, the problems of critical judgment. The Staff

197. **Undergraduate Honors Proseminar.** Prerequisite: senior standing; grade point average of 3.5 in Communication Studies major and 3.3 overall. Variable topic course involving specialized study of selected aspects of the field of human communication. Enrollment is limited. The Staff

199. **Special Studies.** Prerequisites: senior standing and consent of the instructor. A course of independent study for senior undergraduates who desire an intensive or specialized investigation of selected research topics. To be arranged with the member of the faculty who will direct the study. The Staff



**199H. Special Studies for Honors Candidates.** Prerequisites: admission to Honors Program and senior standing. A course of independent study for honors undergraduates who desire an intensive or specialized investigation of selected research topics. To be arranged with a member of the faculty who will direct the study. The Staff

## COMPARATIVE LITERATURE (INTERDEPARTMENTAL)

Arnold J. Band, Ph.D., *Professor of Hebrew and Comparative Literature*  
(*Chairman of the Department*).

Pier-Maria Pasinetti, Ph.D., *Professor of Italian and Comparative Literature.*

Ross P. Shideler, Ph.D., *Associate Professor of Scandinavian Languages and Comparative Literature.*

Kathleen L. Komar, Ph.D., *Assistant Professor of German and Comparative Literature.*

Robert M. Adams, Ph.D., *Professor of English.*

Ehrhard Bahr, Ph.D., *Professor of German.*

Amin Banani, Ph.D., *Professor of Persian and History.*

Marc Bensimon, Ph.D., *Professor of French.*

Marga Cottino-Jones, Ph.D., *Professor of Italian.*

Eric Gans, Ph.D., *Professor of French.*

Carroll B. Johnson, Ph.D., *Professor of Spanish.*

Richard A. Lanham, Ph.D., *Professor of English.*

Richard D. Lehan, Ph.D., *Professor of English.*

Vladimir Markov, Ph.D., *Professor of Slavic Languages.*

Maximilian E. Novak, D. Phil., Ph.D., *Professor of English.*

George S. Rousseau, Ph.D., *Professor of English and Eighteenth Century Studies.*

Ben Bafu, Ph.D., *Associate Professor of Oriental Languages.*

Albert Braunmuller, Ph.D., *Associate Professor of English.*

Frederick L. Burwick, Ph.D., *Associate Professor of English.*

Robert M. Maniquis, Ph.D., *Associate Professor of English.*

James R. Massengale, Ph.D., *Associate Professor of Scandinavian Languages.*

Stephen D. Werner, Ph.D., *Associate Professor of French.*

Stephen I. Yenser, Ph.D., *Associate Professor of English.*

Michael Heim, Ph.D., *Assistant Professor of Slavic Languages.*

Albert D. Hutter, Ph.D., *Assistant Professor of English.*

Romey T. Keys, Ph.D., *Assistant Professor of English.*

UCLA's Program in Comparative Literature requires that all degree candidates demonstrate linguistic, historical, and critical competence in two or more literatures. Candidates for the M.A. degree are examined in at least two literatures, one major and one minor. Candidates for the Ph.D. degree are examined in at least three literatures, one major and two minors. To assist students to achieve this goal, the Comparative Literature Program draws upon the facilities, services, and faculty of UCLA's language and literature departments and programs. While specific required courses in various aspects of Comparative Literature are sponsored by the Graduate Program in Comparative Literature, students do much of their course work in the appropriate language and literature departments: members of these departments participate in the advising and examination of all degree candidates.

Students may be admitted as candidates for either the M.A. or Ph.D. degrees. Students who enter with only the B.A. degree must register in the M.A. program. Though students are advised to enter in the Fall Quarter of the academic year, they may begin their studies in the Winter or Spring Quarter.

### REQUIREMENTS FOR THE M.A.

#### Admission Requirements for the M.A.

1. For entrance into the program, a B.A. in literature, ancient or modern, is a prerequisite. Students not having a literature major in their B.A. program will be required to demonstrate the equivalent knowledge and comprehension of one literature before being considered a graduate student in good standing.
2. Applicants are expected to have at least a 3.4 GPA in upper division literature courses.
3. All applicants for admission must take the G.R.E. examination as required by the University.

#### Areas of Study for the M.A.

The student's study plan should combine the work in the major and minor literatures by focusing on a limited area in which these literatures can be fruitfully explored. The area may be a literary period, e.g., Romanticism, a genre, e.g., the novel, or a theoretical problem.

*The Major Literature.* The major literature is the area of the student's primary concentration. He/she specializes in one historically defined period, e.g., Medieval, Renaissance and Baroque, Neoclassicism and 18th century, Romanticism to Modern, but a general knowledge of the major literature is a prerequisite of the specialization.

*The Minor Literature.* In the minor literature the student focuses on a period comparable to the area of specialization in the major literature. However, it is assumed that the student may not have as much historical depth and breadth in the minor literature as in the major.

### Foreign Language Requirements for the M.A.

Literary proficiency in the major and minor literatures is an essential prerequisite for courses and degrees in Comparative Literature. Students are expected to be able to take graduate classes conducted in the languages of their specialization. The candidate should be able to speak the major foreign language adequately and read literary texts in that language with "literary proficiency," i.e., with sensitivity to stylistic nuances.

Before completion of the M.A., knowledge of two foreign languages is required. Proficiency in one of these languages must be certified by completion of two or more upper division and/or graduate literature courses in the appropriate language department. (Students must prove more than elementary language competency in order to enter upper division and graduate courses at UCLA.) The second foreign language requirement may be completed either by course work or by passing the ETS foreign language examinations administered by the Graduate Division. In those cases where such examinations are unavailable, translation examinations may be administered by departmental members.

### Course Requirements for the M.A.

Candidates for the M.A. degree specialize in two literatures in which they take a total of eight courses; five are taken in the major literature and three in the minor. Four additional courses are taken from those designated as Comparative Literature courses.

The following twelve courses are the minimal course requirements. Some students will take extra courses to make up deficiencies.

#### 1. Four courses in Comparative Literature

A. Comparative Literature 200—Methodology; theory of literature, bibliography, etc.

B. Comparative Literature 201—Contemporary theories of criticism.

C. The comparative study of one genre, e.g., the novel, the epic, the lyric.

D. The comparative study of one period or movement, e.g., Baroque, Romanticism.

2. Five courses (a minimum of three must be graduate courses; the other two, upper division) in the student's major literature. The departmental course in the history of the language of that particular literature may be included.

3. Three courses, either graduate or upper division, in the student's minor literature. The student should study periods, genres, or problems in the minor literature which lend themselves to comparison with similar elements in his/her major literature.

4. Of the above required courses, 12 units at most may be 500 series courses.

#### Qualifying Examination for the M.A.

The examination for the M.A. is both written and oral, testing historical knowledge and comprehension of methodology. The results of this examination determine the student's ability to continue toward the Ph.D. in Comparative Literature. There are three possible results of the examination: a student may be allowed to progress toward the Ph.D., may be granted a terminal M.A., or may fail the examination altogether.

The written examinations of six hours in the major literature and three in the minor, test the student's skill in literary analysis and his/her detailed knowledge of specified works. The examinations are based upon reading lists from the works of approximately fifteen to twenty authors in the major literature and the works of five to ten authors in the minor literature. Normally, the student's reading list consists of 24-30 works in the major literature and 12-15 works in the minor literature.

The reading list for the major literature should contain both prose and poetry, although one of these may be emphasized. In addition, the list must include representative texts outside the period of specialization. For example, students specializing in the 19th and 20th century novel should have novels from the 17th and 18th centuries on their reading lists.

The reading list for the minor literature is focused almost entirely on the student's period of specialization. Sample reading lists are available in the Program's office—334 Royce Hall.

### REQUIREMENTS FOR THE PH.D.

#### Admission Requirements for the Ph.D.

For entrance into the Ph.D. program, an M.A. in Comparative Literature is normally required. Students with an M.A. in one national literature, extensive knowledge of a second, and the ability to read literary texts in a third language may be considered for admission. Students entering with any degree other than an M.A. in Comparative Literature from UCLA are required to pass a Permission to Proceed Examination before being allowed to continue toward the Ph.D. This examination establishes that the applicant is at the same level of graduate work in both major and minor literatures as one of the Program's M.A. students. The examination is conducted along lines similar to the M.A. examination described above. It should be taken within the first year of residence.

#### Foreign Language Requirements for the Ph.D.

The candidate must have literature proficiency in at least two foreign languages and a reading knowledge of a third foreign language before taking the qualifying examination. Two of these

three must be from different language groups, i.e., Romance and Germanic, English and Slavic, etc. If the student intends to offer three literatures written in foreign languages for his Ph.D. degree, he is expected to have literature proficiency in the three pertinent foreign languages. A classical languages is usually necessary for anyone majoring in a period prior to the 19th century.

### Course Requirements for the Ph.D.

Though no specific courses are normally required after the M.A., entering students who have not received the M.A. in the UCLA Comparative Literature Program or its equivalent, are strongly advised to take courses in those areas in which they are deficient. The areas of deficiency will be identified in consultation with the graduate adviser. In general, all students are urged to take the courses necessary to attain sufficient depth in their major and two minor literatures. In the second minor, a combination of three upper division and graduate courses may be required. Students entering Comparative Literature with an M.A. in a single literature are usually required to take the four Comparative Literature courses required for the M.A.

### Study Plan for the Ph.D.

The student's study plan should combine the work in the major and minor literatures by focusing on a limited area in which these literatures can be fruitfully explored. This area may be a literary period (e.g., the late Middle Ages, the sixteenth century, or the Romantic Age) or a particular aspect common to all three literatures (e.g., a genre like tragedy or the novel, or a phenomenon like neo-classicism or the baroque). It may also be a critical or theoretical problem, involving analyses of style or modes of interpretation; comparisons of classical and modern genres and themes; questions about the artistic process in different art forms; or problems in literary aesthetics or epistemology.

### Qualifying Examinations for the Ph.D.

Ph.D. candidates usually take their Qualifying Examinations six to eight quarters after the M.A., although it is possible to take the examination as soon as the candidate's doctoral committee feels that he/she is adequately prepared. The examinations are both written and oral and may be taken over a period of two to three quarters.

The written examinations are based on reading lists for the major and two minor literatures. The reading list for the major should include texts from the earliest works in the literature through the twentieth century. As long as historical depth is demonstrated, the list may emphasize a genre and specific periods. The period of specialization may comprise up to half the items on the list. A normal reading list consists of approximately 50 to 60 primary works or items (an item is equivalent to a novel or a long play). The reading lists for each minor literature focuses on the period of specialization and consists of approximately 25 to 30 primary works. Sample reading lists are available in the Program's office—334 Royce Hall.

The written examinations for the major may be divided into two or three parts. Usually a total of eight to nine hours of examinations (two or three examinations of three to four hours each) are taken in the major literature and a three to four hour written examination is taken in each of the minor literatures.

As part of the preparation for these examinations, students should propose a possible dissertation topic and prepare a short prospectus (5-10 pages) on the topic.

The oral examination covers three areas:

1. Competence as determined by the reading lists and the written examinations in the major and minor literatures.
2. Both a familiarity with major critical texts pertaining to the reading lists and competence in general literary theory.
3. The proposed dissertation must demonstrate original critical work in the field. Comparative Literature students may write a dissertation on a single subject in a single field. It is assumed that their wide range of knowledge would be demonstrated by the quality of the work.

### Graduate Courses

**200. The Methodology of Comparative Literature.** Prerequisite: consent of the instructor. A study of both the methodology of comparative literature and the theory of literature. Mr. Shideler

**201. Contemporary Theories of Criticism.** Prerequisite: Comparative Literature 200 or its equivalent. An advanced course in the theory of literature focusing upon structuralist, psychoanalytic, and Marxist approaches. The Staff

**202. Problems in the Theory of Literature.** Prerequisite: A reading knowledge of French or German; Comparative Literature 201 or its equivalent. A study of specific topics in the theory of literature for advanced students in criticism and literary theory. The Staff

**204. Psychoanalytic Approaches to Literature.** Prerequisite: Comparative Literature 200 or the equivalent criticism course in English. A study of the development of modern psychoanalytic approaches to literature, with particular stress on affective theories of criticism. Readings will include Freud and the early psychoanalytic critics (Crews, Holland) and modern British and American psychoanalytic theorists (Winnicott, Schaffer) whose work is applicable to literary theory. Mr. Hutter

**M205. The Comic Spirit.** (Same as Humanities M105.) Prerequisite: upper division standing and literature major. (Reading knowledge of one appropriate foreign language for graduates.) Literary masterpieces, both dramatic and nondramatic, selected to demonstrate the varieties of comic expression. This course is cross-listed with Humanities M105. Students seeking U/G credit will be allowed to read all works in translation. Students taking the course for graduate credit will be required to prepare papers based on texts read in the original language. These students will meet as a group an additional hour each week. Mr. Band

**M209. The Crisis of Consciousness in Modern Literature.** (Same as Humanities M109.) Prerequisite: upper division standing and literature major. (Reading knowledge of one appropriate foreign language for graduate students.) Study of modern European and American works which are concerned both in subject matter and artistic methods with the growing self-consciousness of the artist and his society, focusing on works of Flaubert, Joyce, Gide, Mann and Nabokov. This course will be cross-listed with Humanities M109. Students seeking U/G credit will be allowed to read all works in translation. Students taking the course for graduate credit will be required to prepare papers based on texts read in the original language. These students will meet as a group an additional hour each week. The Staff

**220. From Epic to Novel.** Seminar, three hours. Prerequisite: literature proficiency in one language, ancient or modern. A comparative study of the themes and techniques germane to each genre. The Staff

**221. The Lyric: Classical to Modern.** Prerequisite: some knowledge of either Latin or Greek. An examination of the genres and conventions of Greek and Roman lyric poetry and their influence on subsequent European poetry. The Staff

**222. Ovid's Influence on European Letters.** Prerequisite: elements of Latin or consent of the instructor. Readings in Latin and in translation from Ovid's works, particularly *Amores* and *Metamorphoses*. Analysis of Ovid's place in Latin letters and his influence on subsequent European literature. The Staff

**M229. Archetypal Heroes in Literature.** (Same as Humanities M129.) Prerequisite: upper division standing. (Reading knowledge of one appropriate foreign language for graduate students.) Survey and analysis of the function and appearance of such archetypal heroes as Osiris, Ulysses, Prometheus and Oedipus in literature from antiquity to the modern period. This course will be cross-listed with Humanities M129. Students seeking U/G credit will be allowed to read all works in translation. Students taking the course for graduate credit will be required to prepare papers based on texts read in the original language, and will meet as a group an additional hour per week. The Staff

**230. Translation Workshop.** Prerequisite: A solid reading knowledge of at least one foreign language and consent of instructor. The theory and practice of literary translation. Analyses of significant theoretical contributions to the field. Weekly exercises in translation technique with genres, periods, and authors at the discretion of the participants. Open to qualified undergraduates with proper language preparation. Mr. Heim

**M245. Renaissance Drama.** (Formerly numbered M203 and same as Humanities M145.) Prerequisites: upper division standing and literature major; consent of instructor. (Reading knowledge of one appropriate foreign language for graduate students.) The course offers a broad introduction to the subject matter and types of plays in the Renaissance. Historical and literary influences on the plays will be considered. Readings will include works of such dramatists as: Tasso, Machiavelli, Lope de Vega, Racine, Jonson, Shakespeare. This course is cross-listed with Humanities M145. Students seeking U/G credit will be allowed to read all works in translation. Students taking the course for graduate credit will be required to prepare papers based on texts read in the original language and will meet as a group one additional hour per week. Mr. Braunnmuller

**251. Varieties of Picaresque Fiction in the 18th Century.** Prerequisite: some knowledge of eighteenth century English literature, and a reading knowledge of two of the following languages: French, Spanish, German, Italian. A study of the metamorphoses of picaresque fiction during 1700-1800, with special attention to the novels of Defoe, Fielding, Smollett, Diderot, Rousseau, and others. The course will begin with a study of Cervantes' *Don Quixote* and will map out a critical theory for quixotic versus picaresque fiction. Mr. Rousseau

**252. Structural Problems in Autobiography.** Prerequisite: a reading knowledge of one European language, plus one other language. This course explores the ways in which writers of different nationalities and cultural backgrounds conceive of the form known as autobiography. Students are expected to read extensively in the autobiographical literature of two languages, one of which must be European. Mr. Rousseau

**M260. Literature and the Other Arts.** (Same as Humanities M160.) Prerequisites: upper division standing and literature major. (Reading knowledge of French, Spanish, Italian or German for graduate students.) A comparative study of literature and the other art media. This course is cross-listed with Humanities M160. Students seeking U/G credit will read all works in translation. Students taking the course for graduate credit will be required to prepare papers based on texts read in the original languages, and will meet as a group an additional hour each week. Mr. Bensimon

**M268. Mozart and the Literature of Opera.** (Same as Humanities M118.) Prerequisites: Humanities 1A and 1B, English 1 and 2, or consent of instructor. (Reading knowledge of either German or Italian for graduates.) The course will concentrate on opera as a dramatic and poetic medium, by focusing on the literary texts and musical settings of five major Mozart operas. Major topics: theatrical use of mixed media; recitative and aria; staging of opera; Mozart's career as a dramatic composer; Da Ponte as librettist. This course is cross-listed with Humanities M118. Students seeking U/G credit will be allowed to read all works in translation. Students seeking graduate credit will participate in a special discussion section and will prepare all papers based on texts read in the original languages. The Staff

**270. The Dream in English and German Romantic Literature.** Seminar, three hours. Prerequisite: literature proficiency in German. A study of the use of the dream as a standard narrative technique in English and German Romantic Literature. Mr. Burwick

**271. Dramatic Theory and Criticism in German and English Romanticism.** Prerequisite: a reading knowledge of German. This seminar examines the generic conception of drama in the critical essays of the Schlegels, Tieck, Jean Paul, Coleridge, De Quincey, and Hazlitt. It gives particular attention to the role of the actor and the idea of dramatic action as discussed by the critics. Mr. Burwick

**M272. The Grotesque in Romantic Literature and Art.** (Same as Humanities M172.) Prerequisites: upper division standing and literature major. (Reading knowledge of either French, German or Spanish for graduate students.) A study of the various theories and modes of the grotesque in the visual and verbal arts of the Romantic period; interpretation will address the aesthetics of tragic-comic interaction, the demonic vision, and the satirical sketches of man's abnormality and perversity. This course is cross-listed with Humanities M172. Students seeking U/G credit will read all works in translation. Students taking the course for graduate credit will be required to prepare papers based on texts read in the original languages. These students will meet as a group an additional hour each week. Mr. Burwick

**274. The Search for Organic Forms.** Prerequisite: reading knowledge of French or German. A seminar devoted to theories of the "organic" in the eighteenth and nineteenth centuries, with special emphasis on Rousseau and Goethe. A large part of the course will be given to studies of the transition made between theories of nature and theories of state. Mr. Maniquis

**275. The Nineteenth Century Novel.** Seminar, three hours. Prerequisite: ability to read either French or German. A comparative study of the 19th century novel in at least England, France, and Germany. Novels will be selected so as to allow the seminar to concentrate on a particular tradition or critical problem. Mr. Maniquis

**M276. Fiction and History.** (Same as Humanities M176.) Prerequisites: upper division standing and literature major; consent of instructor. (Reading knowledge of one appropriate foreign language for graduate students.) The course analyzes the use of historical events, situations, and characters, in works of fiction that are not necessarily "historical novels". Texts and individual assignments range from nineteenth century authors such as Stendhal, Tolstoy, Verga, to Proust and contemporaries like Vidal, Grass, Garcia Marquez. Use of fictional methods by historians may also be analyzed. Mr. Pasinetti

**M277. Sexual Stances in Modern Fiction.** (Same as Humanities M177.) Prerequisite: upper division standing and literature major. An examination of sexual stances employed in fiction, beginning with heterosexuality in Stendhal and continuing through hyper-masculinity in Hemingway, Mailer and Lawrence; aware femininity in Woolf, and Murdoch; and gayness in Gide, Forster and Isherwood. This course will be cross-listed with Humanities M177. Students seeking undergraduate credit will be allowed to read all works in translation. Students taking the course for graduate credit will be required to prepare papers based on texts in the original language, and will meet as a group an additional hour per week.

**M280. The Symbolist Tradition in Poetry.** (Same as Humanities M180.) Prerequisites: upper division standing and literature major. (Reading knowledge of either French or German for graduate students.) A study of the symbolist tradition in English, French, and German poetry. This course is cross-listed with Humanities M180. Students seeking U/G credit will read all works in translation. Students taking the course for graduate credit will be required to prepare papers based on texts read in the original languages. These students will meet as a group an additional hour each week. Mr. Shideler

**M281. Poetry and Poetics of the Post-Symbolist Period.** (Same as Humanities M181.) Prerequisites: upper division standing and literature major. (Reading knowledge of either French or German for graduate students.) A study of some of the dominant poetic trends and figures in American and European poetry in the first half of the 20th century including such Surrealists as G. Apollinaire and A. Breton, imagists, and major individual poets such as E. Pound, T.S. Eliot, Paul Valery, R.M. Rilke, Stefan George, and Wallace Stevens. This course is cross-listed with Humanities M181. Students seeking U/G credit will read all works in translation. Students taking the course for graduate credit will be required to prepare papers based on texts read in the original languages and will meet as a group an additional hour each week. Mr. Shideler

**290. The Distracted Scholar.** Prerequisite: a reading knowledge of either French or German and graduate standing. A study of those scholars whose intellectual pursuits have led them into the unfamiliar attics and cellars of that mansion of human imagination which lesser minds have called irrationality. Classical specimens of such great researchers have been presented in the works of Rabelais, Burton, Swift, Voltaire, Nabokov, and Borges. Mr. Adams

**291. The Post-Joycean Novel.** Prerequisite: a reading knowledge of at least one appropriate foreign language. A study of the post-Joycean novel in several of its best-known representatives: Nabokov, Robbe-Grillet, Queneau (or Butor or Claude Mauriac), Gadda, Borges, and Beckett. Some knowledge of Joyce will be assumed. Mr. Adams

**292. The Psychological Novel.** Prerequisite: major in literature and reading knowledge of French. A comparative study of French and English novels which both precede and follow the development of psychoanalysis. Selected readings of Freud will be assigned in addition to the required fiction. Mr. Hutter

**293. Neoclassicism in the 1920's.** Prerequisite: reading knowledge of either French or German. A study of neoclassicism in England, France, and Germany in the 1920's with emphasis on literary texts and reference to works of fine art, architecture and music. Mr. Adams

**M297. The Mystery Novel.** (Same as Humanities M117.) Prerequisite: upper division standing and literature major or consent of instructor. (Reading knowledge of French for graduate students.) A study of mystery and detective fiction in England, France, and the United States. The origin, form and historical significance of mystery fiction will be developed through close readings of selected works. This course is cross-listed with Humanities M117. Students seeking U/G credit will be allowed to read all works in translation. Students taking this course for graduate credit will be required to participate in a special discussion section and to prepare papers based on texts read in the original languages. Mr. Hutter

**596. Directed Individual Study. (½ to 2 courses)** The Staff

**596X. Directed Individual Study. (½ to 1 course)** Preparation for Foreign Language Examination. The Staff

**597. Preparation for the Doctoral Qualifying Examination. (½ to 2 courses)** The Staff

**599. Research on Dissertation. (½ to 2 courses)** Restricted to those who have passed the qualifying examination for the doctor's degree. The Staff

## COMPUTER SCIENCES

Studies related to computer science are possible in several academic departments. Detailed information is given in the announcements of the individual departments that are listed below.

## BIOMATHEMATICS

Course work in mathematical modeling, simulation and other computer techniques in the health sciences, including computer graphics. M.S. and Ph.D. degrees offered.

## ENGINEERING

Master of Science and Ph.D. degree programs with specialization in control systems, communication theory, computer applications, computer languages, and computer systems.

## LIBRARY SERVICE

Master of Library Science degree with specialization in Information Science (Documentation), including consideration of computer applications to information retrieval.

## LINGUISTICS

Course work in mathematical linguistics and computational linguistics.

## MANAGEMENT

Master's and Ph.D. degree programs with specialization in computers and information systems, computer simulation, management science, and operations management.

## MATHEMATICS

Please see Mathematics-Computer Science major under College of Letters and Sciences.

## PSYCHOLOGY

Course work in mathematical psychology, factor analysis and multivariate analysis, and in computer techniques in the behavioral sciences.

## PUBLIC HEALTH

Master of Science and Ph.D. degree programs in Biostatistics with specializations in data processing and computer assisted statistical analysis.

## COUNCIL ON EDUCATIONAL DEVELOPMENT

The Council on Educational Development (CED) was created by the Los Angeles Division of the Academic Senate in May of 1968. The Council's purpose is to promote academic enrichment and encourage educational diversity and innovation. In fulfilling these objectives, the Council works closely with departments, colleges, schools and research centers on the UCLA campus. The Council is uniquely situated to offer special courses and programs, since it possesses modest funding which can be used for faculty released time or the employment of outside lecturers and teaching personnel.

The Council seeks out and, upon approval, supports academic projects, programs and individual courses of scholarly excellence not otherwise available in the University, including courses of timely or topical importance. The Council can offer a course as many as three times, although in principle the Council seeks to encourage departments and schools to adopt appropriate courses into their regular curriculum.

For information about CED courses consult the Schedule of Classes and the Registration and other selected issues of the Daily Bruin. Further information may be obtained from the CED office, 3121 Murphy Hall, telephone: 55467.

## DANCE

(Department Office, 205 Women's Gym)

*Pia Gilbert, Professor of Dance.*

*Carol Scothorn, M.A., Professor of Dance.*

*Alma M. Hawkins, Ed.D., Emeritus Professor of Dance.*

*Elsie Dunin, M.A., Associate Professor of Dance.*

*Marion Scott, Associate Professor of Dance.*

*Doris Siegel, Associate Professor of Dance.*

*Allegra Snyder, M.A., Associate Professor of Dance. (Chairperson of the Department).*

*Emma Lewis Thomas, Ph.D., Associate Professor of Dance.*

*Erma Alpersen, Ph.D., Assistant Professor of Dance.*

*Kathe Copperman, M.A., Assistant Professor of Dance.*

*Charles Berliner, M.F.A., Lecturer in Dance.*

*Gloria Bowen, Lecturer in Dance.*

*Lynn Dally, M.A., Lecturer in Dance.*

*Gary Faltico, Ph.D., Lecturer in Dance.*

*Alfred Ladzekpo, Lecturer in Dance.*

*Susan Lovell, M.A., Lecturer in Dance.*

*Margalit Oyed Marshall, Lecturer in Dance.*

*Barbara Mattingly, Lecturer in Dance.*

*Emilio Pulido-Huizar, Lecturer in Dance.*

*Mia Slavenska, Lecturer in Dance.*

*Judy Susilo, M.A., Lecturer in Dance and Ethnic Arts.*

*Suenobu Togi, Lecturer in Dance.*

*Martin Tracy, M.A., Lecturer in Dance.*

*Medha von Essen, M.S., Lecturer in Dance.*

*Melinda Williams, M.A., Lecturer in Dance.*

The dance major offered in the College of Fine Arts leads to the Bachelor of Arts degree. For requirements, see College of Fine Arts.

Students who wish to confer with the department counselor regarding program planning and major requirements should see Wendy Ufrig in the department office.

### Preparation for the Major

Dance 30A-30B, 35, 36A-36B-36C, 37A-37B-37C, 38A-38B, and 70A.

### The Major

A total of 14 courses including courses 111A-111B, 150A-150B-150C, 151A-151B, 152A-152B, 153A-153B-153C, 154, 158A-158B; two courses (8 units) chosen from upper division dance electives.

With department approval, in the senior year, students who give evidence of commitment to and special preparation for graduate study may be permitted to substitute certain courses, as follows: students with a dance ethnology focus may substitute a year of ethnic dance for 153A-153B-153C; and course 140A or 140B or 140C for 152A-152B. Students with a dance therapy focus may substitute 165A-165B-165C for 153A-153B-153C; and Psychology 127 for Dance 152A-152B. The department adviser should be

consulted about other special preparatory courses needed for graduate study in dance ethnology and dance therapy.

### Admission to the Major

Readiness for admission to the upper division major is determined by a screening and evaluation conducted during Spring Quarter of the sophomore year.

All entering transfer students are auditioned for placement in technique and choreography classes.

### Admission to Graduate Status

In addition to meeting the requirements of the Graduate Division as stated in the announcement of the Graduate Division, the student must have an undergraduate major in dance or equivalent preparation with a minimum of upper division courses in the dance concentration. Students whose preparation is deficient, as determined by Graduate Admissions, will be required to make up such deficiencies in addition to the degree program. New students will be admitted for graduate study to the Department of Dance only once a year, at the beginning of Fall term. For more detailed information, write to the Chairman of the Department of Dance for a form which describes academic requirements and helps identify deficiencies.

### Requirements for the Master's Degree

An audition for entering graduate dance majors is offered in the Winter Quarter of each year. The student is expected to participate in a vigorous modern movement (technique) class as well as in a directed improvisation session, and he is asked to present his own short choreographic work.

The Department is cognizant of the possible hardships such as audition requirement poses for out-of-state applicants. All applications will be considered; however, priority will be given to those candidates who audition.

Graduate students may follow the thesis plan or the comprehensive examination plan. The candidate's course of study will be planned under the guidance of the graduate adviser. Emphasis may be placed on choreography, dance therapy, dance ethnology, dance education or dance history and criticism.

Thesis Plan. A minimum of nine courses and a thesis. A major choreography is acceptable as partial completion of a thesis. The nine courses include 4 courses elected from the graduate courses in the dance department; 4 courses from either the dance department or outside the department selected from upper division and graduate courses, and; one course, Dance 202, Research Methods and Bibliography in Dance.

Comprehensive Examination Plan. A minimum of 10 courses as listed above, including an independent study project and a final comprehensive examination.

*Note: Check the Schedule of Classes for courses restricted to majors only.*

### Lower Division Courses

**10A-10B-10C. Fundamentals of Creative Dance. (½ course each)** For non-dance majors. Courses must be taken in sequence. Study of dance through varied experience in movement including historical and contemporary forms with emphasis on increasing ability to use movement creatively and to relate to dance the principles and elements of other arts. The Staff

**11A-11B-11C. Creative Dance. (½ course each)** Prerequisite: course 10C or consent of the instructor. For non-dance majors. A continuing study of dance with emphasis on movement principles and composition. The Staff

**30AF-30AW-30AS. Fundamentals of Ballet. (½ course per year)** Open only to Dance majors. This course is offered on an In Progress basis, which requires students to complete the full three quarter sequence, at the end of which time a grade is given for all quarters of work. Students are admitted in the Fall quarter only. Study of ballet techniques and principles including dance terminology. Ms. Bowen

**30BF-30BW-30BS. Fundamentals of Ballet. (½ course per year)** Open only to Dance majors. This course is offered on an In Progress basis, which requires students to complete the full three quarter sequence, at the end of which time a grade is given for all quarters of work. Study of ballet techniques and principles including dance terminology. Students are admitted in the Fall quarter only. Ms. Bowen

**35. Music Analysis for Dance. (½ course)** Study of the elements of music, music structures, and their relationship to dance, with emphasis on rhythmic analysis, dance accompaniment and teacher-accompanist roles. Mrs. Gilbert

**36A-36B-36C. Fundamentals of Creative Dance. (½ course each)** Open only to dance majors. Courses must be taken in sequence. Study of dance through varied experience in movement including historical and contemporary forms with emphasis on increasing ability to use movement creatively and to relate to dance the principles and elements of other arts. Ms. Williams

**37A-37B-37C. Creative Dance. (½ course each)** Prerequisite: course 36C. A continuing study of dance with emphasis on movement principles and choreography. Ms. Copperman

**38A-38B. Dance Notation. (½ course each)** Prerequisite: courses 35 and 36C. Study of Labanotation with experience in recording and interpreting dance scores with emphasis on reading skills. Mr. Tracy

**46A-46B-46C. Fundamentals of Movement. (½ course each)** Prerequisite: consent of instructor. Study of the fundamentals of movement with emphasis on experiencing body awareness, exploring movement potential, and structuring of dance forms. Consideration of cultural influences on expressive forms. Ms. Susilo

**47A-47B-47C. Dance Forms. (½ course each)** Prerequisite: course 46C. A continuing study of dance forms with consideration of social factors and environmental influences. Includes observation and analysis of movement and the development of basic skills in Labanotation. Mrs. Dunin

**52. Introduction to Dance Theater. (½ course)** Prerequisite: course 36A. Study of the interaction of the aesthetic components of dance theater. Mrs. Siegel

**70A-70B. Introduction to Performance in Ethnic Dance. (½ course each)** Study of basic movement in ethnic dance forms. Mrs. Dunin

**71A-71Q. Performance Courses in Ethnic Dance. (½ course each)** May not be repeated for credit. (A) Dance of Bali; (B) Dance of Africa; (E) Dance of India; (F) Dance of Israel; (G) Dance of Japan; (H) Dance of Java; (J) Dance of Mexico; (L) Dance of Scotland; (M) Dance of Spain; (P) Dance of Yugoslavia; (Q) Dance of Korea. The Staff

### Upper Division Courses

**111A-111B. Analysis of Human Movement.** Prerequisites: course 37; 111A must be completed before enrollment in 111B. A study of the biological and physical principles of movement and the effects of movement upon the structure of and function of the human body. Mr. Tracy

**111C. Analysis of Human Movement.** Prerequisite: course 111A and 111B. In depth study of selected topics introduced in 111A and 111B. Mr. Tracy

**112A-112F. Intermediate Modern Dance Technique. (½ course each)** Prerequisite: course 150C or consent of instructor. Synthesis of previous dance experience, advanced technique, and individual and group choreography. Ms. Copperman

**114A-114F. Advanced Contemporary Dance. (½ course each)** Prerequisite: course 153C or consent of the instructor. Advanced technique in contemporary dance with emphasis on performing skills. The Staff

**116. Improvisation in Dance. (½ course)** Prerequisite: consent of instructor, course 37C. Practical study of the art of improvisation with emphasis on centering, spontaneity, and the generation of new movement materials and forms as soloist and within the group. Ms. Dally

**127. Foundation of Dance Education.** Prerequisite: course 150C or consent of instructor. Analysis of theoretical aspects of movement and choreography with special reference to teaching in junior colleges and higher education. Ms. Williams

**128. Dance as Culture in Education.** Prerequisite: course 70A or consent of instructor. Analysis of theoretical and practical aspects of ethnic dance forms with special reference to teaching in higher education. Ms. Williams

**131A-131B-131C. Intermediate Ballet. (½ course each)** Prerequisite: course 30B or consent of instructor. Open only to dance majors. Courses must be taken in sequence. Study of advanced techniques and principles of classical ballet including phrasing, combinations, and repertory works. Miss Slavenska

**132A-132F. Advanced Ballet. (½ course each)** Prerequisite: course 131C. Advanced technique in classical ballet with emphasis on performing skills. Miss Slavenska

**140A-140B-140C. Dance Cultures of the World.** A survey of dance in selected cultures, the role of dance in society; consideration of style, rhythmic structure, historical background and related folklore. Lectures illustrated with demonstrations, film, slides and recordings: (A) Africa (folk and tribal traditions); (B) Asia (art, tribal and folk traditions); (C) North American Indians (tribal and folk traditions). Mrs. Snyder

**142. Dance in the Balkans.** Prerequisite: course 71P. An introduction to the dance of the Balkans, factors influencing its development and social functions, consideration of relationship of dance to other art forms. Mrs. Dunin

**143. Dance in India.** Prerequisite: course 71E. An introduction to the dance of India, factors influencing its development and social functions, consideration of relationship of dance to other art forms. Ms. von Essen

**144. Dance in Indonesia.** Prerequisite: course 71A or 71H. An introduction to the dance of Indonesia, factors influencing its development and social functions, consideration of relationship of dance to other art forms. Ms. Susilo

**145. Dance in Japan.** Prerequisite: course 71G. An introduction to the dance of Japan, factors influencing its development and social functions, consideration of relationship of dance to other art forms. The Staff

**146. Dance in Latin America.** Prerequisite: course 71J. An introduction to the dance of Latin America, factors influencing its development and social functions, consideration of the relationship of dance to other art forms. Mr. Pulido-Huizar

**150A-150B-150C. Advanced Dance.** Prerequisite: course 37C. Choreography with emphasis on the use of composed music, the group composition, and the theatrical environment; synthesis of previous dance experience, theories and technique of outstanding dance artists; principles of human movement related to dance.

Mrs. Scothorn

**151A. History of Dance in Western Culture, Origins to 1600.** Lecture, four hours. Trends in the evolution of dance in Western Civilization are studied from their origins in the Middle East through the European Renaissance period.

Mrs. Thomas

**151B. History of Dance in Western Culture, Early Baroque to the Present.** Lecture, four hours. The evolution of dance as an art form in historical context, with particular emphasis on the development of style in any given period. The shift from European court entertainment to American theatrical presentation is studied chronologically from the early 1600s on.

Mrs. Thomas

**152A. Lighting Design for Dance Theater.** (½ course) Prerequisite: course 37C. Study of aesthetics, principles and technical elements of lighting for dance.

Mrs. Siegel

**152B. Costume and Scenic Design Concepts for Dance Theatre.** (½ course) Lecture, two hours; laboratory, two hours. Prerequisite: course 37C. General study of costume history, selected historical styles and introductory drawing as a conceptual basis for visual awareness in theatrical dance design. Designer-choreographer relationships are explored.

Mr. Berliner

**152C. Advanced Studies in Dance Theater Lighting.** (½ course) Prerequisites: course 152A. Analysis of diverse dance theater lighting problems at an advanced level and individual development of creative solutions.

Mrs. Siegel

**153A-153B-153C. Choreography and Repertory.** (½ course each) Prerequisite: course 150C. Independent work in solo and group choreography. Exploration of various styles and forms. Performance in repertory works.

The Staff

**154. Music as Dance Accompaniment.** Prerequisite: course 35 or consent of the instructor. Piano and percussion improvisation for dance. Choreographer-composer relationships. History of music for the dance with emphasis on contemporary trends. Music for the dance performance.

Mrs. Gilbert

**155. Form and Structure in Choreography.** Prerequisite: course 36C. A study of the craft of choreography as taught by selected artists including Louis Horst, Doris Humphrey and Helen Tamaris. Attention will be given to their concepts of form and structure as well as philosophic bases on which these approaches were formed.

Ms. Scott

**158A-158B. Philosophical Bases and Trends in Dance.** (1, ½ course) Prerequisite: course 150C. Critical analysis of dance as a creative experience and the role of professional and educational dance in our society. Study of selected approaches to current development in dance.

Mrs. Gilbert

**159. Advanced Dance Notation.** Prerequisite: courses 37C and 38A-38B. Intermediate and advanced Labanotation. Reconstruction and score preparation in ballet, modern, and ethnic dance.

Mr. Tracy

**160. Creative Dance for Children.** Prerequisite: course 150C or consent of the instructor. Study of dance as an expressive medium for children with emphasis on concepts and principles.

Ms. Williams

**165A-165B-165C. Introduction to Movement Dynamics and Personality Growth.** (½ course each) Prerequisite: course 150C or consent of instructor. Courses must be taken in sequence. Study of movement experience as a means of increasing awareness, spontaneity, and self-directed non-verbal response to inner and outer stimuli. Emphasis on the dynamic (energy and spatial) aspects of movement with special attention to the felt-dimension associated with the experiencing.

Mrs. Lovell

**171A-171P. Performance Courses in Ethnic Dance.** (½ course each) Each course may be repeated, with the consent of the instructor, for a maximum of four units. Prerequisite: corresponding course in 71A-71P series (i.e., 71A is prerequisite to 171A, 71B is prerequisite to 171B, etc.). (A) Dance of Bali; (B) Dance of Ghana; (E) Dance of India; (F) Dance of Israel; (G) Dance of Japan; (H) Dance of Java; (J) Dance of Mexico; (L) Dance of Scotland; (M) Dance of Spain; (P) Dance of Yugoslavia.

The Staff

**190A-190B-190C. Advanced Dance Performance.** (½ course each) Prerequisite: consent of the instructor. The study of performance of major choreography.

Mrs. Scothorn, Ms. Scott

**197A-197B. Proseminar: Dance Perspectives.** (½ course each) Prerequisite: upper division standing or consent of the instructor. Consideration of the aesthetic evolving from the work of the great artists of our time.

The Staff

**199. Special Studies in Dance.** (½, 1, or 2 courses) Prerequisite: senior standing and consent of the instructor.

The Staff

## Graduate Courses

Not open to undergraduate students. See College of Fine Arts, Unit Requirements.

**200. Dance Notation.** (½ course) Prerequisite: course 159. Advanced study of dance notation.

Mr. Tracy

## 202. Research Methods and Bibliography in Dance.

Mrs. Thomas

**204A-204B-204C. Advanced Choreography.** (½ course, 1 course, ½ course) Prerequisite: course 153C or the equivalent. Theoretical and creative aspects of advanced choreography.

Mrs. Scothorn, Ms. Scott

**204D-204E-204F. Advanced Choreography.** Prerequisites: courses 204A-204B-204C and consent of instructor. Theoretical aspects of advanced choreography for the student who has reached the level of self-initiation of substantial creative works. The course will focus on refinement, realistic self-evaluation as well as critical counsel by acknowledged choreographers.

Mrs. Scothorn, Ms. Scott

**206. Music for Dance.** Prerequisite: course 154. Theory of the aesthetic and functional relationship of music to dance.

Mrs. Gilbert

**208. Principles of Dance Theater.** Prerequisite: course 152A-152B. Principles which serve the presentation of dance.

Mrs. Scothorn

**210. Aesthetics of Dance.** Prerequisite: course 158B. A critical analysis of aesthetic concepts related to dance.

Mrs. Thomas

**220. Dance in the 20th Century.** Prerequisite: course 151A-151B. Concepts, styles and forms of dance in the 20th century.

Mrs. Thomas

**221. The History of Ballet.** Prerequisite: courses 151A-151B. The development of ballet in its various stages: Renaissance, Baroque, Romantic Period; stylistic differences in Italy, France, Spain, and England; influence of the other arts and problems of ballet as an art form.

Mrs. Thomas

**223. Renaissance Dance.** Prerequisite: course 151A-151B or consent of instructor. The evolution of the dance suite will be traced from its earliest records (Domenico da Piacenza, 1430) to codification in words of Arbeau, Caroso, Negri (1580-1610). Style will be studied through reconstruction of steps, costumes, music and presentational form.

Mrs. Thomas

**226A-226B-226C. Dance Expressions in Selected Cultures.** Prerequisite: course 140 or consent of instructor. Dance as an aspect of culture and human behavior. A survey of writings on dance ethnology and literature from related disciplines particularly anthropology and the behavioral sciences as well as techniques for research.

Mrs. Snyder

**227A-227B. Advanced Studies in Dance Education.** Prerequisite: consent of instructor and 227A is prerequisite for 227B. Concepts in the area of movement, creativity, and learning applied to the art of dance. Development of dance in higher education with consideration of the body of knowledge, curriculum development and administrative problems.

Ms. Williams

**251A-251B-251C. Dance in Rehabilitation.** Prerequisite: consent of the instructor. Dance in the therapeutic setting. A year course including a study of related research and literature, theoretical foundations for movement therapy, and individual research projects.

Ms. Alpersen

**252A-252B-252C. Seminar in Movement Therapy.** Prerequisites: courses 251A-251B-251C and course 596R. Selected topics explored in depth; theoretical concepts related to clinical experience.

Ms. Alpersen

## Professional Courses

**327A-327B. Principles of Teaching Dance.** (½ course each) Prerequisite: senior standing or consent of the instructor. A study of methods, curricular materials, and evaluation procedures as related to the teaching of dance in the secondary schools.

Mrs. Dunin

**495. Preparation for the Teaching of Dance in Higher Education.** (½ course) Prerequisites: graduate standing and consent of instructor. Study of problems and methodologies in teaching Dance which includes seminars, workshops and apprentice teaching. May be repeated once for credit. Graded S/U.

Ms. Williams

## Individual Study and Research

**596A. Directed Individual Study or Research.** (½ to 2 courses)

**596R. Directed Study or Research in a Hospital or Clinic.** (½ to 2 courses)

Ms. Alpersen

**597. Preparation for the Comprehensive Examination for the Master's Degree. (No Credit)**

**598. Research for and Preparation of the Master's Thesis.** (½ to 2 courses)

## Related Courses in Other Departments

**Anthropology 144. Aesthetic Anthropology.**

**Art 10A-10B. Drawing.**

**25. Sculpture.**

**30A. Introduction to Design and Technology.**

**50. Ancient Art.**

**51. Medieval Art.**

**52. Renaissance Art.**

**53. Baroque Art.**

**54. Modern Art.**

**55. Africa, Oceania and Native America.**

**110A-110B-110C. European Art.**

**110D. Contemporary Art.**

**122. History of Style and Ornament.**

**161J. Video Imagery.**

**English 80. Major American Authors.**

**85. The American Novel.**

**90. Shakespeare.**

**100A. Introduction to Poetry.**

**100B. Introduction to Drama.**

**101C. Recent American Fiction.**

**112. Children's Literature.**

**133A-133B-133C. Creative Writing: Poetry.**

**134A-134B-134C. Creative Writing: Short Story.**

**135A-135B-135C. Creative Writing: Drama.**

**Humanities 1A-1B. World Literature.**

**Music 2A-2B-2C. Introduction to the Literature of Music.**

**132A-132B. Development of Jazz.**

**135A-135B-135C. History of the Opera.**

**140A-140B-140C. Musical Cultures of the World.**

**Theater Arts 5A-5B-5C. History of the Theater.**

**20. Acting Fundamentals.**

**101. Introduction to the Theater Arts.**

**102A-102B. Selected Topics in the History of the European Theater.**

**105. Main Currents in Theater.**

**118A-118B. Creative Dramatics.**

**122. Make-up for the Stage.**

**188. The Aesthetics of Visual Communication.**

## DENTISTRY (ORAL BIOLOGY)

(Department Office, 63-050 Health Sciences Center)

Thomas K. Barber, D.D.S., M.S., *Professor of Pediatric Dentistry and Pediatrics.*

Angelo A. Caputo, M.S., Ph.D., *Professor of Biomaterials Science.*

Fermin A. Carranza, Jr., D.D.S., Dr. Odont., *Professor of Periodontics.*

Spiro J. Chaconas, D.D.S., M.S., *Professor of Dentistry.*

Andrew D. Dixon, D.D.S., M.D.S., Ph.D., D.Sc., *Professor of Dentistry.*

Lawrence L. Furstman, D.D.S., M.S., Ph.D., *Adjunct Professor of Dentistry.*

Louis J. Goldberg, D.D.S., Ph.D., *Professor of Dentistry (Oral Biology) and Anatomy (Chairman, Oral Biology Section).*

E. Barrie Kenney, D.D.S., M.S., *Professor of Periodontics.*

Carol M. Newton, M.D., Ph.D., *Professor of Biomathematics.*

Bernard G. Sarnat, M.D., M.S., D.D.S., *Adjunct Professor of Oral Biology and Plastic Surgery.*

Max H. Schoen, D.D.S., M.P.H., Ph.D., *Professor of Public and Preventive Dentistry.*

G. Douglas Silva, F.D.S., M.R.C.S., *Professor of Oral Medicine and Medicine.*

Normal S. Simmons, D.M.D., Ph.D., *Professor of Oral Medicine and Research Biochemist.*

Reidar F. Sognnaes, Ph.D., D.M.D., *Professor of Oral Biology and Anatomy.*

Alfred Weinstock, D.D.S., Ph.D., *Professor of Periodontics and Anatomy.*

Robert B. Wolcott, D.D.S., M.S., *Professor of Restorative Dentistry.*

Fred Herzberg, D.D.S., M.S., *Emeritus Professor of Oral Biology and Research Anatomist.*

George W. Bernard, D.D.S., Ph.D., *Associate Professor of Dentistry (Oral Biology) and Anatomy.*

John Beumer, III, D.D.S., M.S., *Associate Professor of Restorative Dentistry.*

Henry M. Cherrick, D.D.S., M.S.D., *Associate Professor of Dentistry (Oral Pathology).*

Colin K. Franker, Ph.D., *Associate Professor of Oral Biology.*

Douglas Junge, Ph.D., *Associate Professor of Oral Biology and Physiology.*

William K. Solberg, D.D.S., M.S.D., *Associate Professor of Restorative Dentistry.*

Ray E. Stewart, III, D.M.D., M.S., *Associate Professor in Residence of Pediatric Dentistry and Pediatrics.*

Stuart C. White, D.D.S., Ph.D., *Associate Professor of Oral Radiology.*

Gerald C. Brundo, D.D.S., M.A., *Assistant Professor of Restorative Dentistry.*

Russell Christensen, D.D.S., M.S., *Assistant Professor of Oral Diagnosis.*

Glenn Clark, D.D.S., M.S., *Assistant Professor of Gnatology.*

Joseph P. Cooney, D.D.S., M.S., *Assistant Professor of Restorative Dentistry.*

Bruce Crispin, D.D.S., M.S., *Assistant Professor of Operative Dentistry.*

Donald F. Duperon, D.D.S., M.Sc., Assistant Professor of Pediatric Dentistry and Pediatrics

Jay Gershen, D.D.S., Ph.D., Assistant Professor of Pediatric Dentistry and Public Health

Wyatt R. Hume, B.D.S., B.Sc.Dent., Ph.D. Assistant Professor of Oral Biology

Bruce D. McKehey, D.D.S., M.S.D., Assistant Professor of Oral Pathology.  
Robert N. Moore, D.D.S., Ph.D., M.S., Assistant Professor of Orthodontics.

Michael G. Newman, D.D.S., Assistant Professor of Periodontics.  
George R. Riviere, D.D.S., M.S., Ph.D., Assistant Professor of Pediatric Dentistry and Oral Biology.

Marlin Walling, D.M.D., Adjunct Assistant Professor of Orthodontics.

David Benson, D.D.S., M.S., Associate Clinical Professor of Restorative Dentistry.

Wil Faermark, D.D.S., M.S., Lecturer in Oral Biology.

Larry S. Luke, D.D.S., M.S., Assistant Clinical Professor of Dentistry and Pediatrics.

William A. Richter, D.M.D., M.S., Clinical Professor of Restorative Dentistry.

Robert P. Thyne, D.M.D., M.S., Clinical Professor of Restorative Dentistry, M.S. (Oral Biology)

The program focuses on the biology of the oral-facial area. An understanding of all systems is obtained through courses designed to explore in depth the morphology, physiology, biochemistry, immunology, microbiology and genetic aspects of the oral-facial complex. Research in any of these fields may be undertaken on problems related to oral biology. The principles of scientific research design and evaluation and the principles of course organization and student evaluation are stressed in order to prepare the student for a more effective career in teaching and research.

#### Admission to Graduate Status

An applicant for the M.S. degree (Oral Biology) is expected to hold an acceptable bachelor's degree in the biological and chemical sciences; or to hold a D.D.S. or D.M.D. degree from an accredited university. Minimum requirement for graduate status is a B scholarship average in the last two years of school prior to admission. Applicants with foreign degrees will be considered individually. The graduate record examination and/or evidence of English language proficiency may be required.

#### Concurrent D.D.S. and M.S. Programs

The summer between the freshman and sophomore years will be spent in a dental school laboratory involved in basic research in oral biology and studying principles and methods of dental research. In the sophomore year students will study advanced oral biology. The student's progress in the M.S. program from the beginning of the junior year will be dependent on individual abilities and desires.

#### Requirements for the M.S. Degree

Candidates for the Master of Science degree must meet the general requirements set by the Graduate Division for this degree. (see Requirements for Graduate Degrees). The required courses are Oral Biology 201A, 201B, 201C, 202, 495, Biomathematics 170A; completion of a satisfactory thesis and oral defense based on laboratory research is required.

Related courses from any department within the Health Sciences Center may be included in a student's program with the approval of the Major Advisor and the Assistant Dean for Research.

A dental student, who qualifies for admission to the Graduate Division, may be concurrently enrolled in the Master's Program of the School of Dentistry.

#### Graduate Courses

**201A. Advanced Oral Biology. (½ course)** Two hours of lecture, one hour discussion per week in the fall and winter quarters. This course in oral biology includes the embryonic biology of specialized oral components, other aspects of orofacial prenatal physiology, preodontal biology of the neonate, deciduous dentition, mixed dentition and its relevant biology, adolescence and adulthood, senescence and the edentulous condition, and pathobiology of the oral cavity. To be graded on an In Progress basis.

Mr. Junge and the Staff

**201B. Advanced Oral Biology. (½ course)** Two hours of lecture, one hour discussion. Prerequisite: course 201A. Continuation of 201A. To be graded on an In Progress basis.

Mr. Bernard and the Staff

**201C. Advanced Oral Biology. (½ course)** Prerequisite: course 201A and 201B. Continuation of 201A and 201B. To be graded on an In Progress basis.

**202. Principles and Methods of Research.** One hour lecture and three hours of lab per week. This course is designed to familiarize the student with the experimental method and its application to basic and applied research. It will include experimental method and design and interpretation of data. The student will be exposed to research instrumentation and the advantages and limitations of various investigative tools.

Mr. Goldberg and the Staff

**203. Growth, Development and Aging.** Four hours of lecture per week in the spring quarter. This course deals with the general principles of growth, development and aging with special emphasis

on the structures of the head and face. Emphasis is placed on experimental findings, as well as on the origins and clinical manifestations of craniofacial anomalies.

Mr. Herzberg and the Staff

**206. Biology of the Neoplastic Cell. (½ course)** One hour seminar per week. Selected topics in oncology are surveyed to provide an acquaintance with current perspectives on the etiology of cancer. Recent research on tumorigenesis is evaluated with the view of possible applications to therapy and management of human neoplasms.

Mr. Franker

**210. Nervous System Control of Masticatory Muscles. (½ course)** One hour seminar per week. This seminar includes reflex control, motor cortex-pyramidal system, corpus striatum and vestibular system, cerebellum, and discussion of current theories of mastication and jaw position.

Mr. Goldberg

**214. Biology of Bone. (½ course)** Prerequisite: consent of instructor. Embryology of bone tissue; bone as an organ; growth and development of specific bones; biochemistry and physiology of bone; remodeling of bone; crystallography of hydroxyapatite; pathological calcifications; pathology of bone; mechanisms and lineage of calcification; clinical correlations.

Mr. Bernard

**215. Genetics in Dentistry. (½ course)** Two hours lecture per week. This course includes molecular and cytologic basis of inheritance, human cytogenetics, mendelian genetics and polygenic modes of inheritance, inborn errors of metabolism, genetic diseases affecting the oral facial area, and recent advances, i.e., amniocentesis, linkage, and cell hybridization.

Mr. Stewart

**216. Biological Electron Microscopy in Dental Research. (½ course)** Prerequisite: consent of instructor. A review of the application of electron microscopy to hard and soft tissues of the oral-facial region. Emphasis given to oral health problems. Course content adapted to special interests of the participants.

Mr. Dixon

**218A. Oral Pathology. (½ course)** Two hours of lecture per week. This course encompasses the embryology, cell biology, histopathology, histophysiology, and symptomatology of oral pathologic condition of local or systemic origin. The course consists of lectures, demonstrations (laboratory tests), and microscopy dealing with the developmental, inflammatory, neoplastic, metabolic, degenerative diseases and physical injuries and healing of wounds.

Mr. Cherrick

**218B. Oral Pathology. (½ course)** Prerequisite: continuation of 218A.

Mr. Cherrick

**219. Oral Pathology in the Child. (½ course)** Two hours of lecture per week. This course covers the embryology, histopathology, etiology, clinical symptomatology, treatment and prognosis of the developmental, neoplastic, inflammation, degenerative and metabolic diseases. The course is a system review with emphasis placed on diseases occurring primarily in children.

Mr. Cherrick

**223. Oral Immunopathology. (½ course)** Prerequisites: consent of instructor. This seminar will evaluate the involvement of immunological phenomena in the pathogenesis of oral diseases such as dental caries, periodontal disease, oral ulceration, and hypersensitivity reactions. Aberrations of the immune system which affect the oral cavity will also be discussed.

Mr. Riviere

**M224. Structure and Chemistry of Connective Tissue. (½ course)** (Same as Anatomy M224.) Prerequisites: histology, biochemistry. This seminar course is designed for graduate students in dentistry or basic science. The objective of the course is to provide students with fundamental information on the fine structure and the chemical composition of bone, dentin, cementum, cartilage, cells of connective tissue in general, as well as enamel. Emphasis will be placed on the biosynthesis of collagen, noncollagenous proteins and glycoproteins, and glycosaminoglycans (mucopolysaccharides). The possible roles of the cellular and non-cellular elements in the process of biological mineralization will also be discussed. Correlation of biological processes to periodontal pathology will be stressed when possible.

**225. Gross Postnatal Craniofacial Growth and Development. (½ course)** This seminar is designed primarily to develop a critical sense in the evaluation of the research literature and an appreciation of the dynamic complexity of postnatal craniofacial growth. At each session students will present reviews and critiques of original articles. This will be followed by group discussion. Specific aspects of the following general topics on growth of bone and bones will be considered in detail: Historical review; modes of growth; general and craniofacial (mandible, midface, cranium) growth; methods of assessing; factors affecting; and conflicting hypotheses. The student will be encouraged to pursue his particular interest.

**226. Physiology of Nerve Cells. (½ course)** Covers basic mechanisms determining resting and action potentials in neurons, and mechanism of action of local anesthetics. Concepts of ionic channels common to a variety of membranes including secretory and osteogenic, will be illustrated with some numerical problems. Text: Junge (1976). *Nerve and Muscle Excitation*.

**227. Dental Embryology and Histology. (½ course)** The student will be able to describe and interpret important stages in the development of the orofacial apparatus and histological features of its component tissues. The student will be able to critique scientific literature relevant to the course content and will analyze the current state of our knowledge about selected features of the orofacial

apparatus which are of significance to the clinical dental specialist.

Mr. Dixon

**495. Communicating Scientific Information. (½ course)** Two hours of lecture and laboratory per week. This course is designed to enhance the preparation of the student for university teaching and to provide an opportunity to study the problems and methodologies associated with instruction in professional schools. S/U grading only.

The Staff

**596. Directed Individual Study or Research. (½ to 1 course)** Graded S/U.

The Staff

**598. Thesis Research and Preparation. (½ to 1 course)** Graded S/U.

The Staff

## EARTH AND SPACE SCIENCES

(Department Office: 3806 Geology)

<sup>17</sup>Orson L. Anderson, Ph.D., Professor of Geophysics.

<sup>17</sup>Arthur L. Boettcher, Ph.D., Professor of Geochemistry and Geophysics.

<sup>17</sup>Friedrich H. Busse, Ph.D., Professor of Geophysical Fluid Dynamics.

Donald Carlisle, Ph.D., Professor of Geology and Mineral Resources.

John M. Christie, Ph.D., Professor of Geology.

<sup>17</sup>Paul J. Coleman, Jr., Ph.D., Professor of Geophysics and Space Physics.

Wayne A. Dollase, Ph.D., Professor of Geology.

<sup>17</sup>W. Gary Ernst, Ph.D., Professor of Geology and Geophysics.

Clarence A. Hall, Jr., Ph.D., Professor of Geology.

<sup>17</sup>Isaac R. Kaplan, Ph.D., Professor of Geology and Geochemistry.

<sup>17</sup>William M. Kaula, D.Sc., Professor of Geophysics.

<sup>17</sup>Margaret G. Kivelson, Ph.D., Professor of Space Physics in Residence.

<sup>17</sup>Richard E. Lingenteller, B.A., Professor of Astrophysics, Geophysics, and History in Residence.

Helen Tappan Loeblich, Ph.D., Professor of Paleontology and Geology.

<sup>17</sup>Robert L. McPherron, Ph.D., Professor of Space Physics and Geophysics.

Clemens A. Nelson, Ph.D., Professor of Geology (Vice Chairman of the Department).

Gerhard Oertel, Dr. rer. nat., Professor of Geology.

John L. Rosenfeld, Ph.D., Professor of Geology.

<sup>17</sup>J. William Schopf, Ph.D., Professor of Paleobiology.

Gerald Schubert, Ph.D., Professor of Geophysics and Planetary Physics.

<sup>17</sup>Ronald L. Shreve, Ph.D., Professor of Geology and Geophysics.

<sup>17</sup>John T. Watson, Ph.D., Professor of Geochemistry and Chemistry.

Kenneth D. Fasson, Ph.D., Professor of Geology.

<sup>17</sup>Robert E. Holzer, Ph.D., Emeritus Professor of Geophysics.

Willis P. Popenoe, Ph.D., Emeritus Professor of Geology.

David D. Jackson, Ph.D., Associate Professor of Geophysics.

Hugh H. Kieffer, Ph.D., Associate Professor of Planetary Physics.

Walter E. Reed, Ph.D., Associate Professor of Geology.

George Peter Bird, Ph.D., Assistant Professor of Geophysics and Geology.

Donald J. DePaolo, Ph.D., Assistant Professor of Geochemistry and Geology.

Susan Werner Kieffer, Ph.D., Assistant Professor of Geological Physics.

Thomas E. Ronan, Ph.D., Assistant Professor of Geology and Oceanography.

Mario E. Bauer, Ph.D., Associate Professor of Chemistry.

Kyle D. Bayes, Ph.D., Professor of Chemistry.

Bradford K. Johnson, Ph.D., Lecturer in Geology.

Robert E. Jones, B.S., Lecturer in Geology.

<sup>17</sup>George C. Kennedy, Ph.D., Professor of Geochemistry and Geology.

<sup>17</sup>Leon Knopoff, Ph.D., Professor of Geophysics and Physics.

<sup>17</sup>Willard F. Libby, Ph.D., Emeritus Professor of Chemistry.

Alfred R. Loeblich, Ph.D., Adjunct Professor of Paleontology and Geology.

Ajit K. Mal, Ph.D., Professor of Engineering and Applied Science.

Paul M. Merifield, Ph.D., Lecturer in Engineering and Environmental Geology.

Malcolm F. Nicol, Ph.D., Professor of Chemistry.

Everett C. Olson, Ph.D., Professor of Zoology.

LouElla R. Saul, M.S., Senior Museum Scientist.

Floyd F. Sabins, Jr., Ph.D., Lecturer in Geology.

Takeo Susuki, M.S., Senior Museum Scientist.

Peter P. Vaughn, Ph.D., Professor of Zoology.

Michio Yanai, D.Sc., Professor of Atmospheric Dynamics.

#### Undergraduate Study

The programs described below are designed to provide the student majoring in earth and space sciences with broad training in curricula leading to the Bachelor of Science degree in Geology or Geophysics.

Students majoring in the Department should confer with the appropriate Undergraduate Counselor at or before the beginning of each quarter. Sample undergraduate programs for the majors in Geology and in Geophysics are available in the advising office.

#### Bachelor of Science in Geology

#### Geology Specialty

Preparation for the Major. Earth and Space Sciences 1, 2, 9, 51A, 51B, 51C; Biology 4A, 4B; Chemistry 11A, 11B, 11BL, 11C, 11CL, or 13A and 13B; Mathematics 31A-31B-31C or (3A-3B-3C, 31C); Physics 6A, 6B, 6C, or 8A, 8B and 8C.

The Major. Earth and Space Sciences 111A, 111B, 111C (or 169), 112, 115 (or 120B), 121A, 121B, M136A, 103 or 141; three

additional courses from Earth and Space Sciences 103, 114, 119, 122, 128A,B, 129A,B, M130, M131, 132, 133, M136B, 137, M139, 141, 144, 150, 160.

### Engineering Geology Specialty

*Preparation for the Major.* Earth and Space Sciences 1, 51A,B,C; Biology 4A,B; Chemistry 11A, 11B, 11BL, 11C, 11CL (or 13A,B); Mathematics 31A,B,C (or 3A,B,C, 31C), 32A; Physics 8A,B,C.

*The Major.* Earth and Space Sciences 103 or 141, 11A,B,C (or 169), 112, 121A,B, M136A, M139; Engineering 108, 184A,B, 185A,B.

### Paleobiology Specialty

*Preparation for the Major.* Earth and Space Sciences 1, 2, 51A,B,C; Biology 4A,B; Chemistry 11A, 11B, 11BL, 11C, 11CL (or 13A,B), 21, 22; Mathematics 31A,B,C (or 3A,B,C, 31C).

*The Major.* Earth and Space Sciences 111A, 111B, 111C (or 132), 112, 115 (or 120B), 121A,B, 141; six courses from: Chemistry 24; Public Health 160B,C; Biology 100 (1½ courses), 103, 105, 110, 111, 119, 120, 122, 126, M132; Earth and Space Sciences 111C, M117, M118, 119, 132, 144.

### Geochemistry Specialty

*Preparation for the Major.* Earth and Space Sciences 1, 51A,B,C; Biology 4A,B; Chemistry 11A, 11B, 11BL, 11C, 11CL (or 13A,B), 21; Mathematics 31A,B,C (or 3A,B,C, 31C), 32A, (recommended: Mathematics 32B,C); Physics 8A,B,C (Physics D recommended).

*The Major.* Earth and Space Sciences 111A,B,C (or 169), M130, M131; Chemistry 110A,B, 113, 114 (or Chemistry 22 and 24; or 184 or Earth and Space Sciences 132); three courses from: Earth and Space Sciences 103, 112, 119, 121A,B, 128A,B; Chemistry 22; one Earth and Space Sciences or Chemistry course on approval of the advisor.

### Nonrenewable Natural Resources Specialty

*Preparation for the Major.* Earth and Space Sciences 1, 2, 51A,B,C; Biology 4A,B; Chemistry 11A, 11B, 11BL, 11C, 11CL (or 13A,B); Mathematics 31A,B,C (or 3A,B,C, 31C); Physics 6A,B,C (or 8A,B,C).

*The Major.* Earth and Space Sciences 111A,B,C, 112, 121A,B, 128A or 128B, 129A,B, M136A,B, 137, 169; one course from Earth and Space Sciences 103, 128A or B, 138, M139, 140, 141, 150.

### Bachelor of Science in Geophysics

### Applied Geophysics Specialty

*Preparation for the Major.* Earth and Space Sciences 1, 51A,B,C; Chemistry 11A or 13A, Mathematics 31A,B,C, 32A,B,C; Physics 8A,B,C,D; Engineering 10.

*The Major.* Earth and Space Sciences 111A,B, 112, 122, M136A,B, 169; Physics 105A,B, 110A,B, 114; three courses from: Earth and Space Sciences 101, 111C, 129A,B, M131, 137, 138, M139, M154, 205, 265; Mathematics 140A,B,C, 152A,B; Physics 112, 115A, 116, 131A,B; or other courses by approval of the advisor.

### Geophysics and Space Physics Specialty

*Preparation for the Major.* Earth and Space Sciences 1, 9; Chemistry 11A, 11B, 11BL, 11C, 11CL (or 13A,B); Mathematics 31A,B,C, 32A,B,C; Physics 8A,B,C,D.

*The Major.* Earth and Space Sciences M109A, 122, M154; Physics 105A,B, 110A,B, 112; Physics 131A or Mathematics 145A; three courses from: Earth and Space Sciences 101, 119, 129B, M131, M136A,B, 150, 160, 205, 233; Atmospheric Sciences 153; or one of Mathematics 104A,B, or C. Three science electives on approval of the advisor.

Students planning to do graduate work in specialized careers in earth science should aim to take, when possible, appropriate courses in departments outside the major in addition to those already specified. Suggested graduate programs for various fields of emphasis are available in the Student Affairs Office, Room 3683 and will provide guidelines in choosing upper division courses.

Qualified undergraduate students may, upon consent of their advisers and the instructor, take Earth & Space Sciences graduate courses numbered from 200 to 250.

### Honors in Geology or Geophysics

The honors program in Geology or Geophysics is intended to provide exceptional students an opportunity for advanced research and study under the tutorial guidance of a member of the faculty. Requirements for admission to candidacy are the same as those required for admission to the Honors Program of the College of Letters and Science. Qualified students wishing to enter the program must submit a completed application form to the Departmental Honors Committee near the end of their junior year. Honors in Geology or Geophysics are awarded upon graduation to those students who have a cumulative GPA of 3.4, who have completed at least 20 graded courses in the University of California, and who have completed a minimum of two quarters (8 units) of course 199H leading to the preparation of a satisfactory honors

thesis. Students demonstrating exceptional ability will be awarded Highest Honors.

### Graduate Study

The Department of Earth and Space Sciences offers programs leading to the M.S. and Ph.D. degrees in Geochemistry, in Geology, and in Geophysics and Space Physics. The program in Geochemistry offers study in biogeochemistry, crystal chemistry, experimental petrology, isotopic studies of light elements, marine geochemistry, meteorite research, planetology, and lunar geochemistry. The program in Geology offers study in geochemistry, geological physics, geomorphology, glaciology, mineral deposits, mineralogy, organic geochemistry, paleobiology, petrology, sedimentology, stratigraphy, structural geology, tectonophysics, and other fields. The program in Geophysics and Space Physics offers study in geophysics (seismology, gravity, thermal regime, geomagnetism, tectonics), geophysical fluid dynamics (turbulence, rotating systems, stability, hydromagnetism), planetology (orbital dynamics, planetary interiors, surfaces, and atmospheres, solar-system origin), and space physics (magnetosphere, radiation belts, solar wind, magnetic fields, cosmic rays). Other comparable areas of study are also possible.

Admission to all three programs is based on the likelihood of success in the program as judged from the materials submitted with the application. The more important criteria considered are: (a) the appropriateness of the program to the applicant's stated objectives and background; (b) the applicant's academic record, especially in the relevant basic sciences; (c) the applicant's Graduate Record Examination scores in verbal, mathematical, and analytical ability and in the appropriate advanced test; (d) the applicant's statement of purpose, which should deal more with the intellectual goals and motivations than with occupational ones; (e) the three required letters of recommendation, which should be from people familiar with the applicant's intellectual and motivational qualifications for academic pursuits; and (f) Departmental load in the desired program and specified field.

Application forms and further information or assistance can be obtained by writing or telephoning the Graduate Advisor, Department of Earth and Space Sciences. Applications, transcripts, and all related materials except letters of recommendation should be sent to the Admissions Office, Graduate Division; letters of recommendation should be sent directly to the Graduate Advisor.

*General University requirements.* All programs are subject to the general University requirements governing graduate degrees, which are summarized in the announcement of the Graduate Division elsewhere in this Catalog and should be read in conjunction with the Departmental requirements.

*Departmental requirements.* These requirements are summarized in the following sections. Variances from them will be permitted only in exceptional cases, and require written recommendation by the student's faculty advisor and formal approval by the Graduate Student Affairs Committee, a faculty committee chaired by the Graduate Advisor.

*Departmental reviews.* The Graduate Student Affairs Committee annually reviews the progress of each student (generally in late May or early June). These reviews become part of the student's Departmental record and are transmitted to students and their faculty advisors in writing. Students whose scholarship or progress are insufficient are subject to dismissal.

The normal minimum course load is 12 units per Quarter.

### PROGRAM IN GEOCHEMISTRY

*Admission.* A bachelor's degree in chemistry, geology, physics, or related field is required. Applicants must have outstanding records in the basic sciences, physics, chemistry, and mathematics. Recent Graduate Record Examination aptitude and advanced test scores are required; the advanced test may be in any appropriate field of science.

Students planning to work toward the Ph.D. are not encouraged to obtain the M.S.

*Advising.* All entering students are required to take either the General Preliminary Examination given by the Department of Earth and Space Sciences or the Orientation Examination given by the Department of Chemistry. These examinations are given at the beginning of each Fall quarter (and also Winter and Spring Quarters as necessary). They are general in scope, are based on undergraduate courses only, and are used solely for guidance in setting up students' courses of study.

All students are assigned a three-member faculty advising committee, which is chosen by the Graduate Advisor in consultation with the student just prior to the first Quarter of enrollment. At the beginning of every Quarter each student's program must be reviewed and approved by his or her faculty advisor before submission for official approval by the Graduate Advisor.

### Master of Science Degree

*Course requirements.* Each course of study is worked out individually by the advising committee in consultation with the student. All students are expected to attain, either through their previous training or through prescribed course work, a common mastery of the subject matter of courses 51A, 51B, 51C, M130, M131, 234B, and Chemistry 110A and 110B, as well as more advanced courses in particular fields, and some familiarity with the methods of field geology (courses 111AG, 111BG, and 111CG strongly

recommended). All students are required to register in M235A, M235B, or M235C each Quarter.

Research courses 596, 597, and 598 may be taken with the approval of the student's advising committee. They may be counted for up to 16 units of the required 36 units of course work for the degree and up to 12 units of the required 20 units of graduate-level courses.

Except for courses 597 and 598, courses graded on an S/U basis are not applicable toward the requirements.

*Thesis plan.* The advising committee normally serves as the Thesis Committee. The topic must be approved and the thesis accepted by the student's research director (who is ordinarily the chairman of the Thesis Committee) as well as by the Thesis Committee.

*Comprehensive-examination plan.* The examination is administered by the advising committee and is normally oral. Although the committee will take into account the fact that some students are better qualified in chemistry and others in geology, it is required that distinct competence in the one be matched by at least adequate performance in the other. In the event of failure a second try is allowed in most cases.

### Doctor of Philosophy Degree

*Course requirements.* Each course of study is worked out individually by the advising committee in consultation with the student. All students are expected to attain, either through their previous training or through prescribed course work, a mastery of the material covered in courses 51A, 51B, 51C, M130, M131, 234B, and Chemistry 110A and 110B, as well as more advanced courses in particular fields, and some familiarity with the methods of field geology (courses 111AG, 111BG, and 111CG strongly recommended). All students are required to register in M235A, M235B, or M235C each Quarter.

*Written Qualifying Examination.* This examination is normally taken toward the end of the second year of graduate study. It covers the field of geochemistry and related areas in geology and chemistry. It may include an oral part at the discretion of the advising committee. If failed, it can be repeated at the discretion of the advising committee.

*Oral Qualifying Examination.* After passing the Written Qualifying Examination the student must consult the advising committee and the Graduate Advisor regarding nomination of his or her doctoral committee.

The student is responsible for arranging the time and place of the examination, which should be as soon after the Written Qualifying Examination as possible. At least a week beforehand he or she must provide each member of the doctoral committee with a written prospectus of his or her proposed dissertation research. The subject matter covered in the examination includes, but is not limited to, the proposed research. Repetition of a failed examination is at the option of the doctoral committee.

*Foreign language requirement.* None.

*Candidate in Philosophy degree.* Not offered.

*Final Oral Examination.* Normally required.

### PROGRAM IN GEOLOGY

*Admission.* A bachelor's degree in geology, biology, chemistry, physics, or other field is required. Applicants must have outstanding records in the relevant basic sciences and mathematics. Recent Graduate Record Examination aptitude test scores are required. Advanced test scores are optional, and may be in any appropriate subject.

Qualified students may proceed directly toward the Ph.D. degree without first obtaining an M.S. degree.

*Advising.* All entering students are required to take the General Preliminary Examination at the beginning of their first Quarter of enrollment. It is a six-hour written examination which covers normal undergraduate training in geology and allied basic sciences and mathematics. It is used solely for guidance, and may result in recommendations that specific courses be taken.

All students are assigned a three-member faculty advising committee, chaired by a faculty advisor, that is selected from the faculty in the appropriate fields of specialization by the Graduate Advisor in consultation with the student just prior to the first Quarter of enrollment. With the approval of the Graduate Advisor the advising committee may be reconstituted to fit developing interests or other circumstances. At the beginning of every Quarter each student's program must be reviewed and approved by his or her faculty advisor before submission for official approval by the Graduate Advisor.

### Master of Science Degree

*Course requirements.* Each course of study is worked out individually by the advising committee in consultation with the student. It may include appropriate courses offered by other departments. Courses applied toward the 36-unit minimum requirement must be from the 100, 200, or 500 series in the physical or life sciences. Not more than 8 units may be from the 500 series. At least 24 units must be graduate level courses, of which at least 4 units must be a geology seminar (courses 251 through 260, 283) and no more than 4 units may be from the 500 series.

Except for courses 597 and 598, courses graded on an S/U basis are not applicable toward the requirements.

All students except those who have already passed course 111C are required to take either course 195G or the sequence 111AG-111BG-111CG in their first year of residence. A grade of U (Unsatisfactory) in 195G automatically requires taking 111BG and 111CG in the following two Quarters.

The advising committees may require additional courses in light of individual educational objectives and performance on the General Preliminary Examination.

**Thesis plan.** This plan is normally required for students not continuing to the doctorate. The Thesis Committee consists of the three-member advising committee, whose chairman is the supervisor of the thesis research. One member of the Committee commonly is from another department, although this is not a requirement. The thesis subject may be selected at once and the research undertaken concurrently with course work; in any event it should normally be selected within the first year of residence. The completed thesis must be approved by the Thesis Committee. If it is not, the Committee may on the basis of the student's academic performance recommend either termination of graduate study or further course work or research or both leading to submission of a revised thesis. Revision and resubmission is not normally permitted more than once.

**Comprehensive-examination plan.** This plan is recommended for those continuing to the Ph.D. The examination is administered by the student's three-member advising committee and one additional member who is appointed by the Graduate Advisor following consultation with the student. It consists of a 6-hour written part and a subsequent oral part. The written part covers the student's major field of study, whereas the oral part may be more general in scope. If the examination is failed, the committee may on the basis of the student's academic performance recommend either termination of graduate study or further course work followed by another examination. Reexamination is not normally permitted more than once.

**Specialization in Nonrenewable Natural Resources.** The objective of this program is to prepare students for professional careers in the geology of metallic, nonmetallic, and fossil energy resources. Because of the diverse backgrounds of students entering the specialization, individual courses of study will be arranged in consultation with the Committee for Graduate Study in Nonrenewable Natural Resources. Particularly relevant courses include 128A, 128B, 129A, 129B, M130, M131, 132, M136A, M136B, 137, 138, 140, 144, 150, 169, 227, M235A, M235B, M235C, 258, 268 and 283, as well as selected courses in Chemistry, Engineering, the Social Sciences, Law, and Management.

#### Doctor of Philosophy Degree

**Course requirements.** Each course of study is worked out individually by the advising committee in consultation with the student. It may include appropriate courses offered by other departments. No fixed number of courses is required, but the program must satisfy the minimum course requirements for the M.S. in Geology.

All students except those who have already passed course 111C are required to take either course 195G or the sequence 111AG-111BG-111CG in their first year of residence. A grade of U (Unsatisfactory) in 195G automatically requires taking 111BG and 111CG in the following two Quarters.

All students are required to take at least 4 units of geology seminars (courses 251 through 260, 283) each year.

**Written Qualifying Examination.** This examination must be taken before the end of the first year of the doctoral program if the student has a master's degree; otherwise it must be taken before the end of the second year of enrollment. It is administered by the advising committee augmented by a fourth member who is appointed by the Graduate Advisor in consultation with the student and serves as chairman of the examining committee. It is given in either a question-answer format or a proposal-proposition format, which the student may select.

The **question-answer format** consists of a two-part examination. The first part is written, takes 6 hours, and can cover any aspect of geology in which the student has had training, including general background, current emphases, and in-depth focus on the student's special field. The second part is oral, is taken no later than a week after the first part, and can cover subjects from the written part, the field of the proposed dissertation, and specifics of the proposed research, although it is not limited to these topics.

The **proposal-proposition format** consists of an oral examination based on three written independent research proposals or scientific propositions in any combination, which must be submitted to the examining committee at least 10 days before the examination. One of the proposals must specify the intended dissertation research. The examination is concerned with the originality and soundness of the proposals and propositions, the depth and breadth of thinking they display, their scientific significance, and the quality of their elucidation and defense, although it is not limited to these topics.

**Oral Qualifying Examination.** After passing the Written Qualifying Examination the student must consult the advising committee and the Graduate Advisor regarding nomination of his or her doctoral committee.

The student is responsible for arranging the time and place of the examination, which should be as soon after the Written Qualifying Examination as possible. At least a week beforehand he or she must provide each member of the doctoral committee with a written

prospectus of his or her proposed dissertation research. The subject matter covered in the examination includes, but is not limited to, the proposed research. Repetition of a failed examination is at the option of the doctoral committee.

**Foreign language requirement.** Advising committees may require one or more foreign languages in special individual cases. The committee determines how the requirement is to be fulfilled.

**Candidate in Philosophy degree.** Offered.

**Final Oral Examination.** Normally required, but may be waived upon recommendation of the doctoral committee.

#### PROGRAM IN GEOPHYSICS AND SPACE PHYSICS

**Admission.** A bachelor's degree in a physical science, engineering, mathematics, or other field is required. Undergraduate work must include Junior or Senior level courses in mathematical methods, dynamics, electromagnetism, and thermodynamics. Recent Graduate Record Examination aptitude test scores are required. Advanced test scores are desirable, preferably in physics, although mathematics or geology are also acceptable.

Qualified students may proceed directly toward the Ph.D. degree, although most obtain the M.S. degree in the process.

**Advising.** All students are assigned a faculty advisor with research interests close to their own by the Graduate Advisor in consultation with the student just prior to the first Quarter of enrollment. At the beginning of every Quarter each student's program must be reviewed and approved by his or her faculty advisor before submission for official approval by the Graduate Advisor.

#### Master of Science Degree

**Course requirements.** Courses applied toward the 36-unit minimum requirement must include courses 200A, 200B, and 200C and at least 12 additional units of 200-series (graduate-level) courses, of which at least half must fall within a single field of concentration (geophysics, geophysical fluid dynamics, planetology, or space physics) selected by the student with the advice and approval of his or her faculty advisor and the remainder must contribute to his or her general competence in geophysics and space physics. Courses from the 500 series and courses graded on an S/U basis do not apply toward the minimum requirement.

**Thesis plan.** This plan is an optional alternative to the comprehensive-examination plan. At least two members of the Thesis Committee must be from the Department.

**Comprehensive-examination plan.** This plan is the one normally followed. The examination is the Comprehensive-Examination part of the Written Qualifying Examination taken by doctoral students, but the passing level for the master's degree is not so rigorous. It must be first attempted by the end of the fourth Quarter of enrollment. If failed, it must be retaken the next time it is given. Permission to take it a third time may be granted by the Graduate Advisor in extenuating circumstances.

#### Doctor of Philosophy Degree

**Course requirements.** No specific requirement.

**Written Qualifying Examination.** In this program this examination is divided into three stages, which must be passed in sequence: (1) the Fundamental Physics Examination, (2) the Comprehensive Examination, and (3) the Field Examination. Students not passing these examinations within 3 years, 2 years, and 4 years, respectively, after entering the Program are subject to dismissal.

(1) **Fundamental Physics Examination.** Students must take the final examinations in at least three of the following five categories of fundamental physics courses: (a) Physics 231A; (b) 201 or Physics 220A; (c) 202; (d) 203 or Physics 210A; and (e) Physics 215A. For the purpose of this requirement the examinations are graded on a 4.0 scale and passing requires an average grade of 3.4 or better in at least three of the categories. Students failing to attain a 3.4 in an examination may repeat it. Students who have attained a grade of A in a comparable course at another institution may petition for credit for passing the corresponding examination; such petitions should be submitted to the Graduate Advisor for consideration by the appropriate faculty. The Fundamental Physics Examinations must be passed before the Field Examination may be attempted.

(2) **Comprehensive Examination.** This is a 6-hour written examination on the level of the introductory courses 200A, 200B, and 200C and is given every December and June. It must be first attempted by the end of the fourth Quarter of enrollment. A grade of S is required to pass. If failed, it must be retaken the next time it is given. Permission to take it a third time may be granted by the Graduate Advisor in extenuating circumstances. It must be passed before the Field Examination may be attempted.

(3) **Field Examination.** This examination must be first attempted within a year of passing the Comprehensive Examination. It consists of a 3-hour written part (which may be waived by mutual agreement of both student and examining committee) followed by an oral part. It tests the student's general knowledge of his or her field of concentration (geophysics, geophysical fluid dynamics, planetology, or space physics) as defined by the student in a written statement to which he or she must obtain the examining committee's concurrence before arranging the examination. The examining committee consists of three or more faculty members, appointed by the Graduate Advisor in consultation with the student, of whom at least three must be from the Department and one must be from outside the student's field of concentration.

**Oral Qualifying Examination.** After passing the written qualifying examination the student must consult his or her faculty advisor and the Graduate Advisor regarding nomination of his or her doctoral committee.

The student is responsible for arranging the time and place of the examination, which should be as soon after the written qualifying examination as possible. The examination determines the suitability of the chosen problem for the Ph.D. dissertation and the capability of the student to pursue research on the problem, but it is not limited to these topics. Repetition of a failed examination is at the option of the doctoral committee. Students not passing this examination within 5 years after entering the Program are subject to dismissal.

**Foreign language requirement.** None.

**Candidate in Philosophy degree.** Not offered

**Final Oral Examination.** Required.

**1. Fundamentals of Earth Science.** Elements of earth science; study of earth materials; the nature and interpretation of geologic evidence; study of geologic processes; historical aspects of geology. Mr. Nelson (F,W,Sp)

**2. Earth History.** Prerequisite: course 1. Methods of historical science; consideration of special problems relating to the physical and biological evolution of the earth from earliest time to the present. Mrs. Loeblich (Sp)

**3. Evolution: Solar System, Earth, Life.** A nonmathematical course for the general university student. Origin and evolution of the solar system, emphasizing the planets Mercury, Venus, Earth, and Mars. Internal evolution of the earth and its geologic consequences (including oceans and atmosphere). Evolution of life; its interaction with the terrestrial environment. The Staff (F)

**\*15. Earth Science and Society: Geological Ecological Interactions.** Geologic aspects of major environmental problems with emphasis on lithosphere-biosphere interactions. Problems of exploration and exploitation of fossil fuel resources. Comparison of society-produced materials and natural cycles. Mr. Reed

**8. Earthquakes.** The causes and effects of earthquakes, with special emphasis on the problems of living with earthquakes in Southern California. Topics include the relationship between earthquakes and local and regional geology, types of earthquakes, past and future earthquakes in California, earthquake engineering, disaster preparedness, and prospects for predicting or controlling earthquakes. Mr. Coleman (Sp)

**9. Origin and Evolution of the Solar System.** Properties of the sun, planets, asteroids and comets. Astronomical observations relevant to understanding the solar system and its origin. Dynamical problems, including examination of fallacious hypotheses. Meteoritic evidence regarding the earliest history of the solar system. Chemical models of the solar nebula. Space exploration and its planning. Mr. Watson (W)

**10. Geology of California.** Prerequisite: course 1. General survey of major geologic features and geologic history of California; its relationship to large scale crustal motions of western North America and the eastern Pacific. Environmental geology; study of geologic hazards such as earthquakes, landslides; aspects of urban geology. Mr. Nelson (Sp)

**15. Introduction to Oceanography.** Not open for credit to students who have taken Biology 25. Processes responsible for the chemical composition of the ocean, and current circulation patterns. Sea floor spreading and morphology of the ocean floor. Biological productivity, marine ecology, and minerals forming in the ocean. The Staff (F,W,Sp)

**20. Natural History of Southern California.** Identification, distribution, diversity of plants, animals, and communities; environmental factors influencing distribution in alpine to lower desert life zones. Identification, interpretation, and physical history of rocks, landforms, and structural geologic features within the physiographic regions of southern California. Emphasis is on field based learning related to integrated aspects of natural history. Mr. Hall (Sp)

**51A. Mineralogy-Petrology.** Prerequisite: course 1, Chemistry 11C, 11CL or consent of instructor Mineralogic crystal chemistry; relation of physical properties to structure. Structural classification and petrogenesis of the main rock-forming minerals. Laboratory study of crystallography and identification of minerals in igneous, sedimentary and metamorphic rocks. Mr. Dollase (F)

**51B. Mineralogy-Petrology.** Prerequisites: course 51A and an introductory course in high school or college physics or the consent of the instructor. Principles of optical crystallography. Utilization of optical properties to identify non-opaque minerals in immersion media and in thin section. Sufficient theory is presented to understand the operations performed in the laboratory. Mr. Dollase (W)

**51C. Mineralogy-Petrology.** Prerequisite: course 51B. Composition, occurrence, and origin of igneous, sedimentary, and metamorphic rocks; megascopic and microscopical study of rocks. Mr. Watson (Sp)

**\*100. Principles of Earth Science.** Designed for non-majors. Fundamentals of physical geology and earth history; major problems of geology, such as continental drift and development of large scale features of the earth; physical and biological evolution.

Not open to students who have taken Earth and Space Sciences I.  
Mr. Oertel

**101. Introduction to Geophysics and Space Physics.** Prerequisites: Physics 8A-8B-8C, Mathematics 31A-31B-31C. A survey of geophysics, the physics of the planets, their atmospheres, and the interplanetary medium, with emphasis on topics of current research interest. The course is designed primarily for students majoring in a physical science or mathematics. Mr. Coleman (F)

**103. Intermediate Petrology.** Prerequisite: course 51C. Microscopic and megascopic study of selected suites of igneous, sedimentary, and metamorphic rocks; their composition, occurrence, and origin. Mr. Watson (F)

**105. Earth Science and Society: Nonrenewable Resources and Geological Hazards.** Prerequisite: course 1 or consent of instructor. An enquiry into the alternatives, opportunities and constraints imposed upon the activities and aspirations of mankind by geological processes and by the characteristics of earth materials. Topics include the nature of non-petroleum mineral resources, mineral and environmental depletions and conservation, the recognition of geological hazards and possible responses. Open to non-majors. Mr. Carlisle (Sp)

**M109A. Geophysical Fluid Dynamics.** (Same as Atmospheric Sciences M109A.) Prerequisites: Mathematics 32C; Physics 8D. Together with Atmospheric Sciences 109B, an introduction to fluid dynamics as applied to geophysical problems. Kinematics. Equations of fluid motion. Irrotational flow. Circulation theorems. Vorticity and vortices. Acoustic and gravity waves. Viscous flow. Mr. Yanai (F)

**111AG-111BG-111CG. Field Geology.** (½ to 1 course each) Prerequisite: graduate standing or consent of instructor. Geologic mapping, principles of stratigraphy, structural Geology and map interpretation. The Staff

**111A. Elements of Field Geology.** Prerequisite: course 1 or consent of instructor; majors must have completed course 51C or be enrolled concurrently in course 51A; course 112 normally is taken concurrently. Techniques of geologic mapping; preparation of geologic reports; methods of mapping faults and folds, sedimentary, igneous, and metamorphic terrains, and Quaternary deposits; introduction to field methods in engineering and environmental geology, petroleum geology, and mining geology and mineral exploration; interpretation of geologic maps; field exercises in pace-and-compass topographic and geologic mapping. Mr. Bird (F)

**111B. Stratigraphic and Field Geology.** Prerequisite: course 111A, or consent of instructor. Principles of stratigraphy; geologic mapping of a selected area; preparation of a geologic report. Mr. DePaolo, Mr. Reed (W)

**111C. Field Geology.** Prerequisite: course 111B, or consent of instructor. Interpretation of geologic maps and aerial photographs; plane table mapping; geologic mapping of a selected area; preparation of a geologic report. The Staff (Sp)

**112. Structural Geology.** Prerequisite: course 111A normally is taken concurrently, or consent of instructor. Planar and linear structures at different scales in sedimentary, metamorphic, and igneous rocks. Faults and folds, their description, classification, and dynamic analysis. Deformation, strength, fracture, and rheological properties of rocks. Mr. Christie (F)

**114. Intermediate Structural Geology.** Prerequisite: course 112 or consent of instructor. Large scale tectonics. The major structural features of the continental and oceanic crust of the earth; their geometry, geological and geophysical characteristics and theories as to their mode of origin. Orogenesis, continental drift, sea-floor spreading and plate tectonics. Methods of structural analysis and interpretation of geological structures. Mr. Christie (W)

**115. Principles of Paleontology.** Principles governing the evolution and distribution of fossils; the geologic history of plants, invertebrates and vertebrates. The Staff (F,W)

**M117. Vertebrate Paleontology.** (Same as Biology M117.) Prerequisite: Biology 110. Recommended: a course in general geology. Limited enrollment. The fossil record of the evolution of the vertebrates, with emphasis on the morphology of primitive forms in the series from fish to mammal. Mr. Vaughn

**M118. Paleobotany.** (Same as Biology M118.) Prerequisite: one course in biological science or consent of instructor. Recommended: course 2 or equivalent. Survey of morphology, paleobiology, and evolution of vascular and non-vascular plants during geologic time, with particular emphasis on major evolutionary events. Mr. Schopf

**119. Continental Drift and Sea Floor Spreading.** Prerequisite: senior standing in Earth and Space Sciences, Physics, or Mathematics. Evidence for continental drift and sea floor spreading from age-dating of marine sediments and continents and from seismic, magnetic and heat-flow data. Description of sea floor topography and sediments. Processes at mid-ocean ridges and edges of plates. Description of events on the continental margins. Biological and biostratigraphic implications. Field work at option of instructors. Mr. Bird, Mr. Ernst (Sp)

**\*120A. Rubey Colloquium: Major Advances in Earth Science.** Prerequisite: upper division standing. Lectures on major advances in earth science. Series of lectures to be offered by distinguished authorities (including regular faculty). Supervision of continuity and assessment of student performance by a faculty member. Series of lectures or short courses to cover topics such as continental drift

or plate tectonics, nonrenewable natural resources, geologic hazards, geophysics, geochemistry, i.e., aspects of physical or chemical geology. Students should consult the Department prior to enrolling in order to ascertain course content. Content or subjects will vary from year to year. The Staff

**120B. Rubey Colloquium: Major Advances in Earth Science.** Prerequisite: upper division standing. Lectures on major advances in earth science. Series of lectures to be offered by distinguished authorities (including regular faculty). Supervision of continuity and assessment of student performance by a faculty member. Series of lectures or short courses to cover topics such as major events in the evolution of life, paleogeologic interpretation, paleobiologic aspects of continental drift, origin of life, etc., i.e., aspects of biogeology. Students should consult Department prior to enrolling in order to ascertain course content. Content or subjects to vary. Laboratory work may be required. When required, students also will register for Earth and Space Sciences 199 (Special Studies in Earth and Space Sciences), ½ course. Mr. Ronan (Sp)

**121A. Advanced Field Geology. (2 courses)** Prerequisite: course 111ABC or 169 or consent of instructor; course 121B must be taken concurrently. Problems in field geology; preparation of geologic maps and structure sections of selected areas. The Staff (SUM)

**121B. Advanced Geologic Report Writing.** Prerequisite: must be taken concurrently with course 121A. Preparation of geologic reports in the field and a final summary report on region mapped in course 121A. The Staff (SUM)

**122. Physics of the Earth.** Prerequisite: Physics 8A-8B-8C, Mathematics 31A-31B-31C, or consent of instructor. Application of physics to the structure and evolution of the solid earth. Seismology, convection and heat flow, gravity, geomagnetism, rock magnetism, and the relation of these topics to plate tectonics and other problems of current geophysical interest. Mr. Anderson (W)

**128A. Mineral Deposits.** Prerequisite: course 51C. Origin and occurrence of important mineral deposits with emphasis on chalcophile elements and sulfide ores. (Alternates yearly with course 128B.) Mr. Carlisle (F)

**\*128B. Mineral Deposits.** Prerequisite: course 51C. Origin and occurrence of important mineral deposits with emphasis on siderophile and lithophile elements and their minerals. (Alternates yearly with course 128A.) Mr. Carlisle

**\*129A. Coal. (½ course)** Prerequisite: course 51C, 111A-B-C or 169 or consent of instructor. Coal resources and reserves of the major coal-bearing stages. Geological methods of estimating coal reserves, and cost of extraction. Theories of coal formation. New geophysical techniques for estimating reserves. Regional analysis of the issues in transporting energy from the coal deposits to urban centers of usage. Mr. Anderson

**\*129B. Geothermics.** Heat flow on the surface of the earth. Origin and distribution of heat sources. Heat transfer in minerals and in the earth. The geothermal gradient, geobarometry and geothermometry. Geology and geochemistry of geothermal areas. Drilling for geothermal power. Mrs. Kieffer

**\*M130. Isotope Geochemistry.** (Same as Geophysics and Planetary Physics M130.) Prerequisites: junior or senior standing in physical or biological science and consent of instructor. Theoretical aspects of geochronology, particularly Carbon-14 dating. Applications of radioisotopes to the hydrologic cycle and to atmospheric circulation. Stable isotope distribution in nature. Exchange mechanisms and their applications to paleotemperatures, hydrology, mineral formation and origin of biological deposits. (Alternates yearly with Earth and Space Sciences and Geophysics and Planetary Physics M131.) Mr. Kaplan

**M131. Geochemistry.** (Same as Geophysics and Planetary Physics M131.) Prerequisite: junior or senior standing in chemistry, physics, or Earth and Space Sciences. Origin and abundance of the elements and their isotopes; distribution and chemistry of the elements in the earth, oceans, and atmosphere; chemistry of the earth's interior, phase transformations at high pressure and temperature. (Alternates yearly with Earth and Space Sciences and Geophysics and Planetary Physics M130.) Mr. DePaolo (Sp)

**\*132. Principles of Biogeochemistry.** Prerequisite: Chemistry 21. Organic substances as evidence for origin and biochemical evolution of life; origin and development of petroleum; comparative properties of recent and ancient sediments, and application of molecular stratigraphy to modern and ancient sediments. The Staff

**\*133. Regional Geology.** Prerequisite: course 111ABC or 169 or consent of the instructor. Application of geologic, stratigraphic, paleontologic, biologic, and climatic principles to a specific province or provinces. Emphasis on tectonic evolution of selected regions. Mr. Ernst, Mr. Nelson

**M136A. Geophysical Exploration.** (Same as Geophysics and Planetary Physics M136A.) Prerequisite: Physics 6ABC, or 8ABC, Math 31C completed or consent of instructor. Principles and techniques of gravimetric, seismic, magnetic and other geophysical methods of exploration for ores, petroleum, and other economic minerals. Mr. Jackson (Sp)

**M136B. Geophysical Exploration.** (Same as Geophysics and Planetary Physics M136B.) Prerequisite: Physics 6ABC, or 8ABC, Math 31C completed or consent of instructor. Principles and techniques of exploration for mineral deposits using natural and

artificial electric and magnetic fields. Methods covered include self potential, induced polarization, electric, tellurics, electromagnetic, magnetotellurics. Mr. McPherron (W)

**137. Petroleum Geology.** Prerequisite: course 111ABC or 169 or consent of instructor. Geology applied to exploration for and production of natural gas and petroleum; techniques of surface and subsurface geology; problems of petroleum geology. Mr. Johnson (W)

**138. Mining and Exploration Geology.** Prerequisite: course 51C. Geological principles applied to the exploration for and evaluation of mineral deposits; geological techniques at operating mines; mine economics; exploration geology and mineral resource economics. Mr. Watson (W)

**M139. Engineering and Environmental Geology.** (Same as Architecture and Urban Planning M195.) Prerequisite: course 1 or 100; 111A recommended. Principles and practice of soil mechanics and foundation engineering in light of geologic conditions, recognition, prediction and control or abatement of subsidence, landslides, earthquakes, and other geologic aspects of urban planning and subsurface disposal of liquids and solid wastes. Mr. Merifield (Sp)

**\*140. Nonrenewable Resource Extraction.** Prerequisite: course 128A or 128B or 138 or consent of instructor. The elements of mining and recovery of nonpetroleum mineral resources; associated geological and economic considerations for the resource analyst and geologist. The Staff

**141. Sedimentology.** Prerequisite: course 111B taken concurrently or consent of instructor. Characteristics of sediment particles, dynamics of sedimentary processes and process-significance of sedimentary features. Interpretation of depositional environments is strongly emphasized. Mr. Reed (W)

**144. Marine Geology.** Prerequisite: senior standing. Recent marine sedimentology, and geochemistry; oceanography morphology, structure and geologic history of the ocean basins. The Staff (W)

**\*145. Advanced Oceanography.** Prerequisite: course 15 or consent of instructor. Physical, chemical, geological, and biological environmental factors and their relationship to the distribution of marine organisms and community structure. Special emphasis will be placed on changes in the marine environment during the last 600 million years. Mr. Ronan

**150. Remote Sensing for Earth Sciences.** Prerequisite: open to upper division and graduate students. Remote sensing related to the development of natural resources. Characteristics of the electromagnetic spectrum and review of remote sensing devices. Applicability to land use classification, soil survey, urban studies, vegetation classification; emphasis on geologic interpretation of imagery. Mr. Sabins (F)

**M154. Solar Terrestrial Physics.** (Same as Atmospheric Sciences M154.) Prerequisite or concurrent: Physics 110B. Particle and electromagnetic emissions from the sun under quiet and under disturbed conditions. The solar wind. The magnetospheres and the ionospheres of the earth and other planets. Geomagnetic phenomena. Aurora and airglow. The Staff (F)

**160. Astrogeology.** Prerequisite: basic geology and calculus, or consent of instructor. Surface modification processes on the planets; meteorite impact and volcanism; field, laboratory and theoretical concepts of impact cratering and shock waves; volcanic landforms and processes; Lunar and Martian impact and volcanic features; field trip to Meteor Crater, Arizona. Mrs. Kieffer (Sp)

**169. Field Geophysics.** Prerequisite: Geophysics and Planetary Physics and Earth and Space Sciences M136A (can be taken concurrently). Application of seismic, gravimetric, magnetic, and other geophysical methods to geologic and engineering problems. Practical aspects of geophysical exploration including planning, data collection, data reduction, and interpretation. Field work on unsolved problems. Mr. McPherron (Sp)

**190. Earth and Space Sciences Seminar. (½ course)** Prerequisite: junior or senior standing. Limited to undergraduate students. Current topics of geologic research. To be given on a pass/not pass basis. May be repeated more than once for credit. Mr. Rosenfeld (W)

**195G. Field Geology for Graduate Students. (½ course)** Field mapping; preparation of a geologic report. Graded P/NP. Mr. Rosenfeld (F)

**199. Special Studies in Earth and Space Sciences. (½ to 2 courses)** Students may be allowed to take course more than once for credit. The Staff

**199H. Honors Research in Earth and Space Sciences.** Prerequisite: senior standing and permission of the departmental honors committee. Individual research designed to broaden and deepen the student's knowledge of some phase of earth and space sciences. The Staff

**200A. Introduction to Geophysics and Space Physics I: The Solid Earth and Planets.** Prerequisite: Physics 105A, 110A, 112A, 131 or consent of instructor. Geochemistry, cosmochemistry, and petrology; geotectonics; gravity field; seismology; heat transfer, thermal and mechanical evolution of the mantle; the core and geomagnetism; lunar and planetary interiors. Mr. Jackson (F)



**2008. Introduction to Geophysics and Space Physics 2: Oceans and Atmospheres.** Prerequisite: Physics 105A, 110A, 112A, 131 or consent of instructor. Evolution, chemistry, and heat balance of oceans and atmospheres; molecular spectra, radiative transfer, and planetary observations; dynamics of oceans and atmospheres. Mr. Busse (W)

**200C. Introduction to Geophysics and Space Physics 3: Plasmas: Aeronomy and the Interplanetary Medium.** Prerequisite: Physics 105A, 110B, 112A, 131, or consent of instructor. Solar surface features, heating and expansion of corona, solar wind, plasma and magnetic fields, interaction of the solar wind with the earth, magnetospheric phenomena. Mrs. Kivelson (Sp)

**\*1201. Classical Mechanics.** Kinematics, variational principles and Lagrange's equations, rotational dynamics. Hamilton equations of motion, linear and non-linear perturbation theory, applications to the solar system. The Staff

**202. Continuum Mechanics.** Kinematics and dynamics of continuous media. Properties of stress, strain and rate-of-strain tensors. Conservation laws. Rotating systems, boundary layers, and dynamical similarity. Mr. Schubert (F)

**203. Electrodynamics.** Prerequisite: upper division electromagnetic theory or consent of instructor. Maxwell's equations and boundary conditions; momentum, angular momentum and energy of electromagnetic fields; plane electromagnetic and magnetohydrodynamic waves; wave guides, simple radiating systems and diffraction. Mr. Coleman (W)

**\*1204. Advanced Remote Sensing.** Theory of surface scattering and thermal emission; useful spectral and photometric characteristics of natural materials; atmospheric and topographic effects; general instrumental transfer characteristics, noise and errors; visible, thermal and radar photometry and imagery; decalibration, data reduction and display techniques; digital image processing, enhancement algorithms; the limits of analysis. Mr. Kieffer

**205. Inverse Theory and Data Interpretation.** Prerequisites: Math 115, Math 150. This course addresses the inverse modelling problem: to determine model parameters consistent with experimental data, considering the effects of random errors and nonuniqueness. Linear and quasi-linear problems will be emphasized, but nonlinear problems will be discussed. Tools to be used include matrix theory, quadratic forms, orthogonal rotations, statistics, the principal axis transformation for rectangular matrices, Backus-Gilbert resolving kernels, and Lagrange multipliers. Examples will be taken from a broad range of physical sciences. Mr. Jackson (W)

**210. Advanced Paleontology.** Prerequisite: course 115 or advanced standing in biological science. Lectures will emphasize evolutionary, ecological, stratigraphic, and taxonomic aspects of fossil invertebrates. Field work and laboratory will be devoted to a research project and written report. Content will vary from year to year. May be repeated for credit. The Staff

**M211. Hydrodynamic Instabilities and Turbulence.** (Same as Mathematics M263.) An introduction to the theories of hydrodynamic instability and the non-statistical description of turbulence; stability bounds by the energy method; linear theory of instability; finite amplitude theories of post-instability flows; bounds on properties of turbulent flows by variational techniques. Mr. Busse (Sp)

**212. Paleocology.** Prerequisite: course 115 or advanced standing in biological science. How and where animals and plants lived in the past; study of habits and habitats of animals, changes in habits and habitats, and the distribution of animals through time and space. Content will vary from year to year. May be repeated for credit. The Staff

**\*1214. Geophysical Fluid Dynamics.** Prerequisite: consent of instructor. Dynamics of stationary and transient motions in rotating systems; Ekman boundary layer theory; inertial oscillations; B-plane approximation; Rossby waves; theory of thermally induced motions; applications to flow phenomena in planetary atmospheres, in the oceans, and in the earth's core. Mr. Busse

**215. Paleobiology of Plant Microorganisms.** Prerequisite: course 115 or advanced standing in biological science. Survey of morphology, evolution and diversification, environmental interactions, and stratigraphic value of bacteria, algae and fungi, with emphasis on dinoflagellates and acritarchs, chrysomonads, silicoflagellates, ebridians and diatoms, discoasters, and coccolithophorids. (Alternates yearly with course 216.) Mr. Loeblich (F)

**216. Micropaleontology.** Prerequisite: course 115 or advanced standing in biological science. Survey of microfossils of the animal kingdom, their systematics, morphology, ecology, evolutionary history and stratigraphic use, with emphasis on foraminiferans, radiolarians, chitinozoans, tintinnids, ostracods, scolecodonts and conodonts. (Alternates yearly with course 215.) Mrs. Loeblich

**\*1217. Magnetohydrodynamics.** The continuum theory of the interaction of conducting fluids and magnetic fields. Electrodynamics of moving media, boundary conditions, wave motion in bounded and unbounded media, energy flow, dynamo problem. Boundary layers and the effects of rotation. Geophysical and astrophysical applications. Mr. Busse

**219. Planetary and Orbital Dynamics.** Solar system dynamical evolution; figure and gravitational field of a planet; satellite orbits;

earth-moon system evolution; rotational dynamics, including effects of non-rigidity and energy dissipation. The Staff (W)

**\*1220. Principles of Paleobiology.** Prerequisites: graduate standing in science; qualified undergraduates in biological and physical sciences admitted with consent of instructor. Current and classic problems in paleobiology, with emphasis on interdisciplinary problems involving aspects of biology, geology, organic geochemistry and cosmology. Course content to vary from year to year. May be repeated for credit. Mr. Schopf

**222. Introduction to Seismology.** Types of seismic waves; travel-time seismology; epicenter location; amplitude variations; seismograph theory; explosion seismology; seismicity; focal conditions; surface wave analysis; microseisms and tsunamis. Mr. Knopoff (Sp)

**\*1224A. Elastic Wave Propagation I.** (Same as Engineering M257A.) Prerequisite: Engineering 158A or 159A or consent of instructor. Elastic wave equation and elementary solutions; wave motions in elastic half-spaces; reflection and refraction of elastic waves; surface waves; vibrations of rods and plates. Mr. Knopoff, Mr. Mal

**\*1224B. Elastic Wave Propagation II.** (Same as Engineering M257B.) Prerequisite: consent of instructor. Wave propagation in layered media; Green's function for various geometries; diffraction and scattering of elastic waves; attenuation; inversion problems. Mr. Knopoff, Mr. Mal

**\*1225A. Physics and Chemistry of Planetary Interiors 1.** Chemical compositions of the earth and planets; high pressure and temperature effects, phase transitions, and equations of state; variations of density and temperature with depth; thermal and compositional evolution. The Staff

**\*1225B. Physics and Chemistry of Planetary Interiors 2.** Lateral inhomogeneities in the earth: seismic velocities, petrology, geothermal and gravitational variations; evidences of motion; remanent magnetism, seismic motions; post-glacial rebound; plate tectonics; rheology of mantle; thermal convection. Mr. Kaula

**\*1226. Theoretical Geomorphology.** Prerequisites: Mathematics 32C and one course in elementary probability theory, or consent of instructor; recommended, Geography 102. Analysis of the intellectual foundations and objectives of modern geomorphology, illuminated by selected past and present theories of river profiles, slope processes, and channel networks. Reading and discussion of original sources. Preparation of term paper. (Offered approximately every third year.) Mr. Shreve

**227. Resource Evaluation Field Methods.** Prerequisite: course 111B and 128A or 128B or 138 or consent of instructor. Techniques of mapping, sampling, appropriate laboratory studies, economic or socio-economic evaluation of a variety of nonrenewable natural sources; preparation of reports. The Staff

**228. Planetary Magnetism.** Prerequisite: course 217 or consent of instructor. Description and analysis of the magnetic fields of the earth and planets. Origin and history of the earth's magnetic field: core dynamics, dynamo theory, paleomagnetism. Mr. Schubert (W)

**\*1229. Planetary Surfaces and Atmospheres.** Prerequisite: course 200A-200B. Study of planetary observations toward determining the evolutionary history and current active processes. Surface and atmosphere heat balance; volatile budgets; condensate cycles and cloud formation; erosion mechanisms; diurnal annual and secular variations. Current observations and theories will be critically discussed. Mr. Kieffer

**\*1230. X-Ray Crystallography.** Prerequisite: course 51C. Point, translation, and space group symmetry, diffraction of x-ray reciprocal lattice theory, single crystal x-ray methods, diffraction symmetry and elementary crystal structure analysis. (Alternates yearly with course 231.) Mr. Dollase

**231. Crystal Chemistry and Structure of Minerals.** Prerequisite: course 51C. Bonding, interatomic configurations, polymorphic transformations, isotypism, thermal and positional disorder; survey of the structures of the common minerals, and relation of physical and chemical properties to crystal structure. (Alternates yearly with course 230.) Mr. Dollase (Sp)

**\*1232. Thermodynamics of Crystals.** Prerequisites: Physical Chemistry (including thermodynamics and some chemical quantum mechanics) and course 233; or consent of instructor. Application of fundamentals of methods for approximating lattice vibrational spectra. Calculation of thermodynamic functions of silicates. Interpretation of experimental data. Systematic variations in thermodynamic functions with crystal structure. Given alternate years. Mrs. Kieffer

**233. Mineral Physics and Equation of State.** Prerequisite: consent of instructor. Interrelationship of the physical properties of rock-forming minerals: optical reflectivity, refraction index, sound velocity, elastic constants, specific heat, and thermal expansivity. Determination of pressure, volume, and temperature relationships and planet-forming compounds. Variation of elastic constants with temperature and pressure. Application of shock-wave experiments to equations of state. Mr. Anderson (W)

**234A. Thermodynamic and Geometric Principles of Phase Equilibria.** Prerequisites: course 51C, Chemistry 110B, or consent of instructor. Thermodynamic bases of phase transformations and of phase rules. Geometric representation of multi-component systems using pressure, temperature, chemical potential, molal

volume, and the fugacity of oxygen, water, and other volatile components as variable parameters. Mr. Boettcher (F)

**234B. Petrologic Phase Equilibria.** Prerequisites: course 51C; Chemistry 110B or consent of instructor. Principles governing homogeneous and heterogeneous equilibria, with selected applications to mineral stability relations in igneous and metamorphic rocks (fractional crystallization, partial melting, hydrothermal solutions, element partitioning in coexisting phases). Mr. Ernest (W)

**M235A-235B-235C. Current Research in Geochemistry.** (¼ course each) (Same as Geophysics and Planetary Physics M235A-235B-235C.) Prerequisite: graduate standing in the Department of Earth and Space Sciences. Seminars presented by staff, outside speakers and graduate students stressing current research in earth and planetary chemistry. Grading on satisfactory/unsatisfactory basis. May be repeated for credit. The Staff (F,W,Sp)

**\*1236A. Igneous Petrology.** Prerequisites: course 234A (may be taken concurrently) and a knowledge of differential equations. Solutions of the heat flow equation for specific examples of cooling magmatic bodies; the nature and origin of batholiths and associated rocks. (Alternates yearly with course 236B.) The Staff

**236B. Igneous Petrology.** Prerequisite: course 234A or consent of instructor. Occurrence and origin of mafic and ultramafic rocks. (Alternates yearly with course 236A.) Mr. Watson (W)

**238. Metamorphic Petrology.** Prerequisite: course 103 or consent of the instructor. Interpretation of metamorphic rocks in the light of observation, theory, and experiment. Geological relations, petrographic evidence, metamorphic zoning, thermodynamics of phase equilibria, projections, chemographic relationships, use of piezobirefringent haloes, Rayleigh depletion model, isotopic fractionation, environmental factors of metamorphism. Laboratory study of representative metamorphic rocks and suites of rocks selected to illustrate topics discussed in lectures. Mr. Rosenfeld (Sp)

**\*1239. Structural Petrology of Deformed Rocks.** Prerequisites: course 51C, 111, 114 or 248 recommended, or consent of instructor. Use of universal stage. Microscopic study of textures, structures and preferred orientations of minerals in tectonites. Deformation mechanisms in crystals and aggregates. Theories of development of preferred orientation. Application of experimental data to the interpretation of microfabrics. (Alternates yearly with course 249.) Mr. Christie

**\*1240. Space Plasma Physics.** Prerequisite: course 203 or Physics 210A. The physics of plasmas in space including treatments based on magnetohydrodynamics and kinetic theory. Applications to solar or planetary winds; steady-state magnetospheres; magnetospheric convection; substorm processes; magnetic merging; field-aligned currents and magnetospheric-ionosphere coupling; ring current dynamics; and wave particle instabilities. Mrs. Kivelson

**\*1241. Sedimentary Petrology.** Prerequisites: course 51C; recommended course 141. Texture, composition, structure, and modes of origin of the sedimentary rocks. Content varies from year to year. Mr. Reed

**245A-245B. Stress and Deformation.** Prerequisites: Physics 8A, 8B, Mathematics 31C, 32A, 32B, or consent of instructor. Scalars, vectors, tensors; subscript notation; rotation and inversion of axes, transformation matrix; stress; finite homogeneous strain, rotation; infinitesimal strain, strain rate; Mohr's circle construction and other graphical methods; flow laws. (Offered every third year.) Mr. Oertel (F,W)

**246. Stress in the Lithosphere.** Prerequisites: courses 202, or 245A or Engineering 108, or consent of the instructor. Overcoming, hydrofracture, fault plane solutions, seismic stress drops; effects of erosion, cooling, earth ellipticity, topography, and density anomalies. State of stress in plate boundaries and interiors. Applications of finite element and analytic methods to stress determination. Offered in alternate years. Mr. Bird

**\*1247. Glaciology.** Prerequisites: course 245A or similar course, or consent of instructor. Occurrence and classification of glaciers; accumulation and ablation; glacier budget; mechanical properties of ice; glacier flow; crevasses; textural and structural features; thermal relationships; bed slip; climatic response; catastrophic advances. (Offered every third year.) Mr. Shreve

**\*1248. Advanced Structural Geology.** Prerequisites: course 111A, 111B, and 111C or 169. Principles governing fracture, folding, and flow of rocks; solution of structural problems at various scales; regional tectonic problems. Mr. Christie, Mr. Oertel

**249. Structural Analysis of Deformed Rocks.** Prerequisites: courses 111ABC or 169; 114 or 248 recommended, or consent of instructor. Geometrical analysis of megascopic structures in terranes with complex or multiple deformations. Analysis of strain from deformed primary features. Interpretation of structural history in metamorphic terranes. (Alternates yearly with course 239.) Mr. Christie (Sp)

**250. Dynamics of the Solar Wind.** Parker's hydrodynamic solution and spiral magnetic field model; effects of magnetic field and solar rotation; shock waves, discontinuities, small amplitude wave propagation, large scale structure; interaction with the moon, planets and interstellar medium, stellar winds and stellar spin-down. Mr. Coleman

**\*1251. Seminar in Mineralogy.** Examination of groups of rock-forming minerals (e.g., feldspars) integrating such aspects as crystal structure, crystal chemistry, phase equilibria, and petrogenesis. Mr. Dollase

**252. Seminar in Geochemistry.** Phase equilibria under crustal conditions, chemistry of ocean waters, recent and ancient sediments, structure and chemistry of the upper mantle, geochronology, cosmochronology, and cosmochemistry. Mr. DePaolo (F)

**253. Seminar in Petrology.** Problems of igneous or metamorphic petrology: methods of evaluating physical conditions of metamorphism; diffusion in mineralogical systems; origin of ultramafic rocks and problems of the mantle; element fractionation among coexisting phases; other current subjects in the field. Mr. Rosenfeld (F)

**\*1254. Seminar in Sedimentology.** Processes of sediment transport and deposition; deep sea sediments; deltas and estuaries; petrology of carbonates, sandstones, and lites; stratigraphy; paleo-environmental studies. Mr. Ronan

**255. Seminar in Structural Geology and Tectonics.** Flow and fracture in the earth's crust from microscopic to continental scale and in experiments. Examples may include metamorphic terranes, glaciers, plutons, volcanoes; and consolidated or unconsolidated sediments. Modern concepts of the oceanic basins; processes leading to segregation of continental-type rocks. Mr. Oertel (Sp)

**\*1256. Seminar in Glaciology and Geomorphology.** Glacier physics, theoretical geomorphology, river mechanics, statistical models. Mr. Shreve

**257. Seminar in Paleontology.** Current biogeological literature and research on: evolution of selected groups of animals and plants, numerical taxonomy, organism-environmental relationships, origin and development of life, biostratigraphy, paleoecology, biogeography, and biostatistics. Mrs. Loeblich (F)

**258. Seminar in Mineral Deposits.** Problems of distribution, composition, and formation of mineral deposits; mineral economics; investigations of opaque minerals by microscopic or other techniques. Mr. Carlisle (W)

**259. Seminar in Advance Topics in Geology.** Topics to vary. May be repeated for credit. Mr. Schoep (W)

**\*1260. Seminar in Geological Physics.** Problems of current interest in geological physics, including topics related to impact cratering processes, mechanisms of volcano eruption, high pressure properties of materials, and thermodynamics of crystals. Mrs. Kieffer

**261. Topics in Magnetospheric Plasma Physics.** Lectures, discussions and exercises on specific, advanced topics in magnetospheric plasma physics. Previous courses have examined magnetic storms, magnetospheric substorms, ultra-low frequency waves and adiabatic particle motion in the earth's radiation belts. The Staff (W)

**265. Instrumentation, Data Processing, and Data Analysis in Space Physics.** Principles, testing and operations of magnetometers and other instruments. Data processing, display, and archiving. Time-series analysis techniques, including filtering, Fourier series, eigen-analysis, and power spectra. Mr. McPherron (F)

**M266. Cosmic Ray Physics.** (Same as Astronomy M255.) Cosmic ray composition, origin, acceleration, propagation, interactions with interstellar matter, magnetic field and radiation field, role in interstellar heating, non-thermal galactic radio and galactic x- and gamma-radiation, interaction in the earth's atmosphere. Mr. Lingenfelter

**268. Seminar in Resource Analysis.** Prerequisite: consent of instructor. Geological, geophysical, economic and technological factors in studies of optimum use of mineral and energy resources. Seminars will emphasize different mineral or energy sources from time to time. The Staff

**\*1270. Energy Production and Environmental Tradeoffs.** Upper Colorado Basin coal and other energy resources of the southwestern states; interest groups involved in exploitation of these resources; impacts of exploitation of these resources on power, water, agriculture and environmental quality. A laboratory course concerning societal issues. Mr. Anderson

**M282. Seminar in Geophysics.** (Same as Geophysics and Planetary Physics M282.) Prerequisite: consent of instructor. Seismology, geophysical prospecting, electromagnetic prospecting. Selected topics in earth physics. The content will vary from year to year. May be repeated for credit. The Staff

**\*1283. Seminar in Environmental Science and Engineering.** Problems of current interest concerning the interaction of man, technology, and the environment, such as: regional water and energy allocation; earthquake mechanism; geochemistry of pollution; environmental fluid dynamics; engineering geology; environmental geology. May be repeated for credit. The Staff

**\*1284. Seminar in Mineral Physics and Rock Physics.** (½ to 1 course) Prerequisite: courses 233 or 234A. Seminar for students interested in rock physics, mineral physics, and aspects of seismology and petrology. Registered students will present seminars in their research topics. The topics covered will be equations of state, acoustic properties of minerals under pressure, dielectric properties of minerals, properties of the earth's deep

mantle and core, compression of porous aggregates, fracture dynamics, lattice dynamics of low symmetry crystals, laboratory analogs of earthquakes. Mr. Anderson

**\*1285. Origin and Evolution of the Solar System.** (Same as Astronomy M285.) Dynamical problems of the solar system; chemical evidences from geochemistry, meteorites, and the solar atmosphere; nucleosynthesis; solar origin, evolution, and termination; solar nebula, hydromagnetic processes, formation of the planets and satellite systems. Content will vary from year to year. May be repeated for credit. Graded S/U. The Staff

**286A-286B-286C. Seminar in Planetary Science.** (½ course each) Problems of current interest concerning the moon, planets, and meteorites. To be graded S/U only. May be repeated for credit. The Staff (F,W,Sp)

**287A-287B-287C. Seminar in Seismology and the Earth's Interior.** (½ course each) Problems of current interest in seismology and the earth's interior. To be graded S/U only. May be repeated for credit. The Staff (F,W,Sp)

**288A-288B-288C. Seminar in Space Physics.** (½ course each) Problems of current interest concerning particles and field in space. To be graded S/U only. May be repeated for credit. The Staff (F,W,Sp)

**289A-289B-289C. Seminar in Fluid Dynamics.** (½ course each) Problems of current interest in fluid dynamics with emphasis on geophysical applications. To be graded S/U only. May be repeated for credit. The Staff (F,W,Sp)

**290. Seminar in Time Series Analysis.** (½ course) Discussion of recent research in spectral estimation, filtering, and signal detection applied to geophysical problems. To be graded S/U only. Mr. Jackson (Sp)

**\*1295. Earth and Space Sciences Colloquium.** (¼ to ½ course) Reading and discussion in the frontiers of earth and space sciences. The Staff

**297. Advanced Techniques in Geological Research.** (½ to 1 course) Graded S/U. The Staff (F,W,Sp)

**298. Advanced Topics in Earth and Space Sciences.** (½ to 2 course) The Staff

**501. Cooperative Program.** (½ to 2 courses) Prerequisites: approval of UCLA Graduate Adviser and Graduate Dean. Approval of host campus Instructor, Department Chairman and Graduate Dean. The course is used to record the enrollment of UCLA students in courses taken under cooperative arrangements with neighboring institutions. To be graded S/U.

**596. Directed Individual Study and/or Research.** (½ to 3 courses) S/U or Letter Grade. The Staff

**597. Preparation for Master's Comprehensive Examination or Doctoral Qualifying Examination.** (½ to 2 courses) To be graded S/U. The Staff

**598. Master's Research and Thesis Preparation.** (½ to 3 courses) To be graded S/U. The Staff

**599. Doctoral Research and Dissertation Preparation.** (½ to 3 courses) To be graded S/U. The Staff

Robert F. Cotterman, Ph.D., *Acting Assistant Professor of Economics.*  
Joel M. Guttman, Ph.D., *Acting Assistant Professor of Economics.*  
Michael P. Ward, M.A., *Lecturer in Economics.*

### Objective of the Major in Economics

The undergraduate program in economics is designed for students who wish to gain a thorough understanding of economic analysis. Emphasis is on economic principles applied to the resolution of interpersonal conflicts of interest and the coordination of productive activity in a world of scarce resources. Because students must gain a thorough theoretical and technical competence before extensive study of the applied specializations in the discipline, the analytic core of the major in economics is closely structured. Some courses are appropriate for non-majors, but the curriculum is most suitable for students who wish to make the study of economics their primary focus in their undergraduate education.

The undergraduate major in economics provides analytical training in reference to socioeconomic phenomena and develops the capacity for general problem solving, independent thought, and research. Moreover, the major provides an excellent theoretical background for those pursuing graduate education in law, management, public administration, journalism, social welfare, architecture and urban planning, and education, as well as economics.

### Preparation for the Major

Required: Economics 1, 2, 40 (or Management 115 as a substitute for Economics 40); four lower or upper division courses in the social sciences other than economics, which may be taken pass/fail; and one course in calculus (e.g., Mathematics 3A, 4A, or 31A, which may be taken pass/fail.) The student should complete the calculus requirement before taking upper division economics courses. The honors sequence in theory (101AH, 101BH, and 102H) requires 2 courses in calculus. Upon petition, Economics 100 may be substituted for Economics 1 and 2 if the student is in upper division standing. Those who wish additional work in economics or in closely related fields while still in lower division standing may take Economics 10 and Management 1A and 1B.

### The Major

Nine upper division courses in economics, which must include: Economics 101A, 101B, 102, and at least one course in each of three fields in economics chosen from the list below. It is preferable for the student to complete Economics 101A, 101B, and 102 in separate, consecutive quarters prior to taking economics field courses. Economics 100 may not be included among the nine upper division courses. One or two of the nine courses may be chosen from the following courses in the Department of Management: 120, 120M, and 130. (If Management 115 is taken in lieu of Economics 40, it will count only as preparation for the major and not as one of the nine upper division courses required on the major.) A 2.0 average is required in upper division economics courses, and also a 2.0 average is required in management courses applied toward the major. (A gradepoint deficiency in economics courses cannot be offset by gradepoints earned in management courses.) Upon consent of the instructor, students may take an upper division course for which they do not have prerequisites.

### MAJOR IN ECONOMICS-SYSTEM SCIENCE

This major is an alternative to the regular departmental major in Economics, and combines work in the Department of System Science (School of Engineering and Applied Science) with preparation in economic theory and in those aspects of mathematics and statistics that are necessary for the study of quantitative aspects of economics and system theory. The major is appropriate for students who plan graduate study with emphasis on such areas as economic theory, mathematical economics, econometrics, feedback and control systems, optimization, computing techniques, and the modeling and analysis of various socio-economic systems.

*Preparation for the Major.* Economics 1 and 2; Engineering 10; Mathematics 31A, 31B, 31C, 32A, 32B, 32C, 60.

*The Major.* Fourteen upper-division courses are required, consisting of six courses in Economics, six courses in System Science, and two courses in Mathematics. Selections must include: Economics 101A, 101B, 102, and one from Economics 144, 145, 146, 147; Engineering 128A, 129A, and one from Engineering 121C, 122A, 122B, 127B; Engineering 120A or Mathematics 150A or 152A; at least one from Engineering 120B, Engineering M120C/Mathematics M151, Mathematics 150B, 152B. System Science selections are made from courses numbered Engineering 120A, 120B, 120C, 121C, 122A, 122B, 124A, 127B, 128A, 128B, 128L, 129A, 129A, 129A.

For the purposes of the College breadth requirement, this major is considered to be in the division of Physical Sciences. Economics-System Science majors may not offer courses in Economics as breadth courses in the Social Sciences.

The major is administered by an interdepartmental committee of six faculty members, three from Economics and three from System Science.

For further information, please contact Committee Chairman M. Aoki of System Science, or Department Chairmen J.C. LaForce of Economics and J.W. Carlyle of System Science.

### Fields for the Major

*Economic Theory* (courses 101A-101B, 102, 107); *Economic Development* (courses 110, 111, 112); *Regional Economics* (courses

## ECONOMICS

(Department Office, 2263 Bunche Hall)

Armen A. Alchian, Ph.D., *Professor of Economics.*  
William R. Allen, Ph.D., *Professor of Economics.*  
Robert W. Clower, B.Lit., *Professor of Economics.*  
Harold Demsetz, Ph.D., *Professor of Economics.*  
George W. Hilton, Ph.D., *Professor of Economics.*  
Werner Z. Hirsch, Ph.D., *Professor of Economics.*  
Jack Hirshleifer, Ph.D., *Professor of Economics.*  
Michael D. Intriligator, Ph.D., *Professor of Economics.*  
J. Clayburn LaForce, Jr., Ph.D., *Professor of Economics.*  
Edward E. Leamer, Ph.D., *Professor of Economics.*  
Axel Leijonhufvud, Ph.D., *Professor of Economics.*  
John J. McCall, Ph.D., *Professor of Economics.*  
Harold M. Somers, Ph.D., LL.B., *Professor of Economics.*  
Thomas Sowell, Ph.D., *Professor of Economics.*  
Earl A. Thompson, Ph.D., *Professor of Economics.*  
Fimis R. Welch, Ph.D., *Professor of Economics.*  
Alice John Vandermeulen, Ph.D., *Professor-in-Residence of Economics.*  
Paul A. Dodd, Ph.D., LL.D., *Emeritus Professor of Economics.*  
Earl J. Miller, Ph.D., LL.D., *Emeritus Professor of Economics.*  
Dudley F. Pegrum, Ph.D., *Emeritus Professor of Economics.*  
John F. Barron, Ph.D., *Associate Professor of Economics.*  
Yung-Ping Chen, Ph.D., *Associate Professor of Economics.*  
Michael R. Darby, Ph.D., *Associate Professor of Economics.*  
Bryan C. Ellickson, Ph.D., *Associate Professor of Economics.*  
Bruce Herrick, Ph.D., *Associate Professor of Economics.*  
Benjamin Klein, Ph.D., *Associate Professor of Economics.*  
Cotton M. Lindsay, Ph.D., *Associate Professor of Economics.*  
George G.S. Murphy, Ph.D., *Associate Professor of Economics.*  
Joseph M. Ostroy, Ph.D., *Associate Professor of Economics.*  
John G. Riley, Ph.D., *Associate Professor of Economics.*  
Rodney L. Jacobs, Ph.D., *Assistant Professor of Economics.*  
Robert Jones, Ph.D., *Assistant Professor of Economics.*

120, 121); *Public Finance* (courses 130, 131, 132, 133); *Statistics, Mathematical Economics, and Economics* (courses 141, 144, 145, 146, 147); *Labor Economics* (courses 150, 151, 152); *Money and Banking* (courses 160, 161); *Government and Industry* (courses 170, 171, 172, 175); *Economic Institutions* (courses 180, 181, 182, 183); *International Economics* (courses 190, 191, 192).

#### Undergraduate Advising

There is an undergraduate advising office located in 2253 Bunche Hall. The adviser is available for consultation on matters relating to curriculum and major requirements, course evaluations, special programs, and career planning.

#### The Graduate Program

The Economics Department offers a broad selection of graduate courses, all of which are designed primarily for the Ph.D. program. However they are also open to candidates for the M.A. degree.

All applicants for graduate study who satisfy the University requirements for admission must submit a full record of prior university experience, three letters of recommendation and their scores in the Graduate Record Examinations. Applicants who have studied in U.S. schools are required to take both the aptitude (verbal and quantitative) and advanced economics tests. Foreign applicants must take the former.

Selection of students is based on the above information. Identical criteria apply to candidates for either the M.A. or the Ph.D. degree.

#### Requirements for the M.A. Degree

Candidates for the degree of Master of Arts in Economics normally have completed the equivalent of an undergraduate major in economics. In addition to the general University requirements (see University Minimum Standards), the departmental requirements are nine upper division and graduate level courses in economics. These must include, if not taken previously, Economics 101A-101B, or 102 (or their equivalent) which must be taken (or retaken) with grade B or better; and Economics 107 (or its equivalent) passed with a grade of at least C. Graduate level courses in economic theory and the history of economic theory may, of course, be substituted for these undergraduate courses. At least five of the nine courses must be strictly graduate courses in economics.

For the purposes of the M.A. degree only, the two graduate theory sequences (Macrotheory and Microtheory) each count as two-thirds of a "field" and the sequence in Quantitative Methods one-third of a "field." Candidates for the M.A. are required to take the qualifying examinations in at least one and two-thirds "fields," so defined, and achieve a Satisfactory grade (S) in at least one examination and Conditional (C) grades otherwise. (A student achieving a B+ average in the Quantitative Methods Sequence automatically receives an S grade.) For example, a student might achieve an S in the Microtheory qualifying examination and a C in a qualifying examination for one of the doctoral fields other than Theory or Quantitative Methods. As another example, a student might take Microtheory, Macrotheory, and Quantitative Methods and achieve one S and two C's.

With the consent of the graduate adviser candidates may offer a maximum of two courses of acceptable upper division and/or graduate courses in other social sciences, history, management, mathematics, psychology, education, or philosophy in partial satisfaction of the requirements for the degree. This will not, however, relieve the student from taking five graduate courses in the Department of Economics.

Students are required to complete or have previously completed three courses in mathematics and statistics consisting of two courses in calculus and one in statistics. Economics 144 may be used as one of the "calculus" courses, and Economics 40 as the statistics course.

#### The Ph.D. Program

Students admitted to the graduate program are all potential candidates for the Ph.D. degree. During the first year it is customary to take the three-quarter Microtheory sequence (201ABC), the two-quarter Macrotheory sequence (202AB), the three-quarter Quantitative Methods sequence (246ABC) and one additional course. Students with a strong background in calculus and with a sound knowledge of basic econometric methods are encouraged to take the Econometrics sequence in place of Quantitative Methods.

Either in the Spring of the first year or the Fall following the first-year courses, students take the Theory Comprehensive Examination. During their second year, students select three areas of study in preparation for their three field qualifying examinations. Course work is completed in the third year, at which time students begin work on their dissertation research. It is usual to enroll also in one of the graduate workshops. The latter provide an opportunity for students to participate in discussions of current research by visiting professors, the faculty and, most importantly, their own classmates. All third year students are expected to choose some forum, either a workshop or class seminar, in which to present their preliminary research progress.

While a few students finish a dissertation by the end of the third year it is normal for the main development to be completed during the fourth year.

#### Written and oral qualifying examinations and other requirements

All doctoral candidates are expected to take the Theory Comprehensive Examination following their first year in the

graduate program. In addition, there is a Quantitative Method requirement which may be satisfied either by achieving a B+ average in 246B or 246C or passing the Quantitative Methods Waiver Examination (administered at the beginning of fall quarter) or achieving a B average in at least two quarters of the advanced econometrics sequence (247-248-249).

Doctoral candidates are also required to have taken at least a one quarter course in (a) either U.S. or European economic history (with grade B or better) and (b) history of economic theory (with grade C or better).

To gain admission to candidacy and to become eligible for the Candidate in Philosophy (C. Phil.) degree, graduate students shall pass further written and oral examinations. The written examinations will cover three fields in economics, beyond the theory and quantitative methods areas already mentioned. A student, upon petition, may substitute a "special field" for one of the three elective fields. That is, with the consent of the instructors and approval of the Chairman of the Graduate Committee, a student may combine three related courses (not necessarily in the department) into a field, e.g., Econ. 245A, 241A and 241B. Overall evaluation of the student's performance in the field is determined by the instructors, who will consider the three course grades and a related paper which must be completed not later than one year after beginning the sequence. The paper becomes a part of the student's official record. The written examinations are offered twice a year, near the beginning of the fall quarter and near the end of the spring quarter.

Written examinations are graded S (satisfactory pass), C (conditional pass), and U (unsatisfactory). A student is considered to have completed his theory and elective field written examinations when he has earned either four S grades or three S grades and one C. A student cannot be advanced to candidacy with more than one conditional grade on his/her record. Students may take no more than six exams in the following four fields: Theory and three electives.

An oral qualifying examination, administered by the Doctoral Committee which is approved by the Dean of the Graduate Division, will be scheduled only after the successful completion of all the written examinations and other basic requirements and on the submission of a written dissertation proposal. The oral examination will focus on, but not be limited to, the dissertation proposal.

*Foreign language requirement.* Ph.D. candidates must offer one foreign language or a substitute program in mathematics. If the language option is chosen, the student shall be required to show a proficiency in one language — French, German, Russian, or Spanish — by passing the ETS examination with a grade of 500 or better. If the mathematics substitute is chosen, a student must show proficiency in mathematics above that ordinarily required of Ph.D. candidates. Since elementary calculus is, as noted above, considered basic for all economists, the three required language-substitute courses must be at a level "above" first-year calculus. Courses in intermediate and advanced calculus, linear algebra, differential equations, and advanced probability and mathematical statistics courses fulfill the spirit of the requirement. Specifically, the courses in UCLA Mathematics Department numbered 32 and 110 or above fulfill the requirement.

#### Fields for Graduate Degrees

Economic Theory (courses 201A-201B-201C, 202A-202B, M203A-203B-203C, 204A-204B, 207, 241A-241B); Economic Development (211, 212, 213); Regional Economics (221, 222); Public Finance (231, 232, 234); Mathematical Economics (243A-243B-243C, 245A-245B-245C); Statistics and Econometrics (244, 246A-246B-246C, 247, 248, 249); Labor Economics (251, 252, 253, 254A-254B-254C); Money and Banking (261, 262, 263A-263B-263C); Government, Industry and Natural Resources (271, 272, 273, 275, 276, 277A-277B-277C); Economic Institutions (281, 282, 283); International Economics (291, 292, 293).

#### Lower Division Courses

**1. Principles of Economics.** Lecture, three hours; discussion, one hour. Not open to students with credit for Economics 100. An introduction to the principles of economic analysis, economic institutions, and issues of economic policy. Emphasis on allocation of resources and distribution of income through the price system. The Staff

**2. Principles of Economics.** Lecture, three hours; discussion, one hour. Not open to students with credit for Economics 100. An introduction to the principles of economic analysis, economic institutions, and issues of economic policy. Emphasis on aggregate economics, including national income, monetary and fiscal policy, and international trade. The Staff

**3. Lower Division Research Seminar in Micro Economics.** Prerequisite: course 1. Class enrollment limited to ten freshman or sophomore students. Seminar in which students do an intensive research project under guidance of regular faculty. Student selects topic in consultation with instructor; subjects limited to materials covered in Economics 1. Student writes paper and presents to seminar. The Staff

**4. Lower Division Research Seminar in Macro Economics.** Prerequisite: course 2. Class enrollment limited to ten freshman or sophomore students. Seminar in which students do an intensive research project under guidance of regular faculty. Student selects topic in consultation with instructor; subjects limited to material

covered in Economics 2. Student writes paper and presents to seminar. The Staff

**10. Evolution of Economic Institutions in America.** Not open to students with credit for course 183. The historical development of the present American economic system and its performance over time, especially as revealed by the Quantitative data of modern research. Mr. LaForce, Mr. Murphy

**40. Introduction to Statistical Methods.** (Formerly numbered 140.) Not open to students with credit for Mathematics 50A-50B, 150A-150B-150C, 152A-152B, or Management 115. Elements of statistical analysis. Presentation and interpretation of data; descriptive statistics; theory of probability and basic sampling distributions; statistical inference, including principles of estimation and tests of hypotheses; introduction to regression and correlation. The Staff

#### Upper Division Courses

Courses 1 and 2 or 100 are prerequisite to all upper division courses in economics.

**100. Economic Principles and Problems.** Not open to students with credit for 1 or 2. Under special circumstances an economics major in upper division standing may be permitted to substitute 100 for 1 and 2 by petition. A one-quarter course presenting the principles of economics with applications to current economic problems. The Staff

**101A. Micro Economic Theory.** Prerequisite: one course in calculus or consent of instructor. The laws of demand, supply, returns, and costs; price and output determination in different market situations. Mr. Hirschleifer, Mr. Ostroy, Mr. Riley

**101B. Micro Economic Theory.** Prerequisite: course 101A. Theory of factor pricing and income distribution; general equilibrium; implications of the pricing process for the optimum allocation of resources; interest and capital. Mr. Hirschleifer, Mr. Lindsay, Mr. Ostroy

**102. Macro Economic Theory.** Prerequisite: one course in calculus or consent of instructor. Theory of income, employment, and the price level. Analysis of secular growth and business fluctuations; introduction to monetary and fiscal policy. Mr. Clower, Mr. Darby, Mr. Jones

#### Honors Sequence

##### 101AH-BH. Micro Economic Theory.

**101AH.** Prerequisites: two courses in calculus and completion of Economics 1 and 2 or 100 or consent of instructor. The laws of demand, supply, returns, and costs; price and output determination in different market situations. Enrollment by consent of instructor. The Staff

**101BH.** Prerequisites: course 101AH or consent of instructor. Theory of factor pricing and income distribution; general equilibrium implications of the pricing process for the optimum allocation of resources; interest and capital. Enrollment by consent of instructor. The Staff

**102H. Macro Economic Theory.** Prerequisites: courses 101AH and 101BH or consent of instructor. Theory of income, employment, and the price level. Analysis of secular growth and business fluctuations; introduction to monetary and fiscal policy. The Staff

**103. Upper Division Research Seminar: Applications of Economic Theory.** Prerequisites: courses 101A-101B, 102. Consent of instructor. A limited enrollment seminar in which the student writes a research paper on a topic chosen in consultation with instructor. The Staff

**107. History of Economic Theory.** A survey of economic analysis from Grecian antiquity to the early 20th century, concentrating on the 18th and 19th centuries; special attention to selected writers, including Aristotle, the Mercantilists, the Physiocrats, Hume, Smith, Malthus, Ricardo, Marx, Marginalists, and Marshall. Mr. Allen, Mr. Sowell

**110. Economic Problems of Underdeveloped Countries.** A survey of the major issues of development economics. Economic structure of low income countries and primary causes for their limited economic growth. Economic goals and policy alternatives open to their leaders. Possible roles of developed countries. Selected case studies. Mr. Herrick

**111. Theories of Economic Growth and Development.** Growth models, theory of production under constraints, relative factor prices and their impact on choice of technology, investment criteria, role of the market, economic planning in less developed areas. Mr. Herrick

**112. Policies for Economic Development.** Prerequisite: course 111 or 102. Suggested strategies for economic development: inflation, balanced growth, industry vs. agriculture, import substitution, export oriented expansion, foreign aid, and others will be considered. Selected case studies. Mr. Herrick

**120. Introduction to Urban and Regional Economics.** Prerequisite: course 101A or consent of instructor. Economic analysis as applied to significant current regional and urban problems and policy. Mr. Ellickson, Mr. Hirsch

**121. Urban Economic Analysis.** Prerequisite: courses 120, 101A-101B, or consent of instructor. Demand and supply of urban public

services; transportation and location decisions and urban human resources analysis.  
Mr. Ellickson, Mr. Hirsch

**130. Public Finance.** Prerequisite: courses 101A and 101B or consent of instructor. Contrast between organization of economic activity by government and by the private sector. Analysis of alternative norms for governmental activity. Methods of assessing benefits of alternative public expenditure projects and burdens of alternative forms of taxation. The use of fiscal policy to achieve economic targets. Techniques of debt management and their interaction with monetary policy.  
Mr. Chen, Mr. Lindsay, Ms. Vandermeulen

**131. Nonproprietary Organization.** Prerequisite: courses 101A, 101B, completion of math requirement for the major. Use of economic techniques to study behavior of nonproprietary institutions such as government, cooperatives, unions, nonprofit firms, etc. Attention paid to behavior within these organizations as well as aggregates characterizing actions of the organization itself. Models of political behavior, and effect of decision rules and agenda on political outcomes studied.  
Mr. Lindsay

**132. Financing Social Security and Transfer Expenditures.** In the context of the economic behavior of the household and the performance of the economy, this course is designed to study the theories, practices, and economic effects of, and the alternatives to, such programs as OASDHI, unemployment insurance, public assistance and others.  
Mr. Chen

**133. State and Local Finance.** Prerequisite: course 130. The division of functions and revenues between state and local governments; the revenues, expenditures, and indebtedness of these governments. Analyses of state and local tax systems.  
Mr. Hirsch, Ms. Vandermeulen

**M135. Economic Models of the Political Process.** (Same as Political Science M103.) Prerequisites: Economics 101A and a basic course in Political Science and junior-senior status. This seminar is jointly offered by Economics and Political Science Departments, and permission of the instructor is required. The course examines conceptions and applications of two different processes of political interaction, the cooperative (as in public choice) and the conflictual (as in warfare) making use of economic models of choice and equilibrium.

**141. Principles of Statistical Decision.** Prerequisite: course 40 or equivalent. Errors of the first and second kind; economic loss functions; prior probabilities and Bayes' Theorem. Analysis of classical and Bayesian approaches. Application to inventory and production problems. The value of information, and implications for sampling design.  
Mr. Ellickson, Mr. Hirschleifer, Mr. McCall

**144. Introduction to Mathematical Methods in Economics.** (Formerly numbered 145.) Prerequisite: courses 101A, 101B and two courses in calculus. An introduction to the use of calculus in economic analysis. Topics covered include partial differentiation, optimization, integration and differential and difference equations with applications to the theory of the household and the firm, capital theory and economic dynamics.  
Mr. Ellickson, Mr. Intriligator, Mr. Riley

**145. Topics in Mathematical Economics.** Prerequisite: course 144 (formerly numbered 145). Detailed course description should be obtained from the instructor. Possible topics include: theory of economic growth; competitive equilibrium analysis; examination of market failure and the role for market intervention. The Staff

**146. Linear Models in Economics.** Prerequisite: a course in calculus. An introduction to matrices and matrix algebra, with applications to economics, specifically input-output, Markov chains and linear models of econometrics.  
Mr. Ellickson, Mr. Intriligator, Mr. Riley

**147. Introduction to Econometrics.** Prerequisite: two courses in calculus and one course in statistics. An introduction to and survey of econometrics, including model specification; data collection; estimation and hypothesis testing; and the use of econometric models for structural analysis, forecasting, and policy evaluation. An integral part of the course is an original econometric study.  
Mr. Ellickson, Mr. Intriligator

**150. Wage Theory.** Prerequisite: courses 101A and 101B or consent of instructor. The supply and demand for labor. Analysis of government, union and other constraints on the competitive system of wage determination. Wage level and structure. Wages and human capital theory.  
Mr. Herrick, Mr. Sowell

**151. Labor, Wages and Income.** Prerequisite: course 150 or consent of instructor. Selected topics in labor theory; income distribution; business cycles and unemployment; investments in human capital and life cycles; migration; human fertility; marriage and divorce, etc.  
Mr. Herrick, Mr. Sowell

**152. Economics of Trade Unions.** Prerequisite: course 150 or consent of the instructor. Economic analysis of strikes, boycotts, lockouts, right to work, seniority, work-rules, pensions, fringe benefits. The evolution of trade unions and the legislative framework within which they operate are also considered.  
Mr. Herrick, Mr. Hilton

**160. Money and Banking.** Principles of money and banking in the United States; legal and institutional framework; money supply process; instruments, effects, and practice of monetary policy.  
Mr. Darby, Mr. Jacobs, Mr. Jones

**161. Monetary Theory.** Prerequisite: course 160. The nature of money and monetary exchange; level and term structure of interest rates; level and growth rate of money; transmission of monetary

shocks; theory and practice of monetary policy.

Mr. Darby, Mr. Jacobs, Mr. Jones

**170. Industrial Organization: Structure and Control.** Prerequisite: course 101A. Economic and institutional foundations of public regulation of industry; the measurement and control of competition, monopoly and collusion; economic examination of antitrust; determinants of market structure; empirical evidence of structure and performance of industries.  
Mr. Demsetz, Mr. Klein

**171. Industrial Organization: Theory and Tactics.** Prerequisite: course 101A. Study of pricing and output decisions of firms under conditions of less than perfect competition or monopoly; theories of oligopoly and monopolistic competition; information costs and advertising; examination of pricing practices such as price discrimination, tie-in selling, predatory pricing and resale price maintenance.  
Mr. Demsetz, Mr. Klein

**172. Economic Analysis of Laws and Legal Institutions.** Prerequisite: course 101A. Application of economic theory to legal rule formulation: study of the economic nature and consequences of alternative legal arrangements with special reference to property rights. Application of economic theory to analysis of effects of laws relative to property, contracts, torts, crimes, taxation and constitutional issues. Analysis of the legal process.  
Mr. Demsetz, Mr. Hirsch

**175. Economics of Transportation.** The economic characteristics of transport; the functions of the different agencies; pricing and resource allocation in transport; public regulation of transport; urban transport; the modern transport problem.  
Mr. Hilton

**180. Comparative Economic Systems.** An analysis of capitalist and planned economies as exemplified by the United States, Soviet Union, Great Britain, etc. Alternative systems are compared with respect to the economic goals, theories of economic organization, institutions, and developmental processes. Problems of economic planning are emphasized.  
Mr. LaForce, Mr. Murphy

**181. Development of Economic Institutions in Western Europe.** Prerequisite: upper division status. Rise of capitalism in Western Europe, with emphasis on its basic institutions, such as private property, profit motive, price system; comparative rates of growth of different countries; protestantism and capitalism; critical evaluation of the concept of the Industrial Revolution. May be concurrently scheduled with Economics 281 lectures.  
Mr. LaForce, Mr. Leijonhufvud

**182. Economic Problems of the U.S.S.R.** An introduction to the organization and policies of the economy of the U.S.S.R.  
Mr. Murphy

**183. Development of Economic Institutions in the United States.** Not open to students with credit for course 10. A study of the changing economic conditions in the U.S. from colonial times to the early 20th century and the effects of these changes on American society.  
Mr. Murphy

**190. International Economics.** Not open to students with credit for courses 191 or 192. A general introduction to international economics, based upon an examination of the theory of trade and the means and significance of balance of payments adjustments, with analysis of major issues of international commercial and monetary policy confronting national and international agencies.  
Mr. Allen, Mr. Leamer

**191. International Trade Theory.** Prerequisite: course 101B. Not open to students with credit for course 190. The theory of international trade: the bases, direction, terms, volume, and gains of trade. The effects of tariffs, quantitative restrictions, and international integration. The effects of free and restricted trade on economic welfare and political stability.  
Mr. Leamer

**192. International Finance.** Prerequisite: course 102. Not open to students with credit for course 190. Emphasis on the interpretation of the balance of payments and the adjustment to national and international equilibria, through changes in price levels, exchange rates, and national income. Other topics include: making international payments, determination of exchange rates under various monetary standards, capital movements, exchange controls, and international monetary organization.  
Mr. Allen

**199. Special Studies in Economics.** (½ to 1 course) Prerequisite: senior standing and consent of the instructor. A student may count this course only once in satisfying his major in economics; he may take it a second time to meet University graduation requirements.

#### Graduate Courses

**200. Policy Applications of Economic Analysis.** Prerequisites: graduate standing. Not open to students in the Department of Economics. Survey of the uses of economic theory in public policy applications. Reviews economic analysis in market and non-market systems of economic organization.  
Mr. Herrick

**201A. Theory of Consumption and Exchange.**  
Mr. Alchian, Mr. Hirschleifer

**201B. Theory of Production and Distribution.**  
Mr. Alchian, Mr. Hirschleifer, Mr. Welch

**201C. Theory of Interest and Capital.**  
Mr. Alchian, Mr. Hirschleifer

**202A-202B. Income, Employment, and Monetary Theory.**  
Mr. Clower, Mr. Leijonhufvud, Mr. Thompson

**M203A. Economics of Decision.** (Same as Management M203A.) Prerequisites: courses 40, 101B, 102 and calculus. The Staff

**M203B. Economics of Information.** (Same as Management M203B.) Prerequisites: courses 40, 101B, 102 and calculus. The Staff

**M203C. Economics of Organization.** (Same as Management M203C.) Prerequisite: course M203A-203B. The Staff

**204A-204B. Applications of Economic Theory.** The Staff

**207. History of Economic Theory.** Mr. Allen, Mr. Sowell

**211. Economic Growth: Measurement and Theory.** Mr. Herrick

**212. Economic Development of Underdeveloped Areas: Theory and Policy.** Mr. Herrick

**213. Selected Problems of Underdeveloped Areas.** Mr. Herrick and the Staff

**221. Urban and Regional Economic Analysis I.** Mr. Ellickson, Mr. Hirsch

**222. Urban and Regional Economic Analysis II.** Mr. Ellickson, Mr. Hirsch

**231. Public Finance.** Mr. Chen, Mr. Lindsay, Mr. Somers

**232. Economics of Government Expenditures.** Mr. Chen, Mr. Lindsay, Mr. Somers

**234. Economics of Federalism.** Mr. Thompson

**M240. Control and Coordination in Economics.** (Same as System Science M222G.) (Formerly numbered Engineering M222G.) Prerequisite: graduate standing in Economics or Engineering, consent of instructor. Appropriate mathematics course recommended. Stabilization policies, short- and long-run dynamics and stability analysis; decentralization, coordination in teams; certainty equivalence and separation theorems; stochastic and learning models, Bayesian approach to price and output rate adjustment.

**241A-241B. Probabilistic Economics.** Prerequisite: calculus and Introductory Probability. 241A will cover those concepts in probability theory and optimization that have been widely used in the economics of uncertainty. 241B will present a survey of the recent literature in probabilistic economics with special emphasis on information and the economics of search, optimal production under uncertainty and models of stock market behavior.  
Mr. McCall

**243A-243B-243C. Workshop in Mathematical Economic Theory.** Workshop for dissertation writers and pre-dissertation writers. Research in progress presented, discussed, and criticized by visiting experts, UCLA faculty members, advanced graduate students. Paper required of students, who enroll with instructor's permission. S/U grading. Mr. Intriligator, Mr. Ostroy, Mr. Riley

**244. Mathematical Analysis in Economic Theory.** Review of vectors, matrices and univariate calculus. Multivariate calculus, constrained optimization. Emphasis on learning to apply optimization techniques in economic analysis. Economic topics discussed include: Pareto-optimality, the Coase theorem, net and gross substitutes, peak load pricing, and an introduction to general equilibrium.  
Mr. Riley

**245A-245B-245C. Advanced Theory and Mathematical Economics.** Prerequisites: course 201C or its equivalent elsewhere or consent of instructor. Selected advanced theoretical topics of current interest and an introduction to modern mathematical economics (including general equilibrium theory).  
Mr. Intriligator, Mr. Ostroy, Mr. Riley

**246A. An Introduction to Probability, Statistical Inference, Matrix Algebra.** (Formerly numbered 246A-246B-246C.) Discrete and continuous probability functions, moments, sampling theory, estimation, hypothesis testing, confidence intervals, multivariate normal distribution, matrix algebra.  
Mr. Ellickson

**246B. Introduction to Theory of Econometrics.** Least-squares regression, generalized least squares, serial correlation, errors-in-variables, simultaneous equations, multicollinearity.  
Mr. Intriligator, Mr. Leamer

**246C. Applications of Econometrics.** Selected econometric studies of consumption, investment, asset demand production functions, goods markets, factor markets, industrial organization, public finance, international trade. Course includes instruction on use of computer. Students are expected to write a research paper.  
Mr. Riley

**247. Single Equation Econometrics.** Linear regression, specification error, autocorrelation, non-normality, non-linear estimation, outliers, qualitative dependent variables, aggregation structural change.  
Mr. Leamer

**248. Multiple Equation Econometrics.** Multivariate regression, errors-in-variables, simultaneous equations, proxy variables (latent variables).  
Mr. Intriligator, Mr. Leamer

**249. Special Topics in Econometrics.** Mr. Intriligator, Mr. Leamer, Mr. McCall

**251. Labor Economics I.** Mr. Herrick, Mr. Welch

**252. Labor Economics II.** Mr. Herrick, Mr. Welch

**253. Labor Problems.** Mr. Herrick, Mr. Welch

**254A-254B-254C. Studies in Human Resource Economics.** Workshop for dissertation writers and pre-dissertation writers.

Research in progress presented, discussed, and criticized by visiting experts, UCLA faculty members, advanced graduate students. Paper required of students, who enroll only with instructor's permission. S/U grading. Mr. Welch

#### 261. Monetary Economics I.

Mr. Clower, Mr. Darby, Mr. Thompson

#### 262. Monetary Economics II.

Mr. Darby, Mr. Thompson

**263A-263B-263C. Studies in Monetary Economics.** Workshop for dissertation writers and pre-dissertation writers. Research in progress presented, discussed, and criticized by visiting experts, UCLA faculty members, advanced graduate students. Paper required of students, who enroll only with instructor's permission.

Mr. Clower, Mr. Darby, Mr. Thompson

#### 271. Industrial Organization, Price Policies, and Regulation: Theory.

Mr. Demsetz, Mr. Klein

#### 272. Industrial Organization, Price Policies, and Regulation: Policy.

Mr. Demsetz

**273. Public Utility Regulation.** Theory, practice and consequences of regulation in electric power, gas, water, telecommunications, broadcasting and other regulated industries; experience of unregulated monopoly and public enterprises by way of contrast.

Mr. Hilton

#### 275. National Transport Policy.

Mr. Hilton

#### 276. Urban Transportation.

Mr. Hilton

**277A-277B-277C. Workshop in Law and Economics.** Workshop for dissertation writers and pre-dissertation writers. Research in progress presented, discussed, and criticized by visiting experts, UCLA faculty members, advanced graduate students. Paper required of students, who enroll only with instructor's permission. S/U grading for economics majors; letter grading for law students enrolled in the Law-Economics concurrent MA-JD program.

Mr. Demsetz, Mr. Klein

**281. Evolution of Economic Institutions in Western Europe.** Prerequisite: graduate status or consent of instructor. May be concurrently scheduled with Economics 181 lectures.

Mr. LaForce

#### 282. Soviet Economic Theory and Organization.

Mr. Murphy

#### 283. Evolution of Economic Institutions in the United States.

Mr. Murphy

#### 291. International Trade Theory.

Mr. Leamer

#### 292. International Finance.

Mr. Allen

#### 293. International Economics: Selected Topics.

Mr. Allen, Mr. Leamer

**299. Dissertation Research Seminar in Economics.** Prerequisite: Advancement to doctoral candidacy. Discussion of research topics and results by dissertation writers and their supervisors. May be taken more than once for credit.

The Staff

**401. The Teaching of Economics 1. (½ course)** Prerequisite: enrollment will generally be limited to teaching assistants handling one or more of the quiz sections in Economics 1. Approximately 20 hours divided between meetings of instructor with all section heads to discuss problems of exposition and structuring of course material, etc., and visits of instructor to the sections of each teaching assistant. S/U grading only. The 2 units of credit will not count towards degree requirements. Student may receive credit no more than twice for the course.

The Staff

**402. The Teaching of Economics 2. (½ course)** Prerequisite: enrollment will generally be limited to teaching assistants handling one or more of the quiz sections in Economics 2. Approximately 20 hours divided between meetings of instructor with all section heads to discuss problems of exposition and structuring of course materials, etc., and visits of instructor to the sections of each teaching assistant. S/U grading only. The 2 units of credit will not count towards degree requirements. Student may receive credit no more than twice for the course.

The Staff

### Individual Study and Research

**596. Individual Study. (½ to 2 courses)** Directed individual study or research.

The Staff

**597. Individual Study: Graduate Examinations. (½ to 2 courses)** Directed individual study in preparation for the M.A. comprehensive examination or the Ph.D. qualifying examination.

The Staff

#### 598. Individual Research: M.A. Thesis. (½ to 2 courses)

Directed individual research in preparation of M.A. thesis.

The Staff

#### 599. Individual Research: Ph.D. Dissertation. (½ to 2 courses)

Directed individual research in preparation of Ph.D. dissertation.

The Staff

## BUSINESS-ECONOMICS EDUCATION

Lawrence W. Erickson, Ed.D., Professor of Education (Adviser for Major, 244 Moore Hall).

Students wishing to prepare for teaching in the field of business-economics education should plan to complete the business-economics major shown below:

### Business-Economics Major for Business Teachers

This major has been designed in accordance with the State law governing the Single Subject (Secondary) Teaching Credential with a Specialization in Secondary Teaching for business teachers. The program consists of a departmental major in economics and management.

**Lower Division Requirements.** (1) Mathematics: Mathematics 1A-1B (if less than three years of high school mathematics); (2) English and speech: English 1A or 1B (or proficiency examination in addition to Subject A examination) and Speech I; (3) American History and Institutions; (4) Breadth Requirements: Satisfy breadth requirements of College of Letters and Science.

**Preparation for Major.** Economics 1, 2, Management 1A, 1B; one course in Calculus (e.g., Mathematics 4A, 3A, or 31A, which may be taken pass/fail).

**Upper Division Requirements.** (1) Economics 101A, 101B, 102, 160; three courses from Economics 107, 130, 150, 170, 180, 190; (2) Management 108, 109, 113A, 115A or Economics 40; Management 120, 130; three courses from Management 113B, 122, 135, 160, 180 or 281B, 190.

### Graduate Division

Students in business-economics education may earn the following graduate degrees; Master of Business Administration or Doctor of Philosophy in the School of Management; Master of Education, Master of Arts, Doctor of Education or Doctor of Philosophy in the Graduate School of Education. For further information see the ANNOUNCEMENT OF THE GRADUATE SCHOOL OF MANAGEMENT, the ANNOUNCEMENT OF THE GRADUATE SCHOOL OF EDUCATION, and the announcement of the Graduate Division, GRADUATE STUDY AT UCLA.

### Requirements for Teaching Credentials

Students may earn credentials for teaching business, economics, and other subjects in California elementary and secondary schools. Consult with the Graduate School of Education (201 Moore Hall) for information.

### Upper Division Course

**199. Special Studies. (¼ to 1 course)** Prerequisites: senior standing and consent of the instructor. The Staff

### Professional Course

**410. Case Studies in Office Management.** Mr. Erickson

### Individual Study and Research

**596. Independent Study in Business Education. (½ to 1 course)** The Staff

### Related Courses in Other Departments

#### Education

337A. The Curriculum in Business Education. Mr. Erickson

337B. The Teaching of Secretarial Subjects. Mr. Erickson

337C. The Teaching of Bookkeeping, General Business, and Economics. Mr. Erickson

## EDUCATION

(Department Office, 244 Moore Hall)

Marvin C. Alkin, Ed.D., Professor of Education.

Alexander W. Astin, Ph.D., Professor of Education.

Helen S. Astin, Ph.D., Professor of Education.

Arthur M. Cohen, Ph.D., Professor of Education.

Sol Cohen, Ph.D., Professor of Education.

Charlotta A. Crabtree, Ph.D., Professor of Education and Associate Director of the University Elementary School (Vice Chairman of the Department).

Lawrence W. Erickson, Ed.D., Professor of Education.

Claude W. Fawcett, Ph.D., Professor of Education.

Norma J. Feshbach, Ph.D., Professor of Education.

Clarence Fielstra, Ph.D., Professor of Education.

John I. Goodlad, Ph.D., L.H.D., LL.D., Professor of Education and

Director of the University Elementary School.

C. Wayne Gordon, Ph.D., Professor of Education and Sociology (Chairman of the Department).

Frank M. Hewett, Ph.D., Professor of Education and Psychiatry.

Evan R. Keislar, Ph.D., Professor of Education.

Barbara K. Keogh, Ph.D., Professor of Education.

Frederick C. Kintzer, Ed.D., Professor of Education.

John D. McNeil, Ed.D., Professor of Education.

C. Robert Pace, Ph.D., Professor of Education.

W. James Popham, Ed.D., Professor of Education.

Harry F. Silberman, Ed.D., Professor of Education.

A. Garth Sorenson, Ph.D., Professor of Education.

Louise L. Tyler, Ph.D., Professor of Education.

Carl Weinberg, Ed.D., Professor of Education.

Charles Z. Wilson, Ph.D., Professor of Education.

Merlin C. Wittrock, Ph.D., Professor of Education.

Melvin L. Barlow, Ed.D., Emeritus Professor of Education.

Jesse A. Bond, Ed.D., Emeritus Professor of Education.

William S. Briscoe, Ed.D., Emeritus Professor of Education.

Watson Dickerman, Ph.D., Emeritus Professor of Education.

Wilbur H. Dutton, Ed.D., Emeritus Professor of Education.

John A. Hockett, Ph.D., Emeritus Professor of Education.

David F. Jackey, Ph.D., Emeritus Professor of Education.

B. Lamar Johnson, Ph.D., Emeritus Professor of Education.

Wendell P. Jones, Ph.D., Emeritus Professor of Education.

George F. Kreller, Ph.D., Litt.D., LL.D., D.Sc., Emeritus Professor of

Education

Dorothy M. Leahy, Ed.D., Emeritus Professor of Education.

Erick L. Lindman, Ph.D., Emeritus Professor of Education.

William H. Lucio, Ph.D., Emeritus Professor of Education.

F. Dean McClusky, Ph.D., Emeritus Professor of Education.

Lynne C. Monroe, Ed.D., Emeritus Professor of Education.

Lloyd N. Morrisett, Ph.D., Emeritus Professor of Education.

Frances M. Obst, Ed.D., Emeritus Professor of Education

Rosemary Park, Ph.D., LL.D., Litt.D., L.H.D., Emeritus Professor of

Education.

May V. Seago, Ph.D., Emeritus Professor of Education.

Paul H. Sheats, Ph.D., LL.D., Emeritus Professor of Education.

Lorraine M. Sherer, Ed.D., Emeritus Professor of Education.

Samuel J. Wanous, Ph.D., Emeritus Professor of Education.

Frederic P. Woellner, Ph.D., Litt.D., LL.D., Emeritus Professor of

Education.

Eva L. Baker, Ed.D., Associate Professor of Education.

Gordon L. Berry, Ed.D., Associate Professor of Education.

James E. Bruno, Ph.D., Associate Professor of Education.

Simon Gonzalez, Ed.D., Associate Professor of Education.

Charles C. Healy, Ph.D., Associate Professor of Education.

Marilyn H. Kourilsky, Ph.D., Associate Professor of Education.

Thomas J. LaBelle, Ph.D., Associate Professor of Education (Vice

Chairman of the Department).

David O'Shea, Ph.D., Associate Professor of Education and Sociology.

Val D. Rust, Ph.D., Associate Professor of Education.

Richard J. Shavelson, Ph.D., Associate Professor of Education.

Rodney W. Skager, Ph.D., Associate Professor of Education.

James W. Trent, Ph.D., Associate Professor of Education.

Richard C. Williams, Ph.D., Associate Professor of Education.

Beatriz Arias, Ph.D., Assistant Professor of Education.

Leigh Burstein, Ph.D., Assistant Professor of Education.

Kenyon S. Chan, Ph.D., Assistant Professor of Education.

Charles W. Cheng, Ed.D., Assistant Professor of Education.

Frederick S. Ellett, Jr., Ph.D., Assistant Professor of Education.

John N. Hawkins, Ph.D., Assistant Professor of Education.

Antoinette Krupski, Ph.D., Assistant Professor of Education.

Janice E. Laine, Ed.D., Assistant Professor of Education.

Gerald J. Mahoney, Ph.D., Assistant Professor of Education.

Laura Miller, J.D., Assistant Professor of Education.

Gary L. Riley, Ph.D., Assistant Professor of Education.

Kathleen R. Rockhill, Ph.D., Assistant Professor of Education.

Deborah J. Stipek, Ph.D., Assistant Professor of Education.

Ruby Takanishi, Ph.D., Assistant Professor of Education.

Romeria Tidwell, Ph.D., Assistant Professor of Education.

Conception Valadez, Ph.D., Assistant Professor of Education.

Wellford Wilms, Ph.D., Assistant Professor of Education.

David P. Wright, Ph.D., Assistant Professor of Education and Head of

Supervised Teaching.

Julia C. Wrigley, Ph.D., Assistant Professor of Education and Sociology.

Byron H. Atkinson, Ed.D., Lecturer in Education.  
James C. Coleman, Ph.D., Professor of Education and Psychology.  
Marjorie S. Day, Ph.D., Lecturer in Education.  
Robert B. Kindred, Ed.D., Lecturer in Education.  
Lewis C. Solmon, Ph.D., Associate Professor of Education in Residence.

## AREA I: SOCIAL AND PHILOSOPHICAL STUDIES IN EDUCATION

### Fields of Specialization:

#### Comparative and International Education

#### Philosophy and History of Education

#### Sociology and Anthropology of Education

### COMPARATIVE AND INTERNATIONAL EDUCATION

**204A. Topics and Issues in International and Comparative Education.** Analysis of basic topics and issues in comparative and international education. Emphasis is placed on those topics and issues that cut across national boundaries and are at the forefront of educational policy and practice in both developed and developing nations.

Mr. Hawkins, Mr. LaBelle, and Staff

**204B. Introduction to Comparative Education.** An examination of conceptual and methodological questions underlying comparative education. Particular attention is given to the development of the field and to styles of social analysis which may be applied to comparative and cross-national studies in education.

Mr. Hawkins, Mr. LaBelle, Mr. Rust

**204C. Education and National Development.** Application of social science perspectives and methodologies to education in the international context. Emphasis on relevant research literature and development processes and strategies for international development education with concentration on so-called less developed countries. Mr. Hawkins, Mr. LaBelle, Mr. Rust

**204D. Minority Education in Cross-Cultural Perspective.** Historical and contemporary analyses of educational policies with regard to ethnic, religious, and linguistic minorities through selected national and international case studies. Introduction to cross-cultural education in representative countries in relation to social, political, and economic systems. The Staff

**204E. International Efforts in Education.** Analysis of problems and concepts related to diffusion, borrowing, and adaptation across cultural and national boundaries. Activities of bilateral and multilateral agencies in promoting international education are examined, as well as conceptual and practical curricular efforts which intend to increase international understanding. The Staff

**204F. Nonformal Education in Comparative Perspective.** A comparative and international study of organized and systematic educational activity for children, youth and adults carried on outside of schools. The types of programs studied include, among others, consciousness raising, community action, skills training, literacy, and extension programs. Mr. Hawkins, Mr. LaBelle, Mr. Rust

**204G. Planning Educational Language Policy Internationally.** Analysis of problems and issues involved in formulating a language education policy. Particular attention is given to planning for the use of vernacular languages in education as well as analyzing models and research for multilingual/bilingual education in various countries. Ms. Arias

**253A. Seminar: Current Problems in Comparative Education.** The Staff

**253B. Seminar: African Education.** The Staff

**253C. Seminar: Asian Education.** Mr. Hawkins

**253D. Seminar: Latin American Education.** Mr. Arias, Mr. LaBelle

**253E. Seminar: European Education.** Mr. Rust

**253F. Seminar: Education in Revolutionary Societies.** A multidisciplinary and comparative study of socialist educational theory is examined through the writings of Marx, Lenin, Mao and others. The implementation of this theory in specific case studies along with comparative assessments of nonsocialist nations will be explored. Mr. Hawkins, Mr. LaBelle, Mr. Rust

## PHILOSOPHY AND HISTORY OF EDUCATION

**200A. Historical Research and Writing.** Techniques of historical research and writing. For students who are or who will be engaged in research, and report or paper or thesis writing, regardless of their field of interest. Mr. S. Cohen

**M201A. History of Western Education.** (Same as History M215A.) The rise of the Western educational tradition, major ideas, institutions, personalities. From the world of the Greeks to that of the Twentieth Century. Mr. S. Cohen

**M201B. History of American Education to 1860.** (Same as History M215B.) Development of American education from the 17th Century to the Civil War. The emergence of the public school system in the context of social, intellectual and political change. Mr. S. Cohen

**M201C. History of American Education.** (Same as History M215C.) The aim is to depict the social forces impinging on American education from the 1860's to the present, and to analyze the relation between these social forces and the philosophy, curriculum, structural organization, and functions of education at all levels. Mr. S. Cohen

**206A. Philosophy of Education: Introduction.** Systematic introduction to the field, indicating ways in which philosophy serves to elucidate educational aims, content, methods, and values. Mr. Ellett, Mr. Weinberg

**206B. Philosophy of Education: Existentialism and Humanism.** Examination of existentialist ideas and their application in contemporary humanistic movements in school and society. Mr. Ellett, Mr. Weinberg

**206C. Philosophy of Education: Logic and Language.** Conceptual analysis of recurrent and contemporary themes in the field. Emphasis is on the development of logical and linguistic skills used in the analysis of educational problems and issues. Mr. Ellett, Mr. Weinberg

**206D. Philosophy of Education: Ethics and Values.** A study of ethics and value theory in teaching and learning, educational organization and policy, and curriculum design and validation. Mr. Ellett

**206E. Philosophy of Education: Introduction to Humanism in Education.** Examines the philosophical foundations of humanism and their relationships to educational theory and practice. Mr. Weinberg

**M250A. Seminar: History of Education.** (Same as History M287A.) Selected topics in History of Education: discussion, research, and writing. Mr. S. Cohen

**M250B. Seminar: History of Education.** (Same as History M287B.) To be given alternate years. Advanced seminar in bibliography and historiography in history of education. Mr. S. Cohen

**251A. Seminar: Philosophy of Education, Epistemology.** Prerequisite: consent of the instructor. Mr. Weinberg

**251B. Seminar: Philosophy of Education, Behavioral Science Problems in Education—Humanistic Perspectives.** Prerequisite: course 206E or consent of the instructor. Mr. Weinberg

**251C. Seminar: Philosophy of Education, Behavioral Science Problems — Methodological Perspectives.** Prerequisite: course 206C or consent of the instructor. Mr. Ellett, Mr. Weinberg

**251D. Seminar: Philosophy of Education, Problems in Ethics and Values.** Prerequisite: course 206D or consent of the instructor. Mr. Ellett

**251E. Seminar: Philosophy of Education, Selected Issues.** The Staff

## SOCIOLOGY AND ANTHROPOLOGY OF EDUCATION

**M10B. Sociology of Education.** (Same as Sociology M143.) Prerequisite: Sociology 1A or 101. Study of social processes and interaction patterns in educational organizations; the relationship of such organizations to aspects of society, social class and power; social relations within the school, college and university; formal and informal groups, subcultures in educational systems; roles of teachers, students and administrators. Mr. O'Shea, Ms. Wrigley

**200B. Survey Research Methods in Education.** Prerequisite: course 210A or the equivalent. Problems of conceptualization, organization and gathering nonexperimental and quasi-experimental quantitative and qualitative data. Mr. O'Shea

**200C. Analysis of Survey Data in Education.** Three class hours, two hours laboratory. Prerequisite: course 200B. Introduction to techniques of processing and analyzing nonexperimental and quasi-experimental quantitative data. Mr. O'Shea

**203. Educational Anthropology.** Prerequisite: Anthropology 22 recommended. Study of education through the research and method of the cultural anthropologist. Interdependence of culture and education with emphasis placed on cross-cultural studies of enculturation, schooling, values, cognition, language, and cultural change. Mr. LaBelle

**207. Politics and Education.** Course explores the political dimensions of both formal and nonformal educational enterprises in a national and international perspective. Political theory will be explored in the context of such educational issues as policy formation, pressure groups, and public and private elites. Mr. Cheng, Mr. Hawkins and Staff

**208A. Perspectives on the Sociology of Education.** Designed to introduce students to sociological perspectives on current issues in educational policy and practice. Issues addressed include desegregation, decentralization, equality of educational opportunity, structure of educational organization, teacher-student relationships, reform in education at the elementary, secondary, post-secondary levels. Mr. Gordon, Mr. O'Shea, Ms. Wrigley

**208B. Issues in Education: Sociological Perspectives.** Prerequisite: course 208A or the equivalent. Theoretical perspectives and data from sociology that throw light upon issues in education. Issues include equality of educational opportunity, school-to-work transition, education and employment, evaluation, school and district organization, innovation, curriculum change, school site management, teacher training, desegregation, and decentralization. Mr. O'Shea

**252A. Seminar: Educational Organizations.** Prerequisite: course 208A or consent of the instructor. Mr. Gordon, Mr. O'Shea, Ms. Wrigley

**252B. Seminar: Education and Social Change.** Prerequisite: course 208A or consent of instructor. Mr. LaBelle, Mr. O'Shea

**275. Seminar: School Desegregation.** Prerequisite: consent of the instructor. Analysis of the social/political response to desegregation programs in Northern and Southern school districts; review of court decisions and development of legal policy on school desegregation. Consideration of effects of integration on school achievement and inter-racial attitudes. Ms. Wrigley

## AREA II: EDUCATIONAL PSYCHOLOGY

### Fields of Specialization:

#### Counseling

### Early Childhood Development

### Learning and Instruction

### Research Methods and Evaluation

### Special Education

### COUNSELING

**213A. Fundamentals of Student Personnel Work.** Prerequisite: graduate student or consent of the instructor. Analysis and in-class application of student and pupil personnel service methods, with emphasis on task groups and evaluation. Mr. Healy, Mr. Sorenson

**213B. Legal and Ethical Bases of Student Personnel Work.** Prerequisite: course 213A. Ethical and legal codes relevant to pupil personnel services; relation of value systems and personality; case studies in the implications of personal values in counseling situations. Mr. Berry, Mr. Sorenson

**213C. Group Process in Education.** Group productivity, leadership, social perception and attitude formation, decision-making, determination of group interaction variables and the effect of behavior changes in individuals and groups. Mr. Berry, Mr. Sorenson

**214A. Counseling Theory and Practice.** (Formerly numbered 214A-214B.) Application of concepts drawn from cognitive psychology to the non-academic problems which people encounter in everyday life, such as finding suitable employment, achieving satisfying interpersonal relationships, and making productive use of leisure time. Mr. Sorenson

**214B. Advanced Counseling Theory and Practice.** Prerequisite: limited to candidates for advanced degrees whose major interest is counseling, and to selected high school and college counselors. Counseling procedures, educational planning, and methods for helping students handle personal problems that interfere with school progress; critical evaluation of procedures. Mr. Sorenson

**216. Counseling in the Urban School and Community.** Prerequisite: course 213A or 214A and consent of the instructor. Research related to the psychological, educational, and sociological characteristics of urban students and the implications for counseling models. Development and evaluation of counseling procedures through practicum-type experiences dealing with school and community groups will be systematically covered. Mr. Berry

**257. Seminar: Pupil Personnel Services.** Mr. Sorenson

**413A-413B-413C. Internship in School Psychology.** Prerequisite: consent of the instructor; courses 413A-413B-413C must be completed in three consecutive quarters; limited to students enrolled in the Counseling specialization. Two class hours, sixteen hours of field experience. Working in public schools or comparable setting performing duties of a school psychologist — psychodiagnosis, integrating case material, staffing cases, developing educational plans, working with teachers and parents, and establishing evaluative criteria. Mr. Healy, Ms. Tidwell

**415A. The Appraisal of Intelligence.** Prerequisites: courses 210A and 211A. Concepts and theories leading to development of individual cognitive assessment instruments; issues and implications relating to the application and current practices of utilizing such tests in a multi-cultural society. Laboratory experience includes administration and interpretation of standardized instruments; case studies. Mr. Healy, Ms. Tidwell

**415B. Human Appraisal in School Counseling and School Psychology.** Prerequisites: course 415A and consent of the instructor. Survey and demonstration of the major techniques of cognitive, affective and achievement appraisal and their applicability to problems found in the school setting. Research and theoretical issues concerned with appraisal will also be discussed. Ms. Tidwell

### EARLY CHILDHOOD DEVELOPMENT

**217A. Child Development and the Educational Process.** Biological and familial, school, and other influences on the child; development in the context of current research and theoretical models; consideration of theoretical and methodological research on family and school; application of developmental theory and research to educational practice. Ms. Stipek, Ms. Takanishi

**217B. Intellectual Development and School Performance.** Prerequisite: course 217A or equivalent. Developmental, behavioral, environmental, genetics, structural, cross-cultural, and methodological approaches to the study of intellectual functioning and educational performance in preschool and school children. Ms. Stipek

**M217C. Personality Development and Motivation in Education.** (Same as Psychology M245.) Personality development and environmental conditions which form motivational patterns; self-concept, moral behavior, aggression; creativity, sex differences, research and personality theory bearing on motivational problems in school settings and curricula development. Ms. Feshbach

**217D. Language Development and Education.** Research and theory on how children develop their first language. Sociolinguistic and psycholinguistic issues in preschool and primary years. Bilingual and dialectal issues. The Staff

**217E. Developmental Problems in Early Childhood.** Prerequisite: two core courses in development and learning. Problems of atypical development during early childhood viewed from an interactional position which has significance for later learning and education. Topics include early identification; implications for school learning; impact of disability on parent-child interactions; and early intervention programs. Ms. Keogh

**256B. Seminar: Special Topics in Development.** Prerequisite: consent of instructor. Ms. Feshbach, Ms. Stipek, Ms. Takanishi

**261A. Seminar: Early Childhood Education.** Prerequisite: courses 421A-421B. Ms. Feshbach, Ms. Takanishi

**421A. Programs, Models and Research in Early Childhood Education.** Prerequisite: one course in the development series and one quarter field placement. Introduction to programs and research in early childhood. Observation of preschool programs (cooperative nurseries, Headstart, private nurseries, Montessori preschools, day care centers). The organization and evaluation of educational research and its relation to goals of early childhood education. The Staff

**421B. Cognitive Education of the Young Child.** Prerequisite: course 217A or 217B, or equivalent. Offered only in alternate years. Review of current theories of cognitive development, e.g., Piaget, Bruner, Guilford, Skinner, and their implications for the development of preschool programs (including those in child care centers). The Staff

**421C. Research and Evaluation of Early Childhood Programs.** Prerequisite: courses 421A and 421B, or equivalent. Critical review and evaluation of the various preventive and remedial programs for the young child. Analysis of relevant research findings and methodological issues; cross-cultural research on early childhood education programs. Ms. Takanishi

**421D. Parents and Community Agents in Childhood Development.** Prerequisite: two courses from the development sequence and one course from early childhood education, or equivalent. Parents and community agents as resources for childhood education. Training parents of preschoolers and elementary school children. Role of preschool programs in the community. Development of culturally significant school programs derived from examination of experiences of young children. Ms. Feshbach

**421E. Techniques for Behavior Change in the Young and Elementary Age Child.** Prerequisite: consent of the instructor. Review of learning theory principles and research relevant to behavioral development and change; application of behavior techniques to problems arising in preschool and early primary grades. Management of aggression; facilitation of cooperation, empathy; and curiosity. The Staff

**421F. Current Perspectives in Early Childhood Development for the Professional.** Prerequisite: recommended for professionals in Early Childhood Education. Critical issues and recent developments in the field and practice of Early Childhood: Organization, curricula and program evaluation; policy and legislative factors; day care; parent programs; community participation in programs, cognitive, emotional and exceptional development; early intervention and mental health. Ms. Feshbach and Staff

## LEARNING AND INSTRUCTION

**205. Computers in the Educational Process.** Introduction to the theory, experimentation, evaluation and the future of computer systems in education, with emphasis on computer-assisted instruction (CAI), computer-managed instruction (CMI), and the use of computers by educational administrators for scheduling, student records, and student performance assessment. The Staff

**212A. Learning and Education.** Models of learning, modeling, reinforcement, motivation, encoding, memory, transfer, individual differences and instruction. Mr. Silberman, Mr. Wittrock

**212B. Motivation and Affect in the Educative Process.** Prerequisites: courses 210A and 212A. A review of the theoretical and empirical literature on motivational factors in school settings and the conditions for the acquisition of affective outcomes. Mr. Keislar

**212C. Cognition and Creativity in Education.** Prerequisite: course 212B. A review of the theoretical and empirical literature on cognitive processes in school learning, including concept learning, problem solving, learning to learn, and creativity. Mr. Wittrock

**256A. Seminar: Special Topics in School Learning.** Prerequisite: consent of instructor. Mr. Keislar, Mr. Wittrock

**258A. Seminar: Problems in Instructional Research.** Mr. Keislar, Mr. Wittrock

**258B. Seminar: Problems in Instructional Development.** Ms. Baker, Mr. Keislar

**267. Seminar: Educational Technology.** Prerequisite: course 433A, 433B recommended. Ms. Baker, Mr. Silberman

**418. Instructional Analysis.** (Formerly numbered 420B.) Prerequisite: consent of the instructor. Analysis of instructional variables as they relate to diverse types of instructional strategies. The student acquires skill in techniques of conducting instructional research. Ms. Baker

**419A. Experimentation on Media of Communication and Instruction.** Prerequisite: course 210A. Analysis of basic methods used and results obtained in experiments on the development of knowledge, skills and attitudes through audio-visual communication media and other instructional programs. The Staff

**419B. Experimental Analysis of Instructional Program Variables.** Two class hours, four hours laboratory. Prerequisite: courses 210A, 212A, 419A; 210B and 212B or 212C recommended. Advanced problems of methodology and rationale in the planning and conduct of experiments on the effects of psychologically defined variables in instructional programs; theory and techniques of laboratory and field experiments on instructional media. The Staff

**433A. Instructional Product Development.** Prerequisite: consent of instructor. An examination of the procedures employed in the systematic development of instructional products. Students acquire competencies associated with those procedures. Ms. Baker, Mr. Popham

**433B. Technological Development in Educational Media.** Two class hours, four hours laboratory. Prerequisite: course 433A; 210A and 212A recommended. Theory, current problems, and anticipated trends in instrumentation and systems development for instructional applications and research; including computer-aided instruction, communication satellites, and other advanced systems; theory and laboratory practice with instrumentation in educational research. Mr. Silberman

## RESEARCH METHODS AND EVALUATION

**210A. Basic Concepts in Educational Research.** Fundamentals of research. The language of research. Basic statistical concepts. Planning of research. Interpretation of research outcomes. Introduction to descriptive statistics; mean, median, mode, variance. Introduction to normal curve. It is strongly recommended that all students have this background as a minimum. Mr. Burstein, Mr. Shavelson, Mr. Skager

**210B. Experimental Design in Educational Research.** Prerequisite: knowledge of descriptive statistics. Inference. Randomization test or t-test. Normal curve tests. Analysis of variance. Randomized block and factorial designs. Internal and external threats to the validity of research conclusions. Mr. Shavelson, Mr. Skager and Staff

**210C. Experimental Design: Advanced Topics.** Prerequisite: course 210B or equivalent work. Completely randomized designs, randomized block designs and their combinations into advanced factorial designs using fixed, random, and mixed models. Analysis of covariance, introduction to multiple regression and quasi-experimental designs. Mr. Shavelson and Staff

**210D. Experimental Design: Multivariate Analysis.** Prerequisite: course 210C or equivalent work. Review of multiple regression analysis, analysis of covariance. Introduction to matrix algebra. Introduction to multivariate normal distribution. Multivariate analysis of variance. Linear discriminant function. Analysis of repeated measurements. Canonical correlation. Principal components. The Staff

**211A. The Measurement of Educational Achievement and Aptitude.** Prerequisite: course 210A. A critical study of tests of achievement and aptitude with an emphasis on group tests; the relation of achievement to aptitude; social implications of the measurement of intelligence; elements of validity and reliability. Mr. Alkin, Mr. Popham, Mr. Skager

**211B. Measurement in Education: Underlying Theory.** Prerequisite: course 211A. Measurement theory as applied to testing, focusing primarily on classical test theory; implications of theories for test construction and selection; current status of validity and reliability theory. Mr. Burstein, Mr. Shavelson, Mr. Skager

**211C. Problems in Measurement.** Prerequisite: courses 210C and 211B or equivalent work. Generalizability theory and some other statistical theories of mental test scores; implications for the design and interpretation of generalizability and decision studies; advanced topics in validity. Mr. Burstein, Mr. Shavelson and Staff

**218A. Multiple Regression Analysis.** Prerequisite: course 210B. Regression-based techniques for analyzing quantitative data; multiple regression methods, multiple correlation, partial correlation; introduction to the general linear model; with direct application to educational inquiry. Mr. Burstein and Staff

**218B. Quasi-Experimental Models in Educational Research.** Prerequisites: course 218A or the equivalent and consent of the instructor. Study of the assumptions and limitations inherent in quasi-experimental research designs. The time-series intervention design will be stressed. The students will be able to design an appropriate quasi-experiment to assess the impact of a particular educational intervention. The Staff

**218C. Causal Models in Non-Experimental Research.** Prerequisites: course 218A or the equivalent and consent of the instructor. Study of the inferential bases for the construction and

validation of causal models in settings where true experiments are not appropriate. Statistical models from sociology, biology, and econometrics will be discussed. Assumptions and limitations of these models will be stressed. Mr. Burstein and Staff

**219. Laboratory: Advanced Topics in Research Methodology.** (½ course) Provides assistance in the design of research and interpretation of data to advanced students from other specializations. Coverage of special topics not included in other courses on research methods. Mr. Burstein, Mr. Shavelson

**221. Critical Analysis of Empirical Research in Education.** Prerequisites: course 210A and 210B or equivalent background, and consent of the instructor. A course examining contemporary empirical research in education and its relevance to educational practice. Designed to develop critical skills in reviewing substantive and methodological aspects of research. Mr. Shavelson

**255. Seminar: Special Topics in Measurement and Research Design.** Prerequisite: courses 210C and 211C or consent of the instructor. The Staff

**410A. Procedural Problems in Curriculum Evaluation.** Assessment methodologies appropriate for curriculum evaluation problems. Writing evaluation proposals, developing program monitoring procedures, selecting appropriate evaluation design strategies, coping with ethical considerations in evaluation, framing the decision context, and reporting evaluation results. Mr. Alkin, Mr. Popham

**410B. Assessment Problems in Curriculum Evaluation.** An examination of problems and alternative solutions associated with the task of evaluating curriculum enterprises. Consideration is given to criterion-referenced measurement, domain-referenced achievement testing, and unobtrusive measurement strategies as these topics relate to the assessment of curricular programs. Ms. Baker, Mr. Popham

**420C. Evaluation of Curriculum and Instruction.** Prerequisite: consent of instructor. Ways of evaluating the effectiveness of curriculum and instruction, including assessment and improvement of teacher behavior and accomplishment. Mr. Alkin, Mr. Popham, Ms. Tyler

**460. Seminar: Special Issues in Curriculum Evaluation.** Mr. Alkin, Mr. Popham, Ms. Tyler

## SPECIAL EDUCATION

**125. The Education of Exceptional Children.** Prerequisites: Psychology 10 and 12 or 101. The psychology of individual difference with emphasis on the learning characteristics of exceptional children and application of research and theory to special education programs. Mr. Chan, Mr. Hewett, Mr. Mahoney

**225. Issues in the Education of Exceptional Children.** Prerequisite: limited to students in graduate degree programs. Analysis of major research regarding contemporary trends, issues, and programs for the exceptional; consideration of commonalities and differences among exceptional children. The Staff

**226A. Medical-Biological Aspects of Mental Retardation.** Research on physical and psychiatric aspects of mental retardation as they affect learning in children; instructional modifications based on such factors. Ms. Krupski

**226B. Psychosocial Aspects of Mental Retardation.** Prerequisite: course 225 or equivalent. Research on the psychological and sociological aspects of mental retardation as they affect learning in children; instructional modifications based on such factors. Mr. Chan

**227A. Research on the Education of the Emotionally Disturbed.** Prerequisite: course 225 or equivalent. Research on the emotionally disturbed and their learning characteristics; instructional modifications based on such factors. Mr. Hewett

**227B. Research on the Education of Children with Learning Disabilities.** Prerequisite: course 225 or equivalent; Psychology 132A-132B recommended. Research on learning disorders with special reference to minimal neurological impairment; instructional modifications based on such factors. Ms. Keogh

**280A. Seminar: Exceptional Children.** Prerequisite: course 225, or 226A, or 227A and admission to a doctoral program. Mr. Chan, Ms. Krupski, Mr. Mahoney

**280B. Seminar: The Mentally Retarded.** Prerequisite: course 225, or 226A, or 227A and admission to a doctoral program. Ms. Krupski, Mr. Mahoney

**280C. Seminar: The Educationally Handicapped.** Prerequisite: courses 225, or 226A, or 227A and admission to a doctoral program. Mr. Hewett, Ms. Keogh

**M280D. Seminar: Children with Learning Disorders.** (Same as Psychology M276A.) Prerequisite: course 225, or 226A, or 227A and admission to a doctoral program. Mr. Coleman

**M280E. Seminar: Children with Learning Disorders.** (Same as Psychology M276B.) Prerequisite: course 225, or 226A, or 227A and admission to a doctoral program. Mr. Coleman

**325A. Introductory Laboratory in the Education of Exceptional Children.** (½ to 1 course) Prerequisite: course 125 or consent of the instructor. Four to eight hours per week field work in the UCLA Neuropsychiatric Institute School, other campus facilities, or public school special education programs. Emphasis on observation and

study of children who have learning disabilities, are emotionally disturbed, or are mentally retarded. The Staff

**325B. Advanced Laboratory in the Education of Exceptional Children.** (½ to 1 course) Prerequisite: course 325A or consent of the instructor. Four to eight hours per week field work in the UCLA Neuropsychiatric Institute School, other campus facilities, or public school special education programs. Emphasis on teaching children who have learning disabilities, are emotionally disturbed, or are mentally retarded. The Staff

**425A. Appraisal of Exceptional Children.** Prerequisite: course 225 and 415A or the equivalent. Individual appraisal of exceptional children with emphasis on the physically handicapped, mentally retarded, educationally handicapped, and gifted; analysis of tests and diagnostic procedures; case studies. The Staff

**425B. Guidance of Exceptional Children.** Prerequisite: course 225 or the equivalent. Educational, vocational, and personal guidance of the exceptional; parent counseling; career and training opportunities; community referrals. The Staff

**426. Analysis of Programs for the Mentally Retarded.** Prerequisite: course 225 or the equivalent. Evaluation of instructional practice in relation to current research; formulation of model programs. Mr. Mahoney

**427A. Analysis of Programs for the Emotionally Disturbed.** Prerequisite: course 225 or the equivalent. Evaluation of instructional practice in relation to current research; formulation of model programs. Mr. Hewett

**427B. Analysis of Programs for Children with Learning Disabilities.** Prerequisite: course 225 or the equivalent. Evaluation of instructional practice in relation to current research; formulation of model programs. Mr. Chan, Ms. Keogh

**501. Cooperative Program in Special Education.** (½ to 2 courses) Prerequisite: approval of UCLA Graduate Adviser and Graduate Dean. Approval of host campus Instructor, Department Chairman, and Graduate Dean. Limited to UCLA doctoral students in Special Education. This course is used to record the enrollment of UCLA doctoral students in practicum courses taken under cooperative arrangements with California State University, Los Angeles. To be graded S/U. The Staff

### AREA III: ORGANIZATIONAL AND ADMINISTRATIVE STUDIES IN EDUCATION

#### Fields of Specialization:

#### Administrative and Policy Studies in Education

#### Business-Economic Education

#### Curriculum and the Study of Schooling

#### Higher Education

#### Vocational-Technical Education

### ADMINISTRATIVE AND POLICY STUDIES IN EDUCATION

**147. Social Science Methods and the Law.** Prerequisite: upper division undergraduate, two years of college level mathematics, or consent of the instructor. A quantitative orientation for understanding and critically analyzing the emerging impact of social science methods and the law. Fundamental skills in statistical and economic analysis of data will be provided along with illustrations of their use in landmark legal cases. Mr. Bruno

**240A. School Administrative Practices Since 1900.** An examination of school administration since 1900 as it has responded to social, political, and economic pressures exerted on schools. Development of sensitivity to current pressures and alternatives for administrative response. Mr. Fawcett

**241. Research Methodology in School Administration.** Prerequisite: consent of the instructor. Examination of research problems and strategies in school administration. The Staff

**242. Economic Analysis for Educational Policy and Planning.** (Formerly numbered 242F.) Prerequisite: graduate standing. The applications of economics-based methodologies for analysis of issues in educational policy and planning. Techniques addressing educational problems of organization of activities, classification, prediction, optimization, goal setting, and measuring inequalities are discussed. Mr. Bruno

**244. Economics of Education.** An introductory course in micro and macro economic techniques applied to education. Methodologies as marginal analysis, linear programming, Leontief I-O models, Lorenz curve analysis are discussed with application to school finance, underdeveloped countries, equality of educational opportunity and credentialing. Mr. Bruno, Mr. Solmon

**246A. Seminar: Mathematical Modeling in Educational Policy Analysis.** Prerequisite: course 242, two years of college level mathematics, knowledge of computer programming, or consent of the instructor. Mathematical modeling of educational processes and problems. Deterministic modeling techniques, in addition to stochastic modeling techniques, are discussed. A mathematics review and instruction in the use of the MPS 360 (Mathematical Programming Code) are provided. Mr. Bruno

**246B. Seminar: Operations Research—Systems Analysis in Education.** Prerequisite: courses 242 and 246A, two years of college level mathematics, computer programming, or consent of the instructor. Advanced topics in the application of quantitative analysis to educational policy and planning. Methodologies such as logit models, Bayesian analysis, game theory, differential equation growth models and advanced topics in production and human capital theories will be discussed. Mr. Bruno

**246C. Strategic Planning in Education.** Problems of goal formulation; interorganizational competition; and control of environmental forces affecting resource utilization, with particular attention to the utility of open-planning models in providing alternative resource-allocation patterns. Mr. Bruno

**440B. Problems in Educational Government and Finance.** (Formerly numbered 240B.) Intensive study of problems and issues affecting the governance and finance of schools. The Staff

**440C. Administration of the Instructional Program.** (Formerly numbered 240C.) Examination of current educational problems in the society and the strategies of their solution through curriculum policy and practice; instructional design and operation; and in-service training of teaching staffs. Mr. Fielstra

**442A. Administration of Large Systems and Individual Schools.** (Formerly numbered 242A.) Prerequisite: consent of the instructor. Theoretical and functional problems in the administration of large systems and decentralized individual schools. The Staff

**442B. Legal Aspects of Educational Management and Practice.** Examination of the structures and kinds-of-law governing educational systems in the United States; constitutional dimensions of church/state relations; employees' civil rights and legal aspects of hiring, firing, and negotiating procedures; student attendance, control, and civil rights. Ms. Miller

**442C. Personnel Systems in Schools.** (Formerly numbered 242C.) The formulation and execution of personnel policies from both the organizational and individual basis. Mr. Fawcett

**442D. Educational Finance.** (Formerly numbered 242D.) Historical and theoretical background of educational finance; considers principles related to federal and state participation in educational finance; considers other economic factors related to the provision and utilization of financial resources in schools. The Staff

**442E. Administration of In-Service Education.** (Formerly numbered 242E.) Emphasis on the development of knowledge, skills, and attitudes essential to exercising leadership in the facilitation of the professional growth of teachers, school administrators, and other educational personnel, especially as such growth contributes to instructional improvement and relevant curriculum development. Mr. Fielstra

**442F. Communication Systems in Schools.** (Formerly numbered 242G.) Communication theory and its application to administrative problems; includes internal communications among board members and among superintendent and staff, and external communication with the community. Mr. Fawcett

**443. Introduction to Policy Analysis in Education.** (Formerly numbered 243.) Prerequisite: consent of the instructor. A survey of major policy issues in American education. The social science basis of policy studies will be examined. An overview of the political, social, economic, and legal context of educational policy formation will be covered. Mr. Cheng, Mr. Williams

**447. Seminar: Educational Policy and Planning, Special Studies.** (Formerly numbered 247.) Prerequisite: consent of the instructor. The Staff

**448A. Urban School Leadership.** Prerequisite: consent of the instructor. Analysis of the problems of urban school leadership. Emphasis is on the changing nature of the urban principalship; however, considerable attention is given to the role of other school and community agencies that interact with the urban school leader. Mr. Williams

**448B. Urban Leadership Laboratory.** Prerequisite: consent of the instructor. Analysis of and opportunity to practice human and technical skills requisite for success as an urban school leader. Topics include negotiations, conflict resolution, applied computer technology, and effective communication. Activities include gaming, simulation, computer programming and group dynamics. The Staff

**470A. Seminar: Large Systems and Individual Schools.** (Formerly numbered 270A.) Prerequisite: consent of the instructor. The Staff

**470B. Seminar: Educational Government.** (Formerly numbered 270B.) Prerequisite: consent of the instructor. The Staff

**470C. Seminar: Personnel Systems.** (Formerly numbered 270C.) Prerequisite: consent of the instructor. Mr. Fawcett

**470D. Seminar: Educational Finance.** (Formerly numbered 270D.) Prerequisite: consent of the instructor. The Staff

**470E. Seminar: In-Service Education.** (Formerly numbered 270E.) Prerequisite: consent of the instructor. Mr. Fielstra

**470F. Seminar: Communications Systems.** (Formerly numbered 270F.) Prerequisite: consent of the instructor. Mr. Fawcett

### BUSINESS-ECONOMIC EDUCATION

**262G. Seminar: Business Education.** Mr. Erickson

**262J. Seminar: Economic Education.** Mrs. Kourilsky

**337A. The Curriculum in Business Education.** The curriculum in business education in secondary schools, including instructional techniques, course content, prognosis of achievement, standards, error analyses, transfer of training, remedial techniques, and evaluation. Mr. Erickson

**337B. The Teaching of Secretarial Subjects.** A survey and evaluation of procedures and materials used in teaching typewriting, secretarial subjects, office practice and business machines. Mr. Erickson

**337C. The Teaching of Bookkeeping, General Business, and Economics.** A survey and evaluation of the procedures and materials used in teaching bookkeeping, general business, and economics in secondary schools. Mr. Erickson

**436A. Principles and Problems of Business Education.** Historical development and principles, practices, and problems in business education in secondary schools and colleges. Mr. Erickson

**436B. Business Education in Secondary and Higher Education: Advanced.** Advanced study in business education with a critical analysis of significant research applicable to curriculum and teaching practices. Mr. Erickson

**436C-436D. Education in Family Finance.** Prerequisite: credit toward advanced degrees by petition only. Theories, principles, concepts and research relating to sound personal and family financial management. Mr. Erickson

**436E. Evaluation and Field Research in Family Finance Education.** (½ to 1 course) Concepts and principles relating to family finance education and their application to teaching situations. Mr. Erickson

**437A. Principles of Curriculum in Economic Education.** Theories, principles and concepts relating to an understanding of the business and economic system; their application to teaching in the secondary school. Mrs. Kourilsky

**437B. Corporate Educational Programs.** History and scope of corporate training programs; current educational problems in training programs within industry as they are affected by automation and technological change. The Staff

**437C. Curriculum in Electronic Computers.** This course deals with courses of study, instructional materials, methods of presentation and evaluation of a number of programs in automated information processing for high schools and junior colleges. The Staff

### HIGHER EDUCATION

**M148. Women in Higher Education.** (Same course as Women's Studies Program M148.) Prerequisite: upper division standing. The course examines the education and career development of women in higher education. Specifically, it focuses on undergraduate and graduate women; women faculty and administrators; curricula, programs, and counseling services; designed to enhance women's educational and career development, affirmative action and other recent legislation. Ms. Astin

**180. Social Psychology of Higher Education.** An overview of significant studies in the Social Psychology of Higher Education. Focusing on institutional characteristics and students' interpersonal and intrapersonal processes, special emphasis is upon identifying and explaining the effects of the college experience upon student development and achievement. Mr. Trent

**209A. History of Higher Education.** An examination of the development of post-secondary education in the United States with attention to the social context and to the scope and variety of institutions. Mr. A. Cohen, Mr. Pace, Ms. Rockhill

**209B. Issues in Higher Education.** Identification, analysis, and discussion of current issues, innovations, trends, and policies in post-secondary education. Ms. Astin, Mr. A. Cohen

**209C. Problems in Research and Evaluation in Higher Education.** A critical review of research and evaluation studies of higher education with special attention to the need for studies of new programs and problems, and to the design and methodology of evaluative research. Mr. Astin, Mr. Pace

**209D. The System of Higher Education.** An analysis of the structure and function of American post-secondary education from a systems perspective. Emphasis is given to the structure of the system and to comparative characteristics (faculties, student bodies, finances, outputs) of different types of institutions. Mr. Astin



**239. The Organization and Governance of Educational Systems.** Academic organizations, precollegiate and post-secondary are most appropriately studied as complex, professionalized organizations. This course provides a basic understanding of the characteristics of educational institutions and systems as organizations: environmental relations, governance structures and processes, and patterns of decision making.  
Mr. Riley

**248. Perspectives on Lifelong Learning.** From an interdisciplinary perspective, lifelong learning is studied theoretically, and as an area of educational research, policy and practice. Conceptual distinctions are drawn among the major proponents of lifelong learning and implications for schooling are considered.  
Ms. Rockhill and Staff

**249A. Seminar: National Evaluations of Post-Secondary Education.** Critical review of national evaluation studies of higher education including programs of general education, and professional and graduate school programs; emphasis on the design, methodology, and interpretation of large-scale evaluation studies.  
Mr. Astin

**249B. Seminar: Institutional Research and Program Evaluation.** Critical review of institutional evaluation studies with consideration of the scope of information needed for various purposes and the problems of interrelating this information to appraise overall institutional functioning and effectiveness.  
Mr. Riley, Mr. Trent

**259A. Seminar: Research on Characteristics of Students.**  
Mr. Trent

**259B. Seminar: Research on Characteristics of Educational Environments.**  
Mr. Pace

**261D. Seminar: The Community College.**  
Mr. A. Cohen, Mr. Kintzer

**261F. Seminar: Higher Education.**  
Ms. Astin, Mr. Riley, Mr. Solmon

**334. Supervised Teaching: Junior College.** Prerequisite: course 431B taken prior to or concurrent with 334.  
Mr. A. Cohen

**431A. Administration in Higher Education.** An overview of college and university administration. Case studies of administrative problems, policies, and practices. Management information systems, resource allocations, and issues related to responsibility, authority, and participation in administrative decisions.  
Mr. Riley

**431B. Curriculum and Instruction in Higher Education.** Principles of curriculum and instruction in post-secondary programs. Theory and practices in goal-setting, testing, media selection, and related instructional responsibilities. Preparing to teach college level students.  
Mr. A. Cohen

**431C. Innovative Forms and Practices in Higher and Continuing Education.** New Institutional forms, e.g., external degree programs and other nontraditional approaches to higher education, neighborhood learning centers, and peoples' colleges. Methodological innovations such as computer-assisted instruction, credit by examination, and independent study.  
Ms. Astin, Ms. Rockhill

**432. Seminar: Professional Topics in Higher Education.**  
Ms. Astin, Mr. Solmon

**461A. Seminar: Adult Education.**  
Ms. Rockhill

**461B. Seminar: Adult Education in Other Countries.**  
The Staff

**461C. Seminar: Community Service and Development Programs in Post-Secondary Education.**  
Mr. Kintzer

## CURRICULUM AND THE STUDY OF SCHOOLING

**220A. Inquiry into Schooling: Organization and Change.** Critical analysis of issues in the reconstruction of schooling; concepts of function and structure of schooling; organization theory; systems approaches in the analysis of organization development and change.  
Miss Crabtree, Mr. Goodlad, Mrs. Tyler

**220B. Inquiry into Schooling: Curricular Problems.** Inquiry into the curriculum of schooling. Critical analysis of the relationship of curricular decision-making to social system and contextual variables.  
Miss Crabtree, Mr. Goodlad, Mrs. Tyler

**220C. Inquiry into Schooling: Basic Issues.** The nature of the school in the United States and in selected countries; school organization; schooling alternatives; special problems.  
Mr. Goodlad, Mrs. Tyler

**224. Problems and Issues in Bilingual and Multicultural Education.** Introduction to the development and implementation of bilingual and multicultural programs in the U.S. Analysis of program goals, models, typologies and effectiveness.  
Ms. Arias, Ms. Valadez

**260. Seminar: Principles of Curriculum and Instruction.**  
Mr. Goodlad, Mr. McNeil, Mrs. Tyler

**261B. Seminar: Elementary Education.**  
Miss Crabtree, Mr. Wright

**261C. Seminar: Secondary Education.**  
Mr. McNeil, Mr. Silberman

**262A. Seminar: The Social Studies.**  
Miss Crabtree

**262B. Seminar: Reading.**  
Miss Laine, Mr. McNeil

**262C. Seminar: Mathematics.**  
The Staff

**262D. Seminar: Language Arts and English.**  
Miss Laine

**262E. Seminar: Science.**  
The Staff

**262F. Seminar: Research Topics in Bilingual/Multicultural Education.** Prerequisite: consent of the instructor.  
Ms. Arias, Ms. Valadez

**268. Seminar: Instructional Analysis.** Prerequisite: course 420A. Critical examination of theories of instruction; problems in conceptualizing and researching related instructional, learner, and social-system variables in classroom learning; problems in instructional decision-making and change.  
Mr. Silberman, Mrs. Tyler, Mr. Wright

**420A. Principles of Curriculum.** Critical examination of the basic concepts underlying the determination of objectives, the selection and organization of learning experiences, and the evaluation process.  
Miss Crabtree, Mr. McNeil, Mrs. Tyler

**420D. Curriculum: Principles and Practice.** An examination and application of various curricular perspectives to questions of purpose, learning opportunities and evaluation.  
Mr. McNeil, Mrs. Tyler

**423. The Humanistic Curriculum.** A consideration of the philosophical and cultural foundations of humanistic curricular strategies. Reviews techniques and procedures of affective education with a view to their place in an overall theory of teaching and learning.  
Mr. Weinberg

**424A. The Social Studies in the Curriculum.** Advanced study in social studies curriculum development; problems in defining objectives and organizing single and multidisciplinary programs; critical review of literature on cognitive and affective learning in social science, with emphasis on experimental study of instructional programs.  
Miss Crabtree, Mr. Wright

**424B. Reading in the Curriculum.** Prerequisite: courses 210A and 313. Study of reading curricula and instructional procedures, with emphasis on the rationale and research underlying their development and the research comparing their effectiveness.  
Miss Laine, Mr. McNeil, Mr. Wright

**424C. Language in the Curriculum.** Advanced study in the school language curriculum; application to the improvement of the curriculum in the field.  
Miss Laine

**424D. Mathematics in the Curriculum.** Prerequisite: courses 314 and Mathematics 38. Study of the school mathematics curriculum; the new mathematics; evaluation procedures.  
The Staff

**424E. Science in the Curriculum.** Prerequisite: courses 210A and 314. Study of current research problems, findings, methodology and design in school science with emphasis on application to and improvement of instruction; new types of courses; curriculum development; instructional techniques.  
The Staff

**424F. Curricular Design for Multicultural Education.** Prerequisite: course 224 or consent of the instructor. Critical analysis of curriculum models currently implemented in multicultural programs. The course will provide a framework for developing and evaluating multicultural curricula. Examination of teaching strategies to meet multicultural needs.  
Ms. Arias, Ms. Valadez

**424G. Curriculum Design for Bilingual Education.** Prerequisite: consent of the instructor. Advanced study of curriculum design for bilingual educational programs. Philosophical basis for bilingual programs; theories of learning and instruction applied to the bilingual learner; language assessment; development of instructional component; program evaluation.  
Ms. Arias, Ms. Valadez

## VOCATIONAL-TECHNICAL EDUCATION

**214C. Principles of Career Planning.** Prerequisite: courses 112, 211A and 415A. The use of tests and occupational information in helping students in educational and vocational planning.  
Mr. Healy

**214D. Vocational Guidance.** Prerequisite: course 214C. Depth study of current interests and needs in vocational guidance; principles, problems, and practices of vocational guidance.  
Mr. Berry, Mr. Healy

**233. American Values in the Development of Vocational Education.** Course traces social values that supported early vocational education, reviews relevant research, and analyzes potential future directions for vocational education.  
Mr. Wilms

**235. Education and Work.** A review of the theoretical and empirical literature on issues concerning the interface of education and work. A review of alternatives in the school-to-work transition of youth and an appraisal of present vocational training and manpower development programs.  
Mr. Silberman

**261E. Seminar: Technical Education in the Junior College.**  
The Staff

**262I. Seminar: Vocational Education.**  
Mr. Wilms

## TEACHER EDUCATION

For courses 324A-324B-324C-324D, and 330A-330B-330C-330D; all candidates must (1) secure the approval of the Office of

Student Services at least one quarter prior to assignment, including formal recommendation of Student Health Service and evidence of suitable scholastic averages; and (2) apply to the Head of Supervised Teaching by the middle of the quarter preceding the assignment.

**100. Cultural Foundations of Education.** Prerequisite: consent of the instructor. Analysis of significant problems and issues in contemporary American education using historical, philosophical, sociological and organizational perspectives. Examines the politics of schooling, the organizational structure of school systems, and philosophical concepts of the aims and functions of schooling and education.  
The Staff

**102. The Mexican-American and the Schools.** Prerequisite: consent of the instructor. Review of research and teaching strategies. Analysis of school policies and practices, and their effect on the development of Mexican-American and Chicano youth and communities.  
The Staff

**112. Psychological Foundations of Education.** Prerequisite: consent of the instructor. Analysis of learning processes in school situations. Examines processes of human motivation, the affective, cognitive, social and personal development of children and adolescents, the evaluation of learning, individual differences, and the implications of relevant theory and research for instructional practices.  
The Staff

**264. Seminar: Teacher Education.** Prerequisite: consent of the instructor. Examines research, issues and practices in preservice and inservice teacher preparation, evaluation and certification. Social, philosophical and methodological issues, and current trends in America and abroad are studied. Opportunities to observe, participate in and discuss teacher education programs are provided.  
Mr. Wright

**312. Basic Principles of Curriculum and Instruction.** Prerequisite: consent of the instructor. Analysis and practice of basic principles and concepts for planning, conducting and evaluating units of curriculum and instruction. Emphasis on the study and utilization of a variety of instructional strategies, and their application in elementary and secondary schools.  
The Staff

**313. Principles and Methods of Teaching the Language Arts and English: K-12.** Prerequisite: consent of the instructor. Principles and methods for development of instructional programs in language arts and English in elementary and secondary school classrooms. Gives attention to psycholinguistic and sociolinguistic foundations of language instruction and language learning. Participation in schools: two hour laboratory by arrangement.  
The Staff

**314. Principles and Methods of Teaching Mathematics and Science: K-12.** Prerequisite: consent of the instructor. Principles and methods for development of instructional programs in mathematics and science with emphasis upon the integration of mathematics and science curricula. Special attention is given to teaching the metric system. Participation in schools; two-hour laboratory by arrangement.  
The Staff

**315AB. Principles and Methods of Teaching Reading: K-12.** Prerequisites: consent of the instructor. 315A is prerequisite to 315B. Analysis of reading problems and programs; study of relationships between language, culture, cognition and reading. Examination and development of instructional programs; analysis and practice of alternative instructional methods. Observation and participation in schools.  
Mr. Wright

**315A-315B. Principles and Methods of Teaching Reading: K-12. (½ course each)** Prerequisites: consent of the instructor. 315A is prerequisite to 315B. Analysis of reading problems and programs; study of relationships between language, culture, cognition and reading. Examination and development of instructional programs; analysis and practice of alternative instructional methods. Observation and participation in schools.  
Mr. Wright

**318A-318B. Principles and Methods for Multiple Subject Instruction. (½ course each)** Prerequisites: consent of the instructor. 318A is prerequisite to 318B. Examination and development of instructional programs; analysis and practice of alternative instructional methods. Focus on subjects commonly taught in elementary schools. Observation and participation in schools.  
Mr. Wright

**320A-320B. Principles and Methods for Single Subject Instruction. (½ course each)** Prerequisites: consent of the instructor. 320A is prerequisite to 320B. Examination and development of instructional programs; analysis and practice of alternative instructional methods. Focus on subjects commonly taught in secondary schools. Observation and participation in schools.  
Mr. Wright

**324A. Observation and Participation: Multiple Subject Instruction. (½ to 1½ courses)** Prerequisite: consent of the instructor. Six hours per week of observation and participation in classrooms in which multiple subjects are taught, normally in elementary schools. Preparation for supervised teaching.  
Mr. Wright

**324B. Supervised Teaching: Multiple Subject Instruction. (½ to 1½ courses)** Prerequisites: course 324A and consent of the instructor. Practice teaching under the daily supervision of a

teacher in a classroom in which multiple subjects are taught, normally in an elementary school. Mr. Wright

**324C. Supervised Teaching: Multiple Subject Instruction.** (½ to 1½ courses) Prerequisites: course 324B and consent of the instructor. Advanced practice teaching under the daily supervision of a teacher in a classroom in which multiple subjects are taught, normally in an elementary school. Mr. Wright

**324D. Supervised Teaching: Multiple Subject Instruction.** (½ to 1½ courses) Prerequisites: course 324C and consent of the instructor. Advanced practice teaching under the daily supervision of a teacher in a classroom in which multiple subjects are taught, normally in an elementary school. Mr. Wright

**330A. Observation and Participation: Single Subject Instruction.** (½ to 1½ courses) Prerequisite: consent of the instructor. Six hours per week of observation and participation in classroom in which single subjects are taught, normally in secondary schools. Preparation for supervised teaching. Mr. Wright

**330B. Supervised Teaching: Single Subject Instruction.** (½ to 1½ courses) Prerequisites: course 330A and consent of the instructor. Practice teaching under the daily supervision of a teacher in a classroom in which a single subject is taught, normally in a secondary school. Mr. Wright

**330C. Supervised Teaching: Single Subject Instruction.** (½ to 1½ courses) Prerequisites: course 330B and consent of instructor. Advanced practice teaching under the daily supervision of a teacher in a classroom in which a single subject is taught, normally in a secondary school. Mr. Wright

**330D. Supervised Teaching: Single Subject Instruction.** (½ to 1½ courses) Prerequisites: course 330C and consent of the instructor. Advanced practice teaching under the daily supervision of a teacher in a classroom in which a single subject is taught, normally in a secondary school. Mr. Wright

**480. Learning and Development in Childhood and Adolescence.** Prerequisite: consent of the instructor. Research and theory from psychology of learning and instruction, and psychology of child and adolescent development applied to practical issues in classroom teaching. Emphasis on intellectual and cognitive development, achievement motivation, self-concept, concept learning, problem solving, and individual differences. Mrs. Feshbach, Mr. Wittrock

**481. Knowledge and Inquiry in the Classroom.** Prerequisite: consent of the instructor. Examines the logical features of instruction, and demonstrates their application to inquiry techniques in teaching and learning. Analyzes various conceptions of truth, belief, fact and opinion, and studies their application to classroom learning situations. Mr. Ellett, Mr. Weinberg

**482. Society and the Organization of School and Classroom.** Prerequisite: consent of the instructor. Analysis and resolution of problems of socialization in the classroom. Case study methods will be used to employ social and cultural concepts and social evaluation to the diagnosis and interpretation of classroom teaching problems. Mr. Gordon, Mr. O'Shea

**483. Cognitive Processes in Reading.** Critical analysis of scholarly studies, theoretical and applied, treating relationships between reading and the mind. Considers implications for teaching of reading. Opportunities for student interaction with foremost scholars in the field, whose studies represent the "growing edge" of research. Mr. McNeil

**484. The Enhancement of Motivation in the School.** Comparative study of motivation in the school including behavioristic, cognitive, developmental, humanistic approaches. Critical review, with special reference to teaching of reading, of (1) motivational methods to heighten school performance, (2) procedures to foster enduring patterns of constructive motivation in the school. Mr. Keislar

**489. Instructional Strategies in Education.** Prerequisite: consent of the instructor. Analyzes methods for academic instruction, including research and active participation in the adversary approach, forms of debate, role playing, interaction process analysis, and feedback instruments. Practical emphasis on social sciences and humanities instruction. K-12. Mrs. Kourilsky

**490. Instructional Decision-Making.** (½ to 1½ courses) Prerequisite: consent of the instructor. Analysis of instructional models relevant to public school education. Assumptions, procedures, and constraints of each strategy considered in terms of learner and task variables. Laboratory experiences in classroom settings permit students systematically to apply and evaluate alternative instructional strategies. Mrs. Baker, Mrs. Kourilsky

**491. Curricular Decision-Making.** (½ to 1½ courses) Prerequisite: consent of the instructor. Examination of alternative solutions for the practical problems that classroom teachers face in making curricular decisions. Analysis of the influence of psychological, societal, and institutional factors in curricular decisions. Miss Crabtree, Mr. Wright

**492. Evaluation of Teaching and Learning.** Prerequisite: consent of the instructor. Examines relationship between appraisal instruments and information required for making decisions about teachers, pupils, and materials. Introduces recent developments in the evaluation of teaching and learning, and demonstrates the use of modern appraisal techniques in classroom settings. Mr. McNeil, Mr. Popham, Mr. Skager

## INDEPENDENT STUDY, RESEARCH, AND INTERNSHIP

**199. Special Studies.** (½ to 2 courses) Prerequisite: senior standing and consent of the instructor. Independent study of individual problems. The Staff

**299A-299B-299C. Research Practicum in Education.** May be repeated once for credit. The Staff

**498A-498B-498C. Directed Field Experience.** May be repeated once for credit. The Staff

**499A-499B-499C. Advanced Directed Field Experience.** May be repeated once for credit. The Staff

**596. Directed Independent Study.** (½ to 2 courses) Individual study or research for graduate students. Maximum credit, three courses. The Staff

**597. Preparation for the Master's Comprehensive Examination or the Doctoral Qualifying Examination.** Individual study for master's degree comprehensive examinations or for qualifying examinations on the Ph.D., or Ed.D. Maximum credit, two courses. The Staff

**598. Thesis Research.** Research for and preparation of the master's thesis. Maximum credit, two courses. The Staff

**599. Dissertation Research.** (1 or 2 courses) Research for and preparation of the doctoral dissertation. Maximum credit, no limit. The Staff

## ENGINEERING AND APPLIED SCIENCE

(Office of the Dean, 7400 Boelter Hall)

Russell R. O'Neill, Ph.D., *Dean*  
Russell A. Westmann, Ph.D., *Associate Dean*  
Alfred C. Ingersoll, Ph.D., *Associate Dean*  
Richard Stern, Ph.D., *Assistant Dean*  
Ahmed R. Wazzan, Ph.D., *Assistant Dean*  
Alan N. Willson, Jr., Ph.D., *Assistant Dean*

## CHEMICAL, NUCLEAR, AND THERMAL ENGINEERING DEPARTMENT

(Department Office, 5531 Boelter Hall)

Douglas N. Bennion, Ph.D., *Professor of Engineering and Applied Science*  
Harry Buchberg, M.S., *Professor of Engineering and Applied Science*  
Ivan Catton, Ph.D., *Professor of Engineering and Applied Science*  
Andrew F. Charwat, Ph.D., *Professor of Engineering and Applied Science*  
Donald K. Edwards, Ph.D., *Professor of Engineering and Applied Science*  
(*Chairman of the Department*)  
Traugott H.K. Frederking, Ph.D., *Professor of Engineering and Applied Science*  
William E. Kastenber, Ph.D., *Professor of Engineering and Applied Science*  
Eldon L. Knuth, Ph.D., *Professor of Engineering and Applied Science*  
Joseph W. McCutchan, M.S., *Professor of Engineering and Applied Science*  
Ken Nobe, Ph.D., *Professor of Engineering and Applied Science*  
David Okrent, Ph.D., *Professor of Engineering and Applied Science*  
Richard L. Perrine, Ph.D., *Professor of Engineering and Applied Science*  
Gerald C. Pomraning, Ph.D., *Professor of Engineering and Applied Science*  
Lawrence B. Robinson, Ph.D., *Professor of Engineering and Applied Science*  
Ahmed R. Wazzan, Ph.D., *Professor of Engineering and Applied Science*  
Vernon E. Denny, Ph.D., *Associate Professor of Engineering and Applied Science*  
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George E. Apostolakis, Ph.D., *Assistant Professor of Engineering and Applied Science*  
Vijay K. Dhir, Ph.D., *Assistant Professor of Engineering and Applied Science*  
Nasir M. Ghoniem, Ph.D., *Assistant Professor of Engineering and Applied Science*  
Owen I. Smith, Ph.D., *Assistant Professor of Engineering and Applied Science*  
Alan Z. Ullman, Ph.D., *Assistant Professor of Engineering and Applied Science*  
Vincent L. Vilker, Ph.D., *Assistant Professor of Engineering and Applied Science*

Leslie Cave, B.Sc., *Adjunct Professor of Engineering and Applied Science*  
Chung K. Chan, Ph.D., *Assistant Professor of Engineering and Applied Science in Residence*  
Carl Gazley, Jr., Ph.D., *Adjunct Professor of Engineering and Applied Science*  
Julius Glater, M.S., *Adjunct Associate Professor of Engineering and Applied Science*

Stanley Kaplan, Ph.D., *Adjunct Professor of Engineering and Applied Science*

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## COMPUTER SCIENCE

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Walter J. Karplus, Ph.D., *Professor of Engineering and Applied Science*  
(*Chairman of the Department*)  
Leonard Kleinrock, Ph.D., *Professor of Engineering and Applied Science*  
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Thomas A. Rogers, Ph.D., *Emeritus Professor of Engineering and Applied Science*  
Antonin Voboda, D. Tech. Sci., *Emeritus Professor of Engineering and Applied Science*  
Daniel M. Berry, Ph.D., *Associate Professor of Engineering and Applied Science*  
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Leon Levine, M.S., *Senior Lecturer in Engineering and Applied Science*

## ELECTRICAL SCIENCES AND ENGINEERING

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A. Theodore Forrester, Ph.D., *Professor of Engineering and Applied Science and Professor of Physics*  
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(*Chairman of the Department*)  
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Oscar M. Stafsudd, Jr., Ph.D., *Associate Professor of Engineering and Applied Science*  
Jack Willis, B.Sc., *Associate Professor of Engineering and Applied Science*  
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Thomas A. Zimmerman, Ph.D., *Adjunct Associate Professor of Engineering and Applied Science.*

## ENGINEERING SYSTEMS

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<sup>18</sup>Joseph W. McCutchan, M.S., *Professor of Engineering and Applied Science.*

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Judea Peart, Ph.D., *Professor of Engineering and Applied Science.*

<sup>18</sup>Richard L. Perrine, Ph.D., *Professor of Engineering and Applied Science.*

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## MATERIALS

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George H. Sines, Ph.D., *Professor of Engineering and Applied Science.*

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Christian N. J. Wagner, Dr. rer. nat., *Professor of Engineering and Applied Science (Chairman of the Department).*

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Ryoichi Kikuchi, Ph.D., *Adjunct Professor of Engineering and Applied Science.*

Martin H. Leipold, Ph.D., *Adjunct Professor of Engineering and Applied Science.*

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## MECHANICS AND STRUCTURES

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Stanley B. Dong, Ph.D., *Professor of Engineering and Applied Science.*

C. Martin Duke, M.S., *Professor of Engineering and Applied Science.*

Kurt Forster, Ph.D., *Professor of Engineering and Applied Science.*

Michael E. Fourny, Ph.D., *Professor of Engineering and Applied Science.*

Robert E. Kelly, Sc.D., *Professor of Engineering and Applied Science.*

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Antony J. A. Morgan, Ph.D., *Professor of Engineering and Applied Science.*

Rokuro Muki, Ph.D., *Professor of Engineering and Applied Science.*

Lucien A. Schmit, Jr., M.S., *Professor of Engineering and Applied Science (Chairman of the Department).*

<sup>18</sup>George H. Sines, Ph.D., *Professor of Engineering and Applied Science.*

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Joseph S. Beggs, D.Eng., *Emeritus Professor of Engineering and Applied Science.*

Walter C. Hurty, M.S., *Emeritus Professor of Engineering and Applied Science.*

Tung Hua Lin, D.Sc., *Emeritus Professor of Engineering and Applied Science.*

William T. Thomson, Ph.D., *Emeritus Professor of Engineering and Applied Science, Resident at Santa Barbara.*

Steven Dubowsky, Sc.D., *Associate Professor of Engineering and Applied Science.*

Lewis P. Felton, Ph.D., *Associate Professor of Engineering and Applied Science.*

Peretz Friedmann, Sc.D., *Associate Professor of Engineering and Applied Science.*

Gary C. Hart, Ph.D., *Associate Professor of Engineering and Applied Science.*

D. Lewis Mingori, Ph.D., *Associate Professor of Engineering and Applied Science.*

Richard B. Nelson, Sc.D., *Associate Professor of Engineering and Applied Science.*

Dixon Rea, Ph.D., *Associate Professor of Engineering and Applied Science.*

Sanford B. Roberts, Ph.D., *Associate Professor of Engineering and Applied Science.*

Lawrence G. Selna, Ph.D., *Associate Professor of Engineering and Applied Science.*

Ross R. Allen, Ph.D., *Assistant Professor of Engineering and Applied Science.*

Steven J. Barker, Ph.D., *Assistant Professor of Engineering and Applied Science.*

Peretz Friedmann, Sc.D., *Assistant Professor of Engineering and Applied Science.*

James S. Gibson, Ph.D., *Assistant Professor of Engineering and Applied Science.*

Poul V. Lade, Ph.D., *Assistant Professor of Engineering and Applied Science.*

Richard S. Chadwick, Ph.D., *Associate Professor of Engineering and Applied Science.*

Robert E. Englekirk, Ph.D., *Adjunct Associate Professor of Engineering and Applied Science.*

George J. Tauxe, M.S., *Senior Lecturer in Engineering and Applied Science.*

Edward R. Wood, D.Engr., *Adjunct Professor of Engineering and Applied Science.*

Harold T. Yura, Ph.D., *Adjunct Professor of Engineering and Applied Science.*

Moche Ziv, Ph.D., *Adjunct Associate Professor of Engineering and Applied Science.*

## SYSTEM SCIENCE

(Department Office, 4532 Boelter Hall)

Masanao Aoki, Ph.D., *Professor of Engineering and Applied Science.*

A. V. Balakrishnan, Ph.D., *Professor of Engineering and Applied Science and Professor of Mathematics.*

Jack W. Carlyle, Ph.D., *Professor of Engineering and Applied Science (Chairman of the Department).*

Sheila A. Greibach, Ph.D., *Professor of Engineering and Applied Science.*

James L. Massey, Ph.D., *Professor of Engineering and Applied Science.*

Jimmy K. Omura, Ph.D., *Professor of Engineering and Applied Science.*

Paul K. C. Wang, Ph.D., *Professor of Engineering and Applied Science.*

Donald M. Wibergh, Ph.D., *Professor of Engineering and Applied Science.*

Stephen E. Jacobsen, Ph.D., *Associate Professor of Engineering and Applied Science.*

Nhan Levan, Ph.D., *Associate Professor of Engineering and Applied Science.*

Bruce L. Miller, Ph.D., *Associate Professor of Engineering and Applied Science.*

Richard E. Mortensen, Ph.D., *Associate Professor of Engineering and Applied Science.*

Izhak Rubin, Ph.D., *Associate Professor of Engineering and Applied Science.*

Kung Yao, Ph.D., *Associate Professor of Engineering and Applied Science.*

Subramani Arunkumar, Ph.D., *Assistant Professor of Engineering and Applied Science.*

<sup>18</sup>Emily P. Friedman, Ph.D., *Assistant Professor of Engineering and Applied Science.*

Jan M. Chaiken, Ph.D., *Adjunct Associate Professor of Engineering and Applied Science.*

Hector O. Fattorini, Ph.D., *Associate Professor of Mathematics and Associate Professor of Engineering and Applied Science.*

**Undergraduate Required Courses**

*Lower Division:* 10

*Upper Division:* The student is to select 8 core courses (32 units) from the 5 subject areas as listed below. The minimum and maximum number of units allowed in each of the 5 subject areas is also given.

**Subject Areas (5)**

**Courses (12)**

(1) *Computer Processes*  
Courses: M124A  
Units: 0-4

(2) *Electrical Sciences*  
Courses: 100, 100B  
Units: 4-8

(3) *Mechanics*  
Courses: 102, 103A, 108  
Units: 8-12

(4) *Systems*  
Courses: 106B, 121C, 127B  
Units: 4-8

(5) *Thermal and Materials Science*  
Courses: 14†, 105A, 105D  
Units: 8-12

†Not open for credit for students who have taken Engineering 107B.

Students following pre 1976/77 catalogs are referred to the respective catalogs for further information.

**School Codes**

5, 11, 12, 104, 104CD, 192A, 192B, 192C, 193A, 196A, 291A, 291B, 291C, 470A-470D,\* 471A-471C,\* 472A-472D,\* 473A-473B,\* 596, 597A, 597B, 597C, 598, 599.

\*Open only to Engineering Executive Program students.

## Departmental Course Responsibility

**Chemical, Nuclear, and Thermal Engineering Courses**

130A, 131A, 131C, 132A, 133A, 134A, 134B, 134C, 135A, 135B, 135C, 135D, 135E, M136A, 137, 137A, 137B, 137C, 137D, 138A, 138D, 139A, 139B, 199C, 230A, 230B, 230C, 230D, 231A, 231B, 231C, 231D, 231E, 231F, 232B, 233A, 234A, 235A, 235B, 235C, 235D, 236A, 236B, 236C, 236D, 236E, M236G, 237A, 237B, 237C, 237D, 237E, 238A, 238B, 238C, 238D, 238E, 239AA-AZ, 239BA-BZ, 239CA-CZ, 239DA-DZ, 239EA-EZ, 239S.

**Computer Science Courses**

20, 30, 111, M123B, M124A, 131, 132, 141, 151A, 151B, 152A, 152B, 171, 172, 173, 174, 199, 201, 202, 211A, 212A, 212B, 212C, 219, 231A, 232A, 232B, 239, 241A, 249, 252A, 253A, 254A,

255A, 257A, 259, 271A, 271B, 275A, 276A, 276B, 279, M285A, 286A, M287A, 288A, 289, 596, 597A, 597B, 597C, 598, 599.

#### Electrical Sciences and Engineering Courses

110A, 110B, 110C, 111A, 111B, 113A, 113B, 115A, 115B, 115C, 115D, 115E, 115F, 116A, 116B, 116C, 116D, 116L, 116M, 116N, 117A, 117B, 117C, 117D, 117L, M118, 195A, 199B, 210A, 210B, 210C, 210D, 210E, 213A, 213B, 213C, 213S, 214A, 214B, 214C, M214E, 215A, 215B, 215C, 215D, 216A, 216B, 216C, 217A-217B, 217C, 219A, 219B, 219C, 219D, 219E, 219X.

#### Engineering Systems Courses

106A, 106C, 106D, 107A, 109, 171A, 171C, 174A, 176A, 177A, 177B, 180A, 180B, 181A, 184A, 184B, 184D, 193B, M196B, 199D, 270A, 271A, 271B, 271C, 271D, 272D, 274A, 274B, 274C, 274K, M275A, 275B, 276A, 277A, 277B, 280A, 280B, 284A, 284B, 284C, 284D, 284E, 284F, 284G, 284H, M288A, M288B, M296A, M296B, M296C.

#### Materials Courses

140D, 140E, 140L, 141, 142A, 142L, 143A, M143B, 143L, 145A, 145L, 146A, 146B, 146C, 146D, 146E, 146L, 147A, 147B, 147E, 147L, 147M, 148, 149A, 199E, 240A, 240B, 240C, 241, 242A, 243A, 243B, 243C, 244, 245C, 246A, 246B, 246D, 247A, 247B, 247C, 248A.

#### Mechanics and Structures Courses

150A, 150B, 151, 152, 153A, 153B, 153C, 154A, 154B, 155, 156A, 157, 157A, 157B, 158A, 160, 161A, 162A, 162B, 162C, 163, 165A, 165B, 165C, 165L, 166, 167A, 167B, 167C, 169A, 185A, 185B, 186A, 191A, 199F, 250A, 250B, 250C, 251A, 251B, 251C, 252A, 252B, 252D, 253A, 253B, 253C, 254A, 254B, 255A, 255B, 256A, 256B, 256C, 256F, M257A, M257B, 258A, 258B, 259A, 259B, 262A, 263A, 263B, 264A, 264B, 265A, 265B, 265C, 266A, 266B, 267A, 267B, 267C, 267E, 267S, 268A, 268B, 269A, 269B, 269C, 269D, 285A, 285B, 285C, 285D, 285E, 285L, 286A, 286B, M291A, M291B, M292A, M292B.

#### System Science Courses

120A, 120B, M120C, 122A, M123B, 128A, 128D, 128L, 129A, 129L, 201A-201ZZ, 220A, 220B, 220G, 221, 222A, 222B, 222C, 222EA-222EZ, M222F, M222G, 227A, 227B, 227C, 227EA-227EZ, 227F, 227G, 228A, 228B, 228CA-228CZ, 228D, 229A, 229B, 229C, 229EA-229EZ, 229J-K-L, 272A, 272BA-272BZ, 272C, 273A, M273B, 273CA-273CZ, M284A, 284XA-284XZ, M285A, M287A, M291A, M291B.

## ENGINEERING

#### Lower Division Courses

**15. Computers in the Man-Made World.** An introduction to computers and computing for non-mathematically oriented students. How a computer functions and how one can "talk" to it will be explained through a study of logical circuits, memory, control, arithmetic, computer organization, and programming.

Mr. Bussell

**10C. Introduction to Computing.** (Formerly numbered 10.) Recommended for Math/Computer Science majors; (emphasis on numerical problems). Open to graduate students on a S/U basis only. Not open to students who have completed Engineering 10, 10F, or 10S. Algorithms and programming languages. Description and use of PL/1 programming language. Selected topics in numerical analysis. Organization and characteristics of digital computers. Machine language. Programming and running of several numeric and non-numeric problems.

Mr. Levine (F,W,Sp)

**10F. Introduction to Programming/FORTRAN.** (Formerly numbered 10.) Recommended for Chemical, Nuclear and Thermal Engineering Department and Mechanics and Structures Department majors; (emphasis on numerical problems). Open to graduate students on S/U grade basis only. Not open to students who have completed Engr. 10, 10C or 10S. Description and use of FORTRAN programming language. Selected topics in programming techniques. Programming and running of several numeric problems.

Mr. Levine (F,W,Sp)

**10S. Introduction to Programming for Life and Social Sciences.** (Formerly numbered 10.) Recommended for all majors except Math/Computer Science, and Engineering; (emphasis on non-numerical problems). Open to graduate students on S/U grade basis only. Not open to students who have completed Engr. 10, 10C or 10F. Description and use of PL/1 programming languages. Selected topics in numerical analysis and data processing. Programming and running of several numeric and non-numeric problems.

Mr. Levine (F,W,Sp)

**11. Patterns of Problem Solving.** An introduction to patterns of reasoning in the process of problem solution and decision making. Exposure to concepts, theories and techniques in the analysis and synthesis of total systems in our complex technological civilization.

Mr. Elliott, Mr. Hart, Mr. Rubinstein (F,W,Sp)

**12. Applied Patterns of Problem Solving.** Prerequisite: course 11. An application of the tools and methods discussed in Engineering 11, to three specific problems of a social and technical nature.

Mr. Rubinstein (W,Sp)

**14. Science of Engineering Materials.** Prerequisite: Chemistry 1A, 1B; Physics 8A and 8B; Physics 8C (may be taken concurrently). (Not open for credit to students who have taken

Engr. 107B.) General introduction to different types of materials used in engineering designs: metals, ceramics, plastics and composites, relationship between structure (crystals and micro-structure) and properties of technological materials. Illustration of their fundamental differences, and their applications in engineering.

Mr. Ono (F,W,Sp)

#### Upper Division Courses

**100. Electrical and Electronic Circuits.** Lecture, four hours; recitation, one hour. Prerequisite: Mathematics 32C, may be taken concurrently; Physics 8C. Electrical quantities, circuit principles, signal wave-forms, A.C. circuits, semiconductor devices, small signal models, amplifiers, electrical and electronic instruments.

Mr. Willis (F,W,Sp)

**100L. Circuit Analysis Laboratory. (1/2 course)** Prerequisite: Physics 8C; Engineering 100, which should be taken concurrently. Experiments with circuits containing linear and nonlinear devices; transient and steady state behavior of circuits.

Mr. Willis (F,W,Sp)

**100B. Engineering Electromagnetics.** Lecture, four hours; recitation, one hour. Prerequisite: Physics 8C, Mathematics 32C. Electromagnetic field concepts; Maxwell's Equations; static and quasistatic fields; field energy; energy flow and the Poynting vector; electromechanical interactions; waves in unbounded media and on two-wire transmission lines; reflection and refraction; lossy media; skin effect; analogs to electromagnetic fields.

Mr. Alexopoulos (F,W,Sp)

**102. Mechanics of Particles and Rigid Bodies.** Lecture, three hours; recitation, two hours. Prerequisite: Mathematics 32C (may be taken concurrently). Newtonian mechanics (statics and dynamics) of particles and rigid bodies. Fundamental concepts of mechanics. Statics, kinematics, and kinetics of particles and rigid bodies. Impulse-momentum and work-energy relationships. Applications.

Mr. Mingori (F,W,Sp)

**103A. Elementary Fluid Mechanics.** Prerequisite: Mathematics 32C; Engineering 102 recommended. An introductory course dealing with the application of the principles of mechanics to the flow of compressible and incompressible fluids.

Mr. Cole, Mr. Liu (F,W,Sp)

**104. Introduction to Experimental Techniques. (1/2 course)** Principles of simple machining operations, engineering drawing practices, soldering and welding techniques, vacuum systems, glassblowing, American standard sizes and color-codes, effective presentation of results. One lecture-demonstration per week. May be taken before junior year. To be graded on P/NP basis.

Mr. Chen, Mr. Shaibaik, Mr. Stern (F,Sp)

**104C-104D. Undergraduate Research Laboratory.** Laboratory, eight hours. Prerequisite: senior standing. Two quarter comprehensive projects in experimental engineering — research or design — involving laboratory work. Students may submit projects of their own choosing. May serve as basis for graduate research. Will satisfy Engineering laboratory requirement. Qualified non-engineering students are encouraged to enroll.

Mr. Campfield, Mr. Stern, Mr. Ullman (F,W,Sp)

**105A. Engineering Thermodynamics.** Prerequisite: Physics 8B and Mathematics 32A. Phenomenological thermodynamics. Concepts of equilibrium, temperature and reversibility. First law and concept of energy; second law and concept of entropy. Equations of state and thermodynamic properties. Application of these principles in analysis of closed and open systems of engineering interest.

Mr. Nobe, Mr. Wazzan (F,W,Sp)

**105D. Transport Phenomena.** Prerequisites: Physics 8B and Mathematics 32C. Transport phenomena; heat conduction, mass species diffusion, convective heat and mass transfer, and radiation. Engineering applications in thermal and environmental control.

Mr. Edwards, Mr. Wazzan (F,W,Sp)

**106A. Principles of Engineering Economy.** Prerequisite: upper division standing. Economic analysis of engineering projects; value systems; economic decisions on capital investment and choice of engineering alternatives; new projects, replacement and abandonment policies; risky decisions including make/buy policies and research investment; corporate financial practices and accounting.

Mr. English (F,W,Sp)

**106B. Introduction to Design and Systems Methodology.** Prerequisite: course 10; Mathematics 32C. Theory of engineering design and synthesis. Models and modeling. Analysis, test and evaluation. Methods for design optimization. Elementary decision theory. Student's design projects.

Mr. Rosenstein (F,W,Sp)

**106C. Experimental Design Laboratory.** Laboratory, eight hours. Prerequisite: course 106B or equivalent. Creative experimental projects for student designs in any engineering domain where individual students have preparation and interest, exemplifying the professional method. Predicted idealized performance is compared to experimentally achieved realities. Student prize competition entries are encouraged.

Mr. Nottage, Mr. O'Brien (F,Sp)

**106D. Engineering Systems Design Laboratory.** Recitation, one hour; laboratory, eight hours. Prerequisite: course 106C, 104 recommended. Advanced senior standing required. Similar to 106C and normally a continuation thereof. Design projects generally emphasizing productivity, energy, environments, and process cost-benefit studies.

Mr. Nottage, Mr. O'Brien (W)

**107A. Principles of Biotechnology.** Prerequisite: third quarter sophomore or higher standing. The principles of biological science are developed in an engineering context. An emphasis is placed on how physiological, psychological, and sociological factors affect the integration of man into environmental, informational and managerial systems by engineering means.

Mr. Lyman (F,W,Sp)

**108. Introduction to Mechanics of Deformable Solids.** Prerequisite: Mathematics 32C (may be taken concurrently); Engineering 102 is recommended. Review of equilibrium principles. Concepts of stress and strain. Material constitution (stress-strain relations). Energy in deformable bodies. Structural applications to trusses, beams, shafts, columns and pressure vessels.

Mr. Nelson, Mr. Westmann, (F,W,Sp)

**109. The Engineer and Society.** Prerequisite: senior standing. Selected lectures, discussions, oral and written reports related to creative engineering, its sociological and ecological impacts, present, future, and past relationships. Maximum student participation in topical selection and class structuring. Creativity and original thinking is emphasized.

Mr. Ingersoll (F,W,Sp)

**110A. Basic Circuit Theory I.** Prerequisite: course 100. The zero-input, zero-state, transient, steady-state, and complete response of first-order and second-order circuits. Linear time-invariant networks; step response, impulse response, convolution integral. Sinusoidal steady-state analysis. Coupling elements and coupled circuits. The Laplace transform.

Mr. Wilson (F,W)

**110B. Basic Circuit Theory II. (Formerly numbered 110A.)** Prerequisite: course 110A. Elementary graph theory, general methods of analyzing electric circuits. Introduction to state equations, natural frequencies. Properties of network functions. Network theorems. Methods of characterizing two-port networks.

Mr. Orchard (W,Sp)

**110C. Passive Network Synthesis. (Formerly numbered 110B.)** Prerequisite: course 110B or equivalent. Properties of positive real functions and tests for positive realness. Synthesis of one and two-port RLC and two-element kind networks.

Mr. Temes (F,Sp)

**111A. Electric Power Systems.** Prerequisite: course 100. Overall electric power system requirements; typical systems; one-line diagrams. Per-unit quantities; characteristics of machines, transformers, overhead lines and cables; steady-state analysis of systems. Power limits and stability; fault calculations; relays and relay systems.

Mr. Schott (W)

**111B. Electromechanical Energy Conversion.** Prerequisite: course 100. Energy conversion and power flow in electromechanical interactions; electromechanics of actuators and rotating a.c. synchronous and induction machines and d.c. machines. Linear machines.

Mr. Schott (Sp)

**113A. Introduction to Lasers and Quantum Electronics.** Prerequisite: course 100B or equivalent or consent of the instructor. Physical principles and applications of lasers and other quantum electronic devices. Interferometers, crystal optics, gain and saturation phenomena, and gas discharges.

Mr. Casperson, Mr. Stafsudd (F)

**113B. Laser Laboratory. (1/2 course)** Recitation, one hour; laboratory, three hours. Prerequisite: course 100B or equivalent or consent of the instructor. Properties of lasers including saturation, mode-locking and relaxation effects, and laser applications including optics, modulation, communication, holography, interferometry and nonlinear effects.

Mr. Casperson, Mr. Stafsudd (F)

**115A. Fundamentals of Solid State I.** Prerequisite: junior standing in Engineering; course 130A or equivalent is recommended. Introductory atomic concepts, quantum mechanical principles, energy level in complex atoms, quantum statistics, crystal structure, energy levels in solids, band theory.

Mr. Viswanathan (F,Sp)

**115B. Fundamentals of Solid State II.** Prerequisite: course 115A. A discussion of the solid state properties, lattice vibrations, thermal properties, dielectric, magnetic, and super-conducting properties.

Mr. Stafsudd, Mr. Viswanathan (W)

**115C. Semiconductor Physical Electronics.** Prerequisite: course 115B. Band structure of semiconductors, homogeneous semiconductors, excess carriers in semiconductors, semiconductor surfaces, optical and thermal properties.

Mr. F.G. Allen, Mr. Viswanathan (Sp)

**115D. Physics of Semiconductor Devices.** Prerequisite: senior standing in Engineering. Semiconductor technology, Schottky barrier, p-n junction, MOS capacitance, transistor fundamentals, drift transistor, high frequency properties, field effect transistors, integrated electronics.

Mr. Viswanathan (F,W)

**115E. Solid State Electronics Laboratory. (1/2 course)** Prerequisite: course 115C. Experiments on magnetic dielectric properties of solids; measurement of electronic properties of both p and n type semi-conductors; thermal electronic properties of p-n junction; optical properties of semiconductors.

Mr. F.G. Allen, Mr. Viswanathan (W)

**115F. Semiconductor Devices Laboratory. (1/2 course)** Prerequisite: course 115D. Design, fabrication and characterization of junction, field effect and other semiconductor devices. In particular the student will perform various processing tasks such as wafer preparation, oxidation, impurity diffusion, metallization, sintering and photolithography.

Mr. F.G. Allen, Mr. Viswanathan (F)

**116A. Electronics I.** Prerequisite: course 100. Equivalent circuit modeling of electron devices. Device-circuit-environment interactions. Design of single-stage amplifiers. Introduction to cascaded stages, coupling problems and frequency response.

Mr. Knorr (F,W,Sp)

**116B. Electronics II.** Prerequisite: course 116A. Electron device-circuit-environment interactions with emphasis on multistage amplifiers. Tuned amplifier considerations. Nonlinear situations requiring graphical method of solution. Emphasis on design techniques including economics, reliability and realization of performance specifications.

Mr. Willis (F,W,Sp)

**116C. Pulse and Digital Methods.** Prerequisite: courses 116A, 116B. Analysis and design of switching-mode electronic circuits and systems including pulse generation, logic operations, timing and frequency counting.

Mr. Knorr (W,Sp)

**116D. Electronic Signal Processing.** Prerequisite: courses 116B, 121C. Signals and spectra. Signal distortion in transmission filters, transmission bandwidth requirements. Random signals and noise, linear modulation, exponential modulation circuits and characteristics. Commercial communication systems.

Mr. Willis (F,Sp)

**116L. Electronics I Laboratory. (½ course)** Prerequisite: course 100L; 116A recommended. Experimental determination of device characteristics, resistive diode circuits, single-stage amplifiers, compound transistor stages, effect of feedback on single-stage amplifiers.

Mr. Knorr (F,W,Sp)

**116M. Electronics II Laboratory. (½ course)** Prerequisite: course 116L; 116B recommended. Experimental and computer studies of multistage, wideband, tuned, and power amplifier, and multiloop feedback amplifier.

Mr. Willis (F,W,Sp)

**116N. Pulse and Digital Methods Laboratory. (½ course)** Prerequisite: course 116M; 116C to be taken concurrently. Experimental and computer studies of diode and transistor switching and timing circuits. Linear and nonlinear wave shaping techniques. Waveform generation.

Mr. Knorr (Sp)

**117A. Electromagnetic Waves I.** Prerequisite: course 100B. Review of transmission line theory; guided waves in enclosed waveguide and on surfaces; Smith Chart; excitation of guided waves; phase and group velocity; cavity resonators; concept of Q; perturbation theory; waves in complex media (ferrites, crystals, semiconductors, plasmas).

Mr. Schott (F,Sp)

**117B. Electromagnetic Waves II.** Prerequisite: course 117A. Retarded potentials; dipole radiation; radiation from wire antennas; near-field and far-field phenomena; aperture antennas; spherical antennas; simple arrays scattering from spheres and cylinders; radar cross-sections.

Mr. Elliott (W)

**117C. Modern Optics.** (Formerly numbered 117D.) Prerequisite: course 117A or equivalent. Two dimensional transforms. Diffraction methods. Geometrical optics and applications. Gaussian beams. Coherent and incoherent imaging systems. Optical processing methods. Holography and applications.

Mr. Alexopoulos, Mr. Casperson, Mr. Cordero (Sp)

**117D. Electromagnetic Waves III.** (Formerly numbered 117C.) Prerequisite: course 117A. Special relativity; relativistic kinematics; field transformations; particle trajectories in electromagnetic fields; radiation from accelerated charges; waves in active media, microwave sources.

Mr. C.W. Yeh (F, even years)

**117L. Electromagnetics Laboratory. (½ course)** Prerequisite: course 117A; course 117B may be taken concurrently. Experimental investigation of microwave and millimeter wave sources; coaxial, waveguide strip line transmission systems; detectors and power measuring devices; cavity resonator studies; antenna impedance and radiation characteristics.

Mr. Luhmann, Mr. Schott (W)

**M118. Plasma Physics.** (Same as Physics M122.) Prerequisite: course 100B for Engineering students only; or Physics 110A. Atomic processes and particle motions; equilibrium and shielding; fluid and kinetic descriptions; transport properties; m waves and instabilities; electromagnetic interaction. Production, confinement, heating and diagnostics. Application to fusion and space.

Mr. Chen (F,Sp)

**120A. Probability.** Prerequisite: Mathematics 32B or consent of the instructor. An introduction to the theory and application of probability, including random variables and vectors, distributions and densities, characteristic functions, limit theorems, preliminary concepts of stochastic processes.

Mr. Carlyle, Mr. Miller, Mr. Omura (F,W)

**120B. Stochastic Processes.** Prerequisite: course 120A or comparable background in probability (e.g., Mathematics 150A-150B), course 121C or equivalent recommended (may be taken concurrently). An introduction to the theory and application of stochastic models, emphasizing stationary processes and filtering. Random signals and noise, correlation, linear systems; mean-square estimation, the orthogonality principle, Weiner and Kalman filters.

Mr. Mortensen, Mr. Yao (W,Sp)

**M120C. Stochastic Processes.** (Same as Mathematics M151.) Prerequisite: course 120A or Mathematics 150A-150B, or Mathematics 152A and consent of the instructor. An introduction to the theory and application of stochastic models, emphasizing Markov chains and pure jump processes; illustrations from queueing systems, point processes, birth and death processes, renewal theory; Poisson processes, Brownian motion.

Mr. Miller, Mr. Rubin (F,Sp)

**121C. Systems and Signals.** Lecture, three hours; recitation, two hours. Prerequisites: Mathematics 31A, 31B, 31C or Mathematics 3A, 3B, 3C, Physics 8C or 6B, or consent of the instructor. Introductory course with illustrations from physical and life sciences. Input-output descriptions of systems, linearity; impulse and frequency responses, Fourier methods; transforms, analysis of signals. Introduction to digital filtering and Fast Fourier Transform. Computational aspects of system modelling and identification.

Mr. Carlyle, Mr. Levan (F,W,Sp)

**122A. Principles of Feedback Control.** Prerequisite: course 121C or consent of the instructor. Classical methods of analysis and design of feedback control systems, as applied to problems selected from engineering, biology and related areas.

Mr. Aoki, Mr. Mortensen (W)

**M123B. Theoretical Models in Computer Science.** (Same as Computer Science M123B; formerly numbered Engineering 123B.) Prerequisite: senior standing or consent of the instructor. Sets, strings, and languages. Phrase-structure languages. Finite-state languages and finite-state automata. Context-free languages and pushdown store automata. Unrestricted phrase-structure languages and Turing machines. Context-sensitive languages and linear-bounded automata. Elementary decision problems of automata and languages.

Ms. Friedman, Ms. Greibach, Mr. Martin (F,W,Sp)

**M124A. Applied Numerical Computing.** (Same as Computer Science M124A; formerly numbered Engineering 124A.) Prerequisite: Engineering 10C and Mathematics 32C or equivalents. An introduction to scientific computing and an application-oriented survey of computing techniques for several important classes of problems, including matrix computations, root-finding, ordinary differential equations, interpolation and approximation. Student computing exercises.

Mr. Carlyle, Mr. Karplus (F,W,Sp)

**127B. Elements of Probability and Information.** Prerequisite: Mathematics 31B, 11B or 3B, or Mathematics 2B and consent of the instructor. An introduction to finite systems for coding and transmission of messages as character strings. Basic laws of probability and decision in finite systems. Information sources, entropy, noisy channels, capacity, discussion of the meaning and application of Shannon's theorems.

Mr. Massey, Mr. Mortensen, Mr. Omura (F,W,Sp)

**128A. Linear Systems: The State Space Approach.** Prerequisite: course 121C. State-space methods of linear system analysis and design, with application to problems in networks, control, and system modeling.

Mr. Levan, Mr. Wang (F,W)

**128D. Discrete Systems and Automata.** Prerequisite: two quarters of lower-division mathematics or comparable experience with mathematical ideas, such as in linguistics or basic courses in logic or computer programming. An introductory course, emphasizing finite-state systems: graphs, machines, languages, regular expressions, coding, computing; memory, system identification, diagnosis; design considerations.

Mr. Carlyle, Ms. Greibach, Mr. Massey (W)

**128L. System Science Laboratory.** Laboratory, eight hours. Prerequisite: two courses numbered Engineering 120 through 129, and consent of the instructor. Laboratory studies such as: applications of interactive computing and online graphics; waveform generation, spectral analysis, random signals; control, servomechanisms, stability; holography, spatial signal processing. Students will have the opportunity to use computer facilities and contemporary equipment for measurement and data analysis.

The Staff, System Science Department (Sp)

**129A. Introduction to Optimization Techniques.** Prerequisite: Mathematics 31C and 32A or 12A and 12B and some knowledge of digital computer programming or consent of the instructor. Optimization of functions of many variables, unconstrained and with linear or nonlinear constraints. Nonlinear programming algorithms. Direct search, gradients, Lagrange multipliers, penalty functions, etc. Duality. Sample problems from engineering, economics, management, operations research. Students will solve problems on digital computers.

Mr. Aoki, Mr. Jacobsen (W,Sp)

**129L. Linear Programming and Operations Research.** (Formerly numbered Engineering 172A.) Prerequisite: Mathematics 31C or consent of the instructor. An introduction to the formulation and solution of linear programming problems in operations research, with application to engineering and economic systems. The simplex algorithm; duality; geometry of linear programs; decomposition; selected topics in extensions of linear programming.

Ms. Greibach, Mr. Jacobsen, Mr. Miller (F,W,Sp)

**130A. Introduction to Statistical Thermodynamics.** Prerequisite: course 105A. Calculations of expected values and variances of thermodynamic functions for perfect monatomic gas, Einstein monatomic crystal, photon gas, electron gas in a metal, perfect adsorbed gas, perfect diatomic gas, and Debye monatomic crystal. Calculations of gross emission rates from surfaces.

Mr. Knuth (F)

**131A. Intermediate Heat Transfer.** Prerequisite: course 105D. Heat transfer by conduction in a stationary medium and by conduction and convection in a laminarily flowing fluid. Steady-state and transient conduction in solids. Heat transfer in laminar entrance flow in ducts and laminar boundary layer flows over surfaces.

Mr. Edwards, Mr. Wazzan (F,Sp)

**132A. Mass Transfer.** Prerequisite: course 105D or 131A. The principles of mass transfer by diffusion. Mass transfer by convection in laminar and turbulent flows. Simultaneous heat and

mass transfer. Applications including combustion of solids and volatile fuels, evaporation and condensation, ablation and transpiration cooling, gas absorption and catalysis.

Mr. Mills (F)

**133A. Power and Process Thermodynamics.** Prerequisite: courses 103A, 105A, 105D. Introduction to fundamentals of power production and process thermodynamics (ideal reference and real power cycles, compressible flow and combustion), analysis of system components (nozzles, turbomachines, combustors, cooling towers, heat exchangers), system optimization (applications of fundamentals to gas turbine and other plants).

Mr. Catton, Mr. Dhir, Mr. Frederking (W)

**134A. New Energy Technology: Resources, Conversion, Constraints.** Prerequisite: course 105A or equivalent in Physics or Chemistry, or consent of the instructor. Energy resources: fossil fuels (fuel to fuel conversions), nuclear fuels, geothermal sources, solar power, etc. Conversion methods for power production and other energy uses. Consideration of thermodynamic, economic and environmental constraints.

Mr. Buchberg (F)

**134B. Solar Energy Use and Control.** Prerequisite: course 105D or equivalent; or consent of the instructor. Nature and availability of solar radiation; review of selected heat transfer topics pertinent to solar energy collection and use; design analysis of nonfocusing solar energy collector-converters and methods of energy storage; selected applications.

Mr. Buchberg (W)

**134C. Chemical, Nuclear and Thermal Pollution of the Environment.** (Formerly numbered 134.) Prerequisite: upper division standing. Description of the environment and the nature of environmental problems. Emphasis on the atmosphere and water as receptors of man-made and natural pollution; a description of sources of pollution, alternatives for control, and transport in the environment.

Mr. Apostolakis, Mr. McCutchan, Mr. Perrine (Sp)

**135A. Nuclear Reactor Theory.** Prerequisite: junior standing. Introduction to nuclear reactor theory, basic physics, neutron cross sections, nuclear fission, elementary analysis of homogeneous reactor cores. Multi-region reactors, and one and two group diffusion theory.

Mr. Kastenberg (F,Sp)

**135B. Nuclear Reactor Theory and Experiment.** Lecture, four hours; laboratory, two hours. Prerequisite: course 135A. Introduction to slowing down, thermalization and resonance absorption theories, multi-group theory and heterogeneous effects. Laboratory experiments include measurement of neutron slowing down parameters, neutron diffusion lengths and reactor buckling.

Mr. Pomraning (F)

**135C. Nuclear Reactor Processes and Laboratory.** Lecture, two hours; laboratory, four hours. Prerequisite: course 135B. Heterogeneous reactor calculations, cell calculations and thermal utilization. Nuclear reactor kinetics and control, perturbation theory, introduction to neutron transport theory. Experiments include reactor approach to critical, control rod oscillator, control rod calibration and reactor period.

Mr. Apostolakis (W)

**135D. Introductory Nuclear Reactor Design.** Prerequisites: courses 135A, 135B; 135C (may be taken concurrently). Reactor physics, engineering, fuel element design for nuclear reactor core, criticality, reactivity considerations, and heterogeneous effects; power distribution and heat removal; fuel and clad behavior; differences among various power reactor systems.

Mr. Okrent (Sp)

**135E. Nuclear Reactor Thermal Hydraulic Design.** Prerequisites: courses 105A, 105D, 131A, (135A recommended). Thermohydraulic design of various nuclear power reactor concepts; power generation and heat removal; power cycle, thermal and hydraulic component design; overall plant design; steady state and transient nuclear system operation.

Mr. Catton, Mr. Dhir (W)

**135F. Experimental Reactor Operations, Control and Safety. (½ course)** Laboratory, four hours. Prerequisite: course 135A. Operation of the UCLA R-1 Argonaut reactor, measurements of various core parameters and control system responses and evaluation of various safety systems through experimentation. Experiments not included in Engineering 139A, 135B, 135C will be conducted.

Mr. Catton (Sp)

**M136A. Failure Analysis and Reliability.** (Same as Engineering M143B.) Prerequisites: courses 101A, 107B, and 107C. Concepts of mechanical, structural, and electrical failure; methods of failure analysis (system failure, component failure, material failure); environmentally and internally caused failure; statistical analysis of failure data; fault tree and failure mode and effects analysis; case histories of failure. Field trips to be arranged.

Mr. Apostolakis (W)

**137. Introduction to Chemical Engineering Operations.** Prerequisites: Mathematics 31C, Chemistry 1C. Fundamentals of Chemical Engineering processes and practices. Material and energy balances in reacting and non-reacting systems; analysis of thermochemical and thermophysical properties of industrial materials; staged processes and unit operations; introduction to industrially important chemical processes.

The Staff, Chemical, Nuclear and Thermal Engineering Department (F)

**137A. Chemical Engineering Thermodynamics.** Prerequisite: course 105A. Calculation of chemical potentials and activities, chemical reaction equilibrium constants, and phase equilibrium for ideal and real systems. Dynamic interpretation of equilibrium and

introduction to chemical reaction rate expressions.

Mr. Nobe (F,Sp)

**137B. Chemical Engineering Separation Operations.** Prerequisite: course 105D or either 137A or consent of the instructor. Fundamentals of separation processes with emphasis on environmental control applications. Topics include filtration, precipitation, gas adsorption, distillation and reverse osmosis.

Mr. Vilker (F)

**137C. Chemical Engineering Kinetics.** Prerequisite: courses 137 and 137A. Fundamentals of chemical kinetics and catalysis; application to design and operation of chemical reactors. Analysis of chemical kinetic data in non-flow and flow, homogeneous and heterogeneous reactors. Introduction to analysis and design of commercial-scale chemical reactors.

Mr. Ullman (W)

**137D. Chemical Engineering Design.** Prerequisite: courses 137A, 137B, 137C or 131A. Application of the basic principles of heat, mass, and momentum transport to the design, operation, and control of thermochemical systems. Typical systems include heat exchangers, chemical reactors, high pressure vessels, high vacuum systems, distillation and chromatographic columns.

Mr. McCutchan, Mr. Vilker (Sp)

**\*138A. Cryogenics.** Prerequisite: course 105B or 130A. Gas liquefaction, cooling methods; cryogenic techniques and associated transport phenomena, changes of state and phase; superfluids.

The Staff, Chemical, Nuclear and Thermal Engineering Department

**\*138D. Vacuum Techniques and Applications.** Lecture, two hours; laboratory, four hours. Prerequisite: junior standing; 130A (may be taken concurrently). Elementary kinetic theory. Vacuum production and measurement, vacuum-system design, vacuum-based instruments, leak detection, physical and chemical interactions at surfaces. Processes requiring a vacuum environment (freeze drying, vapor depositing, space simulation). Molecular-beam techniques and applications.

The Staff, Chemical, Nuclear and Thermal Engineering Department

**139A. Introductory Chemical, Nuclear, and Thermal Engineering Laboratory.** Lecture, one hour; recitation, one hour; laboratory, six hours. (Not the same as Engineering 139A prior to Winter Quarter 1977.) Prerequisites: courses 103A, 105A, 105D. Basic introductory laboratory experiments illustrating the equilibrium state properties and transport response to applied driving forces in energy transformation and rate processes. Experiments include examples from thermodynamics, chemical engineering, heat and mass transfer, nuclear engineering, and environmental problems.

Mr. Frederking (F,W)

**139B. Chemical and Thermal Engineering Laboratory.** Lecture, two hours; laboratory, six hours. (Formerly numbered 139A. Not open to students who have taken Engineering 139A prior to Winter Quarter 1977.) Prerequisites: courses 131A, 135A, 137A, 139A. Basic laboratory practice for the study of energy transformation and rate processes. Selected experiments include examples from thermodynamics, heat and mass transfer, chemical and electrochemical processes, cryogenics, chemical kinetics, molecular dynamics, saline water conversion and environmental problems.

Mr. Mills, Mr. Ullman (Sp)

**\*140D. Solid State Technology.** Prerequisite: course 107B. Rate processes and crystal growth. Technology and preparation of single crystals. Epitaxial growth. Vapor deposition and thin film techniques. Powder metallurgy. Phase diagrams. Annealing and diffusion techniques of semiconductors. Chemical and mechanical treatments of crystals. Field trips.

Mr. Yue

**140E. Materials and Design.** Lecture, one hour; laboratory, eight hours. Prerequisite: course 106B; senior standing in Materials. Consideration and specification of design requirements: mechanical, physical, and environmental factors. Materials selection, fabrication methods, and heat treatment. Performance evaluation and failure analysis. Integration of knowledge by treating complete problems from a list of different design projects.

Mr. Bunshah, Mr. Shabaik (W)

**140L. Introductory Engineering Materials Laboratory. (½ course)** Prerequisite: course 14. Introduction to several laboratory and shop techniques used in fabricating and characterizing different types of materials involved in engineering design.

Mr. Klement (W,Sp)

**\*141. Phase Relations in Solids.** Prerequisites: courses 14, 105A. Summary of thermodynamic laws, equilibrium criteria, solution thermodynamics, mass-action law, binary and ternary phase diagrams, glass transitions.

Mr. deFontaine

**142A. Diffusion and Diffusion-Controlled Reactions.** (Formerly numbered 142.) Prerequisite: course 141. Diffusion in metals and ionic solids, nucleation and growth theory; precipitation from solid solution, eutectoid decomposition, design of heat treatment processes of alloys, growth of intermediate phases, gas-solid reactions, design of oxidation-resistant alloys, recrystallization and grain growth.

Mr. Douglass (F)

**142L. Diffusion and Diffusion-Controlled Reactions Laboratory. (½ course)** Prerequisite: course 142A to be taken concurrently. Not open for credit to students who have taken Engineering 142. Design of heat-treating cycles and performing experiments to study interdiffusion, growth of intermediate phases, recrystallization, and grain growth in metals. Analysis of data. Comparison of results with theory.

Mr. Douglass (F)

**143A. Mechanical Behavior of Materials.** Prerequisite: courses 14 and 108 or equivalent. Plastic flow of metals under simple and combined loading, strain rate and temperature effects, dislocations, fracture, microstructural effects, mechanical and thermal treatment of steel for engineering applications.

Mr. Shabaik (W)

**M143B. Failure Analysis and Reliability.** (Same as Engineering M136A.) Prerequisites: courses 101A, 107B, and 107C. Concepts of mechanical, structural, and electrical failure; methods of failure analysis (system failure, component failure, material failure); environmentally and internally caused failure; statistical analysis of failure data; fault tree and failure mode and effects analysis; case histories of failure. Field trips to be arranged.

Mr. Tetelman (W)

**143L. Mechanical Testing Laboratory. (½ course)** Prerequisite: courses 14, 108; one or more of courses 143A, 158A, 166A recommended. Experimental techniques for the measurements of mechanical properties of engineering materials. Elastic constants, tensile, compression and bend testing, fracture toughness, fatigue and creep testing.

Mr. Ono, Mr. Shabaik (W)

**145A. Introduction to Materials Characterization.** Prerequisite: course 140C or equivalent. Modern methods of materials characterization; X-ray diffraction and spectroscopy; principles of metallography; scanning and transmission electron microscopy; analysis and evaluation of engineering materials.

Mr. Ardell, Mr. Wagner (Sp)

**145L. Materials Characterization Laboratory. (½ course)** Prerequisite: course 145A. Modern laboratory techniques for the microstructural characterization of materials; X-ray powder method; X-ray spectroscopy (wavelength and energy dispersive) for chemical analysis; optical and electron microscopy, quantitative metallography; surface topography.

Mr. Ardell, Mr. Wagner (Sp)

**146A. Introduction to Ceramics and Glasses.** Prerequisite: course 14 or equivalent. An introduction to ceramics and glasses being used as important materials of engineering, processing techniques and unique properties. Examples of design and control of properties for certain specific applications in engineering.

Mr. Mackenzie (W)

**146B. Processing of Ceramics and Glasses.** Prerequisite: course 146A or equivalent. A study of the processes used in fabrication of ceramics and glasses, relationship to structure and properties. Processing operations including materials preparation, forming, sintering and melting. Design of processing to achieve desired characteristics of structure, properties and cost.

Mr. Knapp (Sp)

**146D. Structure and Properties of Ceramics and Glasses.** Prerequisite: course 146A or equivalent. Relationship between crystal structure and microstructure of ceramics and properties. Defects and impurities. Correlation of composition, structure, and properties of glasses. Phase transformations. Factors controlling properties such as strength, electrical resistivity, ferrimagnetism, ferroelectricity, optical transmission, and thermal expansion.

Mr. Mackenzie (F)

**146E. Ceramic Materials in History and Archaeology.** Lecture, two hours; laboratory, four hours. Prerequisite: consent of the instructor. A technical introduction to the origins and evolution of ceramics and related materials, with emphasis on fabrication processes and raw materials. Laboratory exercises are aimed at the development of skills necessary for analytical studies. (For students in the Humanities and Sciences.)

Mr. Knapp (F)

**146L. Laboratory in Ceramics. (½ course)** Prerequisite: course 146A or equivalent; 146B recommended to be taken concurrently. Processing of common ceramics and glasses. Attainment of specific properties through process control for engineering applications. Quantitative characterization and selection of raw materials: Slip casting and extrusion of clay bodies. Sintering of powders. Glass melting and fabrication. Determination of chemical and physical properties.

Mr. Knapp (Sp)

**147A. Introduction to Metallurgy.** Prerequisite: course 14. Introduction to metallic alloys used in engineering design. Processing of metals, phases in metal systems, phase diagrams, metal forming, steels and cast iron, nonferrous alloys, design of metallic alloys for specific applications.

Mr. Wagner (F)

**147B. Metal Fabrication Processes.** Prerequisite: course 14. Theoretical basis for cold forming and hot forming processes; rolling, extrusion and forging. Conventional metal removal. Solidification processes and casting. Powder metallurgy.

Mr. Shabaik (Sp)

**147E. Vacuum Metallurgy.** Prerequisite: course 141 or equivalent. Metallurgical processes carried out in vacuum including melting, purification, heat treatment, degassing of liquid metals, joining. Properties and applications of these materials.

Mr. Bunshah (Sp)

**147L. Metal Fabrication Processes Laboratory. (½ course)** Prerequisite: course 147B. Experimental investigation and analysis of metal forming processes (forging, extrusion, drawing and rolling). Force measurements and energy calculations in metal cutting. Experimental investigation of hot and isostatic pressing of powder.

Mr. Shabaik (Sp)

**147M. Metallurgy Laboratory. (½ course)** Prerequisite: course 147A. Design of preparation and heat-treatment cycles of alloys for specific applications. Casting, fabrication, metallography,

equilibrium diagrams, precipitation-hardening, heat-treatment of steels.

Mr. Wagner (Sp)

**148. Nondestructive Evaluation of Materials.** Prerequisite: course 107B. Interaction of acoustic wave and electromagnetic radiation with solids. Ultrasonic pulse-echo and spectroscopy. Radiography, magnetic particle, eddy current and fluid penetrant techniques. Practical applications of flaw detection in castings, forgings and pressure vessels. Potential methods including acoustic emission and holography.

Mr. Ono (F, even years)

**149A. Polymer Science.** Prerequisite: introductory chemistry and consent of the instructor. Polymerization mechanisms, molecular weight and distribution, chemical structure and bonding, structure crystallinity, and morphology and their effects on physical properties. Glassy polymers, springy polymers, elastomers, adhesives. Fiber forming polymers, polymer processing technology, plastication.

Mr. Cannon (W)

**149C. Properties of Art Ceramic Materials.** (Formerly numbered Engineering 146C.) Composition and properties of art ceramics and glazes. Ceramic raw materials and their functions in bodies and glazes. Design of glazes and methods of expressing composition. Laboratory projects will be included (Not intended for Engineering Majors.)

Mr. Knapp (W)

**149L. Design of Specific Polymeric Systems. (½ course)** Prerequisite: course 149A, to be taken concurrently. Encapsulation of circuit boards, corrosive fluid containers; compatibility problems, polymeric chair bases, motor vehicle tires; compatibility and bonding problems, design of fiber reinforced polymeric systems, polymer-metal articulating surfaces, passenger restraint systems.

Mr. Cannon (Sp)

**150A. Applied Fluid Mechanics I.** Prerequisite: course 103A or consent of the instructor. The course will provide students with a working knowledge of incompressible fluid mechanics. Equations of motion will be derived and applied to a variety of engineering fields. These will include flow over bodies, turbulent flow in pipes, open channel flow, ocean waves, and porous media.

Mr. Barker (F,W)

**150B. Applied Fluid Mechanics II.** Prerequisite: course 103A or equivalent, or consent of the instructor. Gas dynamics: isentropic flow in nozzles, normal and oblique shocks, Prandtl-Meyer expansion fan, effects of friction and heat transfer in channel flows, thin airfoils in supersonic flow. Viscous flow; exact solutions of Navier-Stokes equations, boundary layer theory, instability, turbulence, separation.

Mr. Charwat, Mr. Kelly (W,Sp)

**\*151. Performance of Vehicles.** Prerequisite: courses 103A, 105A. Preliminary design analysis of the performance of a variety of vehicles, including automobiles, trains, aircraft, rocket-powered vehicles, ground effect machines, ships and sailboats; performance parameters will include speed, range, payload, efficiency, dynamics and stability, noise, and air or water pollution.

Mr. Charwat

**\*152. Hydraulics and Flow Machinery.** Prerequisite: course 103A. Flow in open and closed conduits; distribution and dispersion (mixing) problems. Unsteady effects: transients, resonances. Fluid energy sources: winds, waves, tides, rivers. Design of turbines, pumps and fans. Activators and fluid logic elements.

Mr. Charwat

**153A. Engineering Acoustics.** Prerequisite: upper division standing in Engineering or consent of the instructor. Fundamental course in acoustics. Includes: the ear and hearing; basic acoustical instrumentation; propagation of sound; sources of sound; architectural reverberation; selected subjects.

Mr. Stern (F)

**153B. Acoustics Laboratory.** Laboratory, eight hours. Prerequisite: course 153A (may be taken concurrently) or consent of the instructor. Experimental studies in the field of acoustics, including audiometry, noise and noise control, acoustic filters, impedance measurements, transducer characteristics and interferometry. Occasional field trips may be necessary to obtain data.

Mr. Stern (W, odd years)

**153C. Noise and Noise Control Design.** Prerequisite: course 153A or consent of the instructor. Practical concepts in design, construction, measurement and analysis of noise suppression techniques. Includes equipment, transducers, environmental factors in sound propagation, enclosures, properties of materials, sound interaction in structures, mufflers, isolators, damping of panels, ducts, aerodynamic noise, noise criteria and standards.

Mr. Stern (W, even years)

**154A. Aerodynamic Design.** (Formerly numbered 150C.) Prerequisites: courses 103A, 150A. This course presents the classical ideas of aircraft aerodynamics. Lift, drag, thrust, and power are discussed, then aircraft performance and stability. The quarter assignment is the preliminary design of an aircraft satisfying specifications set by the instructor.

Mr. Crow (W)

**154B. Design of Aerospace Structures.** (Formerly numbered 168.) Prerequisites: courses 154A, 166. Design of aircraft, helicopter, spacecraft and related structures. External loads, internal stresses. Applied theory of thin-walled structures. Material selection, design using composite materials. Design for fatigue prevention and structural optimization. Field trips to aerospace companies.

Mr. Friedmann (Sp)

**155. Intermediate Dynamics.** Prerequisite: course 102 or equivalent. Not open for full credit to students having taken 102B. The axioms of Newtonian mechanics, generalized coordinates, Lagrange's equations, variational principles; central force motion; kinematics and dynamics of a rigid body, Euler's

equations, motion of rotating bodies, oscillatory motion, normal coordinates, orthogonality relations, the vibrating string.

Mr. Forster (Sp)

**156A. Advanced Strength of Materials.** Prerequisite: course 108. Columns and beam columns. Torsion; Airy's stress functions, stress concentrations. Loads on balls, rollers. Rotating disks, thick hollow spheres, thick hollow circular cylinders, curved beams, coiled springs.

Mr. Lin, Mr. Nelson (Sp)

**157. Experimental Techniques in Mechanics.** Lecture, one hour; laboratory, six hours. Methods of measurement in mechanics and fluid mechanics. Primary sensors, transducers (motion, force, fluid flow, temperature). Signal processing, analogue and digital recording. Theory of data analysis. Course consists of lectures and laboratory sessions.

Mr. Barker, Mr. Charwat (F,W)

**157A. Fluid Mechanics Laboratory.** Laboratory, 12 hours. Prerequisite: courses 103A, 157. Course provides a background in experimental techniques in fluid mechanics. Most work will be in the laboratory. Students will take part in three experiments, each of which will study a practical problem while giving hands-on experience with various measurement techniques.

Mr. Barker, Mr. Charwat (Sp)

**157B. Experimental Fracture Mechanics.** Lecture, two hours; laboratory, six hours. Prerequisite: course 157 or equivalent. Elementary introduction to fracture mechanics and experimental techniques used in fracture, crack tip stress fields, strain energy release rate, fracture characterization, compliance calibration, surface flaws, fatigue crack growth and fatigue life of structural components, mixed mode fracture and individual projects.

Mr. Fournay, Mr. Westmann (W)

**158A. Elasticity and Plasticity.** Prerequisite: Mathematics 32B. Three-dimensional stress and strain. Criteria for prediction of mechanical failure. Differential equations in three dimensions; analytical, numerical, and experimental solutions of plane state and torsion problems. (Stress function, iteration, strain gages, photoelasticity.) Homogeneous plastic flow, plastic tensile instability.

Mr. Westmann (F,W)

**160. Introduction to Biomechanical Mechanics.** Prerequisite: course 108 or equivalent. An introduction to Biomechanical Mechanics of the human musculo-skeletal system. Structural characteristics and behavior of skeletal members. Response to mechanical trauma. Elastic and viscoelastic properties of hard and soft tissues. Mathematical modeling.

Mr. Roberts (Sp)

**\*161A. Introduction to Astronautics.** (Not the same as Engineering 161A prior to Fall Quarter 1975.) Prerequisite: course 102. The space-environment of earth, near-earth orbits and trajectories, step rockets and staging, the two-body problem, orbital transfer and rendezvous, elementary perturbation theory, influence of earth's oblateness.

The Staff, Mechanics and Structures Department

**162A. Introduction to Mechanism and Mechanical Systems.** (Formerly numbered 178A.) Prerequisite: course 102. The analysis and synthesis of mechanisms and mechanical systems are studied including both kinematics and dynamics aspects. Mechanisms from a wide range of applications including automatic machinery, transportation systems and computer peripheral equipment are introduced.

Mr. R.R. Allen, Mr. Dubowsky (F)

**162B. Fundamentals of Mechanical System Design.** (Formerly numbered 178B.) Lecture, three hours; laboratory, three hours. Prerequisite: course 102. Techniques of modern design and development of mechanical systems. Application and analysis of basic components and sub-systems such as gear trains, bearings, hydraulic and pneumatic sub-systems. The dynamics of high-speed machines. Students will create a design of their choice.

Mr. R.R. Allen, Mr. Dubowsky (W)

**162C. Electromechanical Systems Laboratory.** Lecture, one hour; laboratory, five hours. Prerequisite: course 162B or consent of the instructor. Laboratory course for students interested in research, design or development of complex mechanical and electromechanical systems. Student, with consent of instructor, will select a system which he will develop, build and instrument. Behavior of this system is studied in detail.

Mr. R.R. Allen, Mr. Dubowsky (Sp)

**163. Dynamics and Control of Physical Systems.** Prerequisites: courses 171A and either 155 or 169A; (concurrent enrollments satisfactory). Application of the principles of dynamics and classical control theory to a wide range of physical systems, including simplified models of machines and electromechanical devices, space and ground transportation vehicles, and biomechanical systems. Mathematical modeling and computer simulation are emphasized.

Mr. Dubowsky, Mr. Mingori (W)

**165A. Elementary Structural Analysis.** Prerequisite: course 108. Equilibrium of structures; deformation analysis of structures by differential equation method, moment-area method and the principle of virtual work; influence lines; analysis of statically determinate and indeterminate structures such as beams, frames, arches and trusses; introduction to slope-deflection equations.

Mr. Dong (F,Sp)

**165B. Intermediate Structural Analysis.** Prerequisite: course 165A. Classical force, displacement methods of structural analysis; three moment equation, slope deflection equations, moment distribution; virtual work, minimum potential, complementary potential theorems; Castigliano's theorems, generalized displacements, forces; Rayleigh-Ritz method; introduction to

matrix methods; stiffness, flexibility matrices for bars, beams.

Mr. Nelson (F,W)

**165C. Computer Analysis of Structures.** (Formerly numbered 165N.) Prerequisite: course 165A. Development of algorithms and FORTRAN coding for matrix manipulation, inversion, solution of the linear algebraic equations, eigenvalue problems; structural applications; matrix displacement method for planar trusses, frames, direct assembly of system stiffness; matrix force method for planar frames.

Mr. Dong, Mr. Nelson (Sp)

**165L. Structural Design and Testing Laboratory.** (½ course) Lecture, one hour; laboratory, four hours. Prerequisite: courses 157, 165A. Design, construction, instrumentation, and test of a small scale model of a structure for comparison with theoretically predicted behavior.

Mr. Felton (Sp)

**166. Elementary Structural Mechanics.** Prerequisite: course 108. Analysis of stress, strain; phenomenological material behavior, fatigue, cumulative damage; bending, extension of beams, unsymmetrical sections, stiffened shell structures; torsion of beams, stress function, warping, thin-walled cross-sections; shear stresses; plate analysis; instability, failure of columns, plates, approximate methods, empirical formulas.

Mr. Friedmann, Mr. Schmit (F,W)

**167A. Design of Steel Structures.** Lecture, three hours; recitation, three hours. Prerequisite: course 165A. Allowable stress design of tension members, compression members, beams, beam-columns, and tension splices according to AISC specifications for buildings.

Mr. Rea, Mr. Selna (F)

**167B. Design of Reinforced Concrete Structures.** Lecture, three hours; recitation, three hours. Prerequisite: course 165A. Design of reinforced concrete buildings. Reinforced concrete beams, columns, and slabs. Working stress and ultimate strength methods of analysis. Determination of loads and design constraints. Introduction to reinforced concrete structural systems.

Mr. Rea, Mr. Selna (W)

**167C. Design of Prestressed Concrete Structures.** Prerequisite: course 165A. Prestressing and post-tensioning techniques. Properties of concrete and prestressing steels. Loss of prestress. Analysis of sections for flexural stresses and ultimate strength. Design of beams by allowable stress and strength methods. Load balancing design of continuous beams and slabs.

Mr. Rea, Mr. Selna (Sp)

**169A. Introduction to Mechanical Vibrations.** Prerequisite: course 102. Fundamentals of vibration theory and applications. Free, forced and transient vibration of one and two degrees of freedom systems including damping and nonlinear behavior. Normal modes, coupling and normal coordinates. Elements of vibration and wave propagation in continuous systems.

Mr. Mingori, Mr. Roberts (F,W)

**171A. Introduction to Feedback and Control Systems: Dynamic Systems Control I.** Lecture, three hours; lecture/laboratory, one hour. Prerequisite: consent of the instructor. Introduction to feedback principles, control systems and stability. Unified introductory treatment of continuous and discrete-time (digital or sample-data) systems. Control systems modeling applications in engineering and other fields. Emphasis on concepts. Computer-aided problem solving techniques for systems analysis and design.

Mr. DiStefano, Mr. Leondes (F,W)

**171C. Dynamic Systems Control II.** Prerequisite: either course 171A or 122A is recommended. State-space models of continuous and discrete-time dynamic systems. Linear algebra of systems; vector spaces; geometric concepts; transformations and matrices; canonical forms. Stability. Controllability and observability. State representation of nonlinear systems; linearization. Emphasis on modeling concepts, applications, and computer-aided problem solving.

Mr. DiStefano (W,Sp)

**173. Engineering Project Management.** Prerequisite: courses 172A, 193A, or equivalent with consent of the instructor. Scientific principles and application arts for computer-compatible management in project definition, design, implementation, and evaluation. Quantitative interdisciplinary formulations exemplifying environmental, industrial, business, and administrative challenges with people influences and iterative value-goal strategies. Organization theory. Project manager as a leader.

Mr. Nottage (W)

**174A. Introduction to Elements of Decision Making.** (Not the same as 174A prior to Fall Quarter 1974.) Prerequisite: course 193A or equivalent mathematics course. Elements of decision making and the decision process. Decision and utility theory. Formulation of utility functions and objective functions. Subjective probabilities. Bayesian approach to value of information. Risk sharing and group decisions. Methods of eliciting judgements; bias and scoring rules.

Mr. Rubinstein (F)

**176A. Introduction to Optimization Methods for Engineering Design.** Prerequisite: course 10, Mathematics 32B, 32C. Introduction to applied optimization as an engineering design tool. Computational algorithms and chemical, civil, electrical, mechanical and structural applications. Methods for solving the general unconstrained and constrained minimization problem. Methods for converting the general inequality constrained problem to a sequence of unconstrained problems.

Mr. Rosenstein, Mr. Schmit (F,Sp)

**\*177A. Engineering Economics I.** Prerequisite: Economics 100 or equivalent or consent of the instructor. A concise analytic

development of modern microeconomic and macroeconomic theory with emphasis on a high technology society and the engineering firm.

Mr. English (F)

**\*177B. Engineering Economics II.** Prerequisite: courses 106A and 193A or equivalent or consent of the instructor. Supply of and demand for money. Equilibrium in money and bond markets. Financial instruments and institutions. Investment decision-making for engineering enterprise under certainty, risk, and uncertainty. Break-even analysis, goal programming, capital allocation, sensitivity analysis. Financing of engineering projects, public and private.

Mr. English (W)

**180A. Environmental Biotechnology.** Prerequisite: course 107A or consent of the instructor. Physical, physiological, and psychological aspects of the interaction between man and thermal, atmospheric, radiant, and mechanical agents and energies in the environment. Biological and physical requirements for engineering control of the environment; applications to complex systems.

Mr. O'Brien (F)

**180B. Machine and Systems Biotechnology.** Prerequisite: course 107A or consent of the instructor. Quantitative and qualitative methods for assessing man as a component in engineering design applications. Limits and optima of human psycho-physiological capabilities applied to display-control design, decision-making problems, and task definition; problems of man-machine interactions in large-scale systems.

Mr. Lyman (W)

**181A. Air Pollution Control.** Prerequisite: senior standing or consent of the instructor. Quantitative consideration of the air resource and its management. Air quality measurements and standards. Systems for pollution removal. Industrial, commercial and community air pollution problems. Data analyses and interpretations. Lectures, occasional laboratory and field trips.

Mr. Perrine (Sp)

**184A. Engineering Hydrology.** Prerequisite: senior standing or consent of the instructor; elementary probability recommended. Precipitation, climatology, stream flow analysis, flood frequency analysis, groundwater, snow hydrology, hydrologic simulation. Possible field trips.

Mr. Dracup (F,Sp)

**184B. Introduction to Water Resources Engineering.** Prerequisite: course 103A or consent of the instructor. Principles of hydraulics, the flow of water in open channels and pressure conduits, reservoirs and dams, hydraulic machinery, hydroelectric power, introduction to system analysis applied to Water Resources Engineering.

Mr. W.G. Yeh (W)

**184D. Water Resources Quality Control Systems.** Prerequisite: senior standing in engineering or consent of the instructor. Water as a resource; the physical, chemical, and biological bases of pollution and degradation. Potability and chemical aspects of quality control and reclamation; analytical, economic, and performance aspects of systems design for prevention and treatment. Field trips.

Mr. Dracup, Mr. Stenstrom (F,Sp)

**185A. Principles of Soil Mechanics.** Prerequisite: courses 108 or 108A; Geology 11 is recommended. Soil as a foundation for structures and as a material of construction. Soil formation, classification, physical and mechanical properties, compaction, bearing capacity, earth pressures, consolidation and shear strength.

Mr. Lade, Mr. Lee (F,W)

**185B. Soil Mechanics—Laboratory Practices.** (½ course) Lecture, one hour; laboratory, three hours. Prerequisite: course 185A (may be taken concurrently). Laboratory experiments to be performed by the students to get basic data required for assigned design problems. Soil classification, Atterberg limits, permeability, compaction, shear strength and specific gravity determination.

Mr. Lee (Sp)

**\*186A. Elements of Construction.** Lecture, two hours; special projects, field trips, four hours. Prerequisite: senior standing in engineering. Anatomy of the industry, bidding and purchasing strategies, contracts, costs and economics, operations research in construction, planning and scheduling, equipment and materials, construction methods, field engineering techniques, observation and engineering analysis of current construction projects in the vicinity.

Mr. Duke

**191A. Laplace Transforms and Applied Complex Variables.** Prerequisite: courses 100, 102. Introduction to the Laplace Transformation: application to electrical and mechanical problems, convolution-type integral equations, difference equations and simple boundary value problems in partial differential equations. Complex variable theory, contour integrals, residues; application to transform inversion and partial differential equations.

Mr. Forster (W,Sp)

**192A. Mathematics of Engineering.** Prerequisite: Mathematics 32C or equivalent. Application of mathematical methods to problems of interest in engineering. The main topic covered is systems of linear ordinary differential equations. Fourier series, transforms, and nonlinear effects are also discussed as related to the solutions of differential equations.

Mr. deFontaine, Mr. Forster, Mr. Vilker (F,W,Sp)

**192B. Mathematics of Engineering.** Prerequisite: course 192A or equivalent. Applications of mathematical methods to engineering problems are considered. Eigenvalue problems for continuous systems and the related special functions are studied.

Mr. deFontaine, Mr. Forster, Mr. Vilker (F,W,Sp)

**192C. Mathematics of Engineering.** Prerequisite: course 192A or equivalent. Application of mathematics to engineering problems. A

survey of the classical partial differential equations, wave, heat, and potential. The formulation of boundary value problems and analytical and numerical methods are studied.

Mr. Defontaine, Mr. Forster, Mr. Vilker (Sp)

**193A. Engineering Probabilities and Stochastics.** Prerequisite: junior standing in engineering. Sets and set algebra; sample spaces; combinatorics; absolute and conditional probability; discrete and continuous random variables; probability distribution, increment, and density functions; Chebyshev's inequality; Laplace-Fourier transforms; law of large numbers; central limit theorems; discrete and continuous stochastic processes.

Mr. Apostolakis, Mr. Meecham, Mr. Pearl (F,Sp)

**193B. Engineering Statistics.** Prerequisite: course 193A or equivalent or consent of the instructor. Introductory concepts of statistical decision and estimation. Population parameters, samples, data, statistics. Classical tests of significance and hypotheses. OC-functions and sample sizes. Statistical estimation for one- and two-parameter populations. Bayesian inference, stopping rules. Decision theory, payoffs, losses. Applications.

Mr. Pearl (W)

**195A. Computer Aided Circuit Design.** Prerequisite: course 110B; also, use of a computer will be required but not taught. Piecewise analysis of large networks. Device modeling. AC, DC and transient analysis of linear and nonlinear networks. Sensitivity and tolerance analysis. Computer-aided circuit optimization.

Mr. McNamee, Mr. Temes (W)

**196A. Introduction to Topics in Bioengineering.** (½ course) Prerequisite: calculus. History, motivation and current directions in bioengineering. Bioinstrumentation and measurement. Biomaterials. Biomechanics. Biosystems. Health services and patient protection. Human factors engineering. Orthotic/prosthetic systems and sensory aids. This course is graded on a passed/not passed basis.

Mr. Cannon, Mr. DiStefano, Mr. Roberts (F,Sp)

**M196B. Modeling and Simulation of Biological Systems.** (Same as Medicine M196B; formerly numbered M171F.) Prerequisite: calculus. Introduction to classical and modern systems modeling and simulation methods for studying biological systems. Applications in physiology and medicine. Life science and medical students are encouraged to enroll.

Mr. Campfield, Mr. DiStefano (F,Sp)

**199B-199G. Special Studies.** (½ to 2 courses) Prerequisite: senior standing and consent of the instructor. Individual investigation of a selected topic, to be arranged with a faculty member. Enrollment request forms are available in Department Offices. Occasional field trips may be arranged. May be repeated for bachelor's degree credit.

199B. Electrical Sciences and Engineering Department.

The Staff (F,W,Sp)

199C. Chemical, Nuclear, and Engineering Department.

The Staff (F,W,Sp)

199D. Engineering Systems Department.

The Staff (F,W,Sp)

199E. Materials Department.

The Staff (F,W,Sp)

199F. Mechanics and Structures Department.

The Staff (F,W,Sp)

199G. System Science Department.

The Staff (F,W,Sp)

## COMPUTER SCIENCE

**20. Programming and Problem Solving.** (Formerly numbered Engineering 20.) Prerequisite: Engineering 10C or consent of the instructor. Open to graduate students on a S/U grade basis only. Solution of numerical and nonnumerical problems of intermediate complexity, using assembly languages and several programming languages. Students will analyze, program, and run half a dozen problems. Emphasis is placed on individual ability to carry out assignments under minimum supervision.

Mr. Levine, Mr. Melkanoff, Mr. Uzgalis (F,W,Sp)

**30. Introduction to Computer Operating Systems.** (Formerly numbered Engineering 30.) Prerequisite: Computer Science 20; open to graduate students on S/U grade basis only. Introductory course on functions and use of modern computer systems. Overview of batch and time-sharing systems. Functional description of assemblers, compilers, linkage editors, loaders. Job control language, overlays, file structures, buffering, protection. Assignments will include problems on the computer.

Ms. Friedman, Mr. Muntz (F,W,Sp)

**111. Systems Programming.** (Formerly numbered Engineering 126C.) Prerequisites: Computer Science courses 30 and 141. Introduction to modern operating systems. Mapping and binding of addresses. The organization of multiprogramming and multi-processing systems; interrupts, process model, and interlocks. Resource allocation models and the problem of deadlocks. Job control and system management.

Mr. Muntz (F,Sp)

**M123B. Theoretical Models in Computer Science.** (Same as Engineering M123B; formerly numbered Engineering 123B.) Prerequisite: senior standing or consent of the instructor. Sets, strings, and languages. Phrase-structure languages. Finite-state languages and finite-state automata. Context-free languages and pushdown store automata. Unrestricted phrase-structure languages and Turing machines. Context-sensitive languages and linear-bounded automata. Elementary decision problems of automata and languages.

Ms. Friedman, Mr. Martin (F,W,Sp)

**M124A. Applied Numerical Computing.** (Same as Engineering M124A; formerly numbered Engineering 124A.) Prerequisite:

Engineering 10C and Mathematics 32C or equivalents. An introduction to scientific computing and application-oriented survey of computing techniques for several important classes of problems, including matrix computations, root-finding, ordinary differential equations, interpolation and approximation. Student computing exercises.

Mr. Carlyle, Mr. Karplus (F,W,Sp)

**131. Programming Languages.** (Formerly numbered Engineering 125L.) Prerequisite: Computer Science 20. The main objective is to study, compare and evaluate programming languages, in particular commercially available languages: FORTRAN, ALGOL 60, COBOL, PL/I, and ALGOL 68. Additional topics as instructor sees fit.

Mr. Berry, Mr. Cardenas, Mr. Uzgalis (F,W,Sp)

**132. Compiler Construction.** (Formerly numbered Engineering 125N.) Prerequisite: Computer Science 131 or consent of instructor. Modern compiler structure. Syntax analysis. Lexical analysis. Semantic analysis and run-time environment. Program and data structure. Code optimization.

Mr. Martin, Mr. Popek (W,Sp)

**141. Basic Methods of Data Organization.** (Formerly numbered Engineering 123A.) Prerequisite: Computer Science 20. Fundamental techniques for organizing and manipulating data, stressing relationships to performance, time/storage tradeoffs. Sequential and linked storage allocation for linear lists, multi-linked structures. Trees: implementation, traversals, mathematical properties. Dynamic storage allocation. Topics from: sorting-searching, algorithmic analysis, graph theory, concepts underlying file management.

Mr. Klinger, Mr. Melkanoff (F,W,Sp)

**151A. Computer System Architecture: I. (Introductory)** (Formerly numbered Engineering 125A.) Prerequisite: College level Physics (electricity and magnetism); Engineering 10C; Computer Science 152A to be taken concurrently. Introduction to computer architecture. Description of machine organization and operation. Information: its representation and manipulation. Combinational logic design with IC's and MSI devices. Sequential circuits, storage elements and MSI packages. Arithmetic and the arithmetic-logic unit.

Mr. Avizienis, Mr. Bussell, Mr. Ercegovac (F,W,Sp)

**151B. Computer System Architecture: II. (Intermediate)** (Formerly numbered Engineering 125B.) Prerequisite: Computer Science 151A; Computer Science 152B to be taken concurrently. Formal description of machine organization. Effects on machine organization of: instruction sets and formats; addressing structures. Memory organization and management: control sequence generator; I/O processing and interrupts; reliability aspects.

Mr. Bussell, Mr. Ercegovac (F,W,Sp)

**152A. Introductory Digital Circuits Laboratory. (½ course)** (Formerly numbered Engineering 125Z.) Prerequisite: Engineering 10C; this course is to be taken concurrently with Computer Science 151A. Familiarization with design and interconnection of logic circuits and networks through implementation and debugging procedures, including experience with printed circuit design.

Mr. Bussell (F,W,Sp)

**152B. Digital Systems Laboratory. (½ course)** (Formerly numbered Engineering 125Y.) Prerequisite: Computer Science 151B to be taken concurrently. A computer based laboratory which probes computer architecture through construction simulation and measurement of digital subsystems.

Mr. Bussell (F,W,Sp)

**171. On-Line Computer Systems.** (Formerly numbered Engineering 124D.) Prerequisite: senior standing or consent of instructor. A survey of fundamentals with emphasis on hardware and systems concepts. Adapting digital computers to interfaces, including multi-programming, interrupt and time-sharing considerations. Digital communication, remote consoles, sampling, quantizing, multiplexing, analog-digital conversion, and data reconstruction.

Mr. Karplus, Mr. Levine (F,W,Sp)

**172. Simulation and Models.** (Formerly numbered Engineering 126A.) Prerequisite: Computer Science 20. Model formulation and programming for discrete event systems in simulation languages (e.g., GPSS, SIMSCRIPT). The simulation data base and considerations for language development. Statistical considerations: design of experiments, random number generation, analysis of model results. Computer exercises.

Mr. Karplus, Mr. McNamee (W)

**173. Random Data Analysis and Measurement Procedures.** Prerequisite: Engineering 121C.) Provides practical aspects of random data analysis and measurement procedures. Includes statistical properties of random data, correlation, spectral density input/output relationships, statistical errors, coherence functions, data acquisition and processing techniques.

Mr. McNamee (F)

**174. Elements of Computer Graphics.** (Formerly numbered Engineering 124E.) Prerequisite: Computer Science courses 171, 131, 141 or consent of the instructor. Hardware and software elements of computer graphics systems, including problems of intelligent terminals, communications and graphics languages. Application areas and cost effective uses of interactive graphics.

Mr. Uzgalis (W)

**199. Special Studies.** (Formerly numbered Engineering 199A.) Prerequisite: senior standing and the consent of the instructor. Individual investigation of a selected topic, to be arranged with a faculty member in the Computer Science Department. Enrollment request forms available in the Department office. Occasional field trips may be arranged. May be repeated for bachelor's degree credit.

The Staff, Computer Science Dept. (F,W,Sp)

## GRADUATE COURSES

### Chemical, Nuclear, and Thermal Engineering

**230A. Advanced Engineering Thermodynamics.** (Formerly numbered Engineering 230A.) Prerequisites: Engineering 130A, 137A or equivalent. Phenomenological and statistical thermodynamics of chemical and physical systems with engineering applications. Presentation of the role of atomic and molecular spectra and intermolecular forces in the interpretation of thermodynamic properties of gases, liquids, solids and plasmas.

The Staff, Chemical, Nuclear and Thermal Engineering Department (W)

**230B. Nonequilibrium Thermodynamics.** (Formerly numbered Engineering 230B.) Prerequisite: Chemical, Nuclear and Thermal Engineering 230A. Interpretation of non-equilibrium phenomena in terms of the Fourth Law of Thermodynamics, namely (a) linear interdependence of fluxes and driving forces and (b) Onsager reciprocal relations. Boltzmann transport equation; diffusion; electrical and heat currents; numerical calculation of parameters.

Mr. Robinson (Sp)

**230C. Cryogenics.** (Formerly numbered Engineering 238A.) Prerequisite: Engineering 137A. The study of basic phenomena in low temperature systems including the third law, various cooling methods and superfluid systems; Meissner state, type I and type II systems; applied superconductivity cryogenics.

Mr. Frederking (F, odd years)

**230D. Thermodynamics of Phase Transitions.** (Formerly numbered Engineering 239A.) Prerequisite: Chemical, Nuclear and Thermal Engineering 230A or equivalent. Phase stability criteria and separation of phases; first and second order phase transitions, including lambda-transitions. Specific transitions: vapor-liquid, liquid-solids, vapor solid, order-disorder. High pressure equilibria: theories of solutions; nucleation and surface phenomena.

Mr. Robinson (F, even years)

**231A. Convective Heat Transfer Theory.** (Formerly numbered Engineering 231A.) Prerequisite: Engineering 131A. The conservation equations for flow of real fluids. Analysis of heat transfer in laminar and turbulent, incompressible and compressible flows. Internal and external flows; free convection. Variable wall temperature; effects of variable fluid properties. Analogies among convective transfer processes.

Mr. Edwards (W)

**231B. Radiation Heat Transfer.** (Formerly numbered Engineering 231B.) Prerequisite: Engineering 131A. Radiant intensity and flux. Radiation properties of walls, gases, and particulates. Heat transfer by combined conduction, convection, and radiation in nonabsorbing and absorbing media. Applications to industrial, aerospace, energy-conversion, and environmental problems.

Mr. Edwards (Sp)

**231C. Boiling and Condensation.** (Formerly numbered Engineering 231C.) (Not the same as 231C prior to Winter Quarter 1978.) Prerequisites: Engineering 131A, 150A or equivalent. Phenomenological theories of boiling. Hydrodynamic instability of liquid-vapor interfaces and their application to predict maximum and minimum heat fluxes. Forced flow boiling of liquid metals. Film and dropwise condensation.

Mr. Dhir (W)

**231D. Application of Numerical Methods to Transport Phenomena.** (Formerly numbered Engineering 231D.) Prerequisite: Engineering 131B, 132A or consent of the instructor. Numerical techniques for solving selected problems in heat and mass transfer. Applications include free convection, boundary layer flow, two-phase flow, separated flow, flow in porous media. Effects of concentration and temperature gradients, chemical reactions, radiation, electric and magnetic fields.

The Staff, Chemical, Nuclear and Thermal Engineering Department (F)

**231E. Two-Phase Flow Heat Transfer.** (Formerly numbered Engineering 231E.) Prerequisites: Engineering 131A, 150A. Generalized constitutive equations for various two-phase flow regimes. Interfacial heat and mass transfer. Equilibrium and non-equilibrium flow models. Two-phase flow instability. One-dimensional wave propagation. Two-phase heat transfer applications: convective boiling, pressure drop, critical and oscillatory flows.

Mr. Catton, Mr. Chan, (Sp, odd years)

**231F. Advanced Heat Transfer.** (Formerly numbered Engineering 231F.) (Not open to students who have taken 231C prior to Fall Quarter 1977.) Prerequisites: Chemical, Nuclear and Thermal Engineering 231A. Advanced topics in heat transfer from the current literature. Linear and non-linear theories of thermal and hydrodynamic instability; variational methods in transport phenomena; phenomenological theories of turbulent heat and mass transport.

Mr. Catton (Sp)

**232B. Advanced Mass Transfer.** (Formerly numbered Engineering 232B.) Prerequisite: Engineering 131A, 132A. The formulation of the general convective heat and mass transfer problem including equilibrium and nonequilibrium chemistry. Similar and nonsimilar solutions for laminar flows; solution procedures for turbulent flows. Multicomponent diffusion. Application to the hypersonic boundary layer, ablation and transpiration, cooling combustion.

Mr. Mills (Sp, odd years)

**233A. Advanced Power Production and Propulsion.** (Formerly numbered Engineering 233A.) Prerequisite: Engineering 133A or equivalent. Thermodynamic cycle analysis. Fluid



mechanics and thermodynamics of compressors and turbines. Component matching. Atomization and vaporization. Flow and mixing in combustion chambers. Flame stabilization and combustion instabilities. Turbojet and ramjet engines and gas turbines. Rocket propulsion and stability of combustion processes. Mr. Frederking (Sp)

**234A. Topics in Thermal Design.** (Formerly numbered Engineering 234A.) Prerequisite: Engineering 131B, 132A. Consideration of thermal design problems selected from applications such as heat exchangers, heat shields, heat pipes, thermal environment control, spacecraft temperature control and solar thermal conversion. Presentations will be made by the Staff and occasionally by invited off-campus specialists. Mr. Buchberger, Mr. Mills (Sp)

**235A. Nuclear Reactor Analysis I.** (Formerly numbered Engineering 235A.) Prerequisite: Engineering 135C. The analytical and computational methods used in one speed neutron transport theory. Spatial and angular dependent problems in various approximations; Pn, Sn and diffusion theory; the use of variational. Case and finite difference methods. Mr. Pomraning (F)

**235B. Nuclear Reactor Analysis II.** (Formerly numbered Engineering 235B.) Prerequisite: Chemical, Nuclear and Thermal Engineering 235A. The analytical and computational methods used in multigroup and energy dependent transport theory. Bn, multigroup, finite difference and variational methods applied to slowing down, thermalization and resonance phenomena in various approximations. Mr. Pomraning (W)

**235C. Nuclear Reactor Kinetics and Control.** (Formerly numbered Engineering 235C.) Prerequisite: Chemical, Nuclear and Thermal Engineering 235A. Time dependent behavior reactor systems. Analysis of the reactor as a lumped and distributed parameter system by methods of modern control theory. Computational Methods; modal, nodal synthesis and adiabatic techniques. Mr. Pomraning (Sp)

**235D. Methods of Nuclear Reactor Analysis.** (Formerly numbered Engineering 235D.) Prerequisite: Engineering 135B. The analysis of nuclear systems by analytical, numerical and experimental methods. A synthesis of reactor physics and engineering with applications to various prototypes. Mr. Kastenberg (F)

**236A. Nuclear Reactor Materials.** (Formerly numbered Engineering 236A.) Prerequisite: Engineering 105A, 135A. Behavior and properties of nuclear reactor materials, particularly fuel elements; thermodynamics of high temperature materials; stoichiometric effects and compatibility; a fission product, actinide, pore and fission gas bubble migration; sintering, creep, and hot pressing; fracture; irradiation-induced changes in metals; fuel swelling. Mr. Ghoniem, Mr. Okrent, Mr. Wazzan (F)

**236B. Fuel Element Behavior.** (Formerly numbered Engineering 236B.) Prerequisite: Engineering 158A; Chemical, Nuclear and Thermal Engineering 236A. Performance and behavior of nuclear reactor fuel elements under steady state and transient conditions, mechanical interaction and stress analysis; generic fuel modeling codes; irradiation experience; advanced reactor fuel elements; fusion reactor first wall behavior. Mr. Ghoniem, Mr. Okrent, Mr. Wazzan (W)

**236C. Thermal Reactor Safety.** (Formerly numbered Engineering 236C.) Prerequisite: Engineering 135A, and 135B (may be taken concurrently). (Not the same as Engineering 236C prior to Spring Quarter 1975.) Safety-related characteristics of boiling water, pressurized water, and high-temperature gas-cooled nuclear power reactors; design criteria and siting considerations; methods of accident analysis; probabilistic methods, general risk considerations. Mr. Catton, Mr. Chan, Mr. Dhir (W)

**236D. Fast Reactor Safety.** (Formerly numbered Engineering 236D.) Prerequisite: Engineering 135A, 135B, and 135C (may be taken concurrently). Safety related characteristics of liquid-metal and gas-cooled fast power reactors; reactivity coefficients; sodium voiding and fuel-coolant interactions; super-prompt-critical behavior; generic accident codes; containment design aspects; post-accident heat removal. Mr. Dhir, Mr. Kastenberg (Sp)

**236E. Advanced Problems in Reactor Design.** (Formerly numbered Engineering 236E.) Prerequisite: at least 4 courses from 235A-235B-235C-235D and 236A-236B-236C-236D. Methods of attack and solution for advanced problems in reactor design, including fuel elements, power reactor cores, pulsed reactors, fuel cycle and fuel management, thermal-hydraulics, shielding, and safety. Mr. Okrent (F)

**M236G. Seminar in Fusion Reactor Technology.** (Formerly numbered Engineering M236G.) (Same as Electrical Science and Engineering M214E.) Prerequisite: consent of the instructor. Non-plasma problems in the design of fusion reactors: environmental hazards, lithium blankets, radiation damage, first-wall materials, tritium handling, superconducting magnets, energy storage, fuel injection and ash removal, reactor stability and control, transmutation of radioactive wastes, and other current topics. Mr. Ghoniem (W, odd years)

**237A. Reaction Kinetics.** (Formerly numbered Engineering 232C.) Prerequisites: Engineering 130A, 137C or equivalent. Macroscopic descriptions: reaction rates, relaxation times, thermodynamic correlations of reaction rate constants. Molecular descriptions: kinetic theory of gases, models of elementary processes. Applications: absorption and dispersion measurements, unimolecular reactions, photochemical reactions, hydrocarbon pyrolysis and

oxidation, explosions, polymerization.

The Staff, Chemical, Nuclear, and Thermal Engineering Department (F)

**237B. Molecular Dynamics.** (Formerly numbered Engineering 232D.) Prerequisite: Engineering 130A or 137C. Analysis and design of molecular-beam systems. Molecular-beam sampling of reactive mixtures in combustion chambers or gas jets. Molecular-beam studies of gas-surface interactions, including energy accommodations and heterogeneous reactions. Applications to air-pollution control and to catalysis. Mr. Knuth (W)

**237C. Surface Science.** (Formerly numbered Engineering 237C.) Prerequisites: Engineering 137C or consent of the instructor. Chemical processes at the gas-solid interface. Physics and chemistry of the solid surface, reconstruction, and bulk interactions. Gas scattering and trapping. Mechanism and rate of adsorption and surface reactions on clean and covered surfaces. Experimental techniques in surface science. Mr. Ullman (Sp)

**237D. Atomic and Molecular Collisions.** (Formerly numbered Engineering 238D.) Prerequisite: Engineering 130A. Elastic scattering: classical theory (potential models, equations of motion); quantum theory (general relations for spherical potentials; some exactly treatable cases); approximate methods; resonance scattering; nonspherical potentials; multiple-potential interactions. Classical and semi-classical descriptions of inelastic and reactive scattering. Mr. Knuth (Sp)

**237E. Combustion Processes.** (Formerly numbered Engineering 232A.) Prerequisite: Engineering 132A or 137C. Fundamentals change equations for multicomponent reactive mixtures, rate laws. Applications: combustion, including burning of (a) premixed gases or (b) condensed fuels. Detonation. Sound absorption and dispersion. Mr. Knuth, Mr. Smith (Sp)

**238A. Chemical Reaction Engineering.** (Formerly numbered Engineering 237A.) Prerequisites: Engineering 137B and 137C or equivalent. Principles of chemical reactor analysis and design. Particular emphasis on simultaneous effects of chemical reaction and mass transfer on noncatalytic and catalytic reactions in fixed and fluidized beds. The Staff, Chemical, Nuclear and Thermal Engineering Department (F)

**238B. Electrochemical Kinetics.** (Formerly numbered Engineering 238B.) Prerequisite: one year physical chemistry or equivalent. Study of principles of electrode kinetics and other phenomena associated with metal-electrolyte interfaces. Some applications to engineering processes of current interest such as electrochemical energy conversion (i.e., fuel cells and batteries) and corrosion processes. Mr. Nobe (W)

**238C. Electrochemical Engineering.** (Formerly numbered Engineering 238C.) Prerequisite: one year physical chemistry or equivalent. Transport phenomena in electrochemical systems; relationships between molecular transport, convection, and electrode kinetics will be discussed along with applications to industrial electrochemistry, fuel cell design, and modern battery technology. Mr. Bennion, Mr. Nobe (Sp)

**238D. Biochemical Engineering.** (Formerly numbered Engineering 237B.) Prerequisite: Engineering 137C, 137D or consent of instructor. Theoretical models and experimental techniques for describing the thermodynamics and transport behavior of solutions of biological macromolecules. Nonideal solution behavior emphasized. Applications to mass transfer problems in natural and man-made systems. Elementary theory of biochemical reactions. Mr. Vilker (W)

**238E. Corrosion Science and Engineering.** (Formerly numbered Engineering 138B.) Prerequisite: Engineering 137A, or a course in physical chemistry or equivalent. Fundamentals of electrochemical thermodynamics and kinetics pertinent to corrosion processes are presented. Topics such as corrosion inhibition, passivity, anodic and cathodic protection, pitting, stress corrosion and hydrogen embrittlement will be covered. Optional laboratory experiments will be offered. Mr. Nobe (F)

**239AA-239AZ. Special Topics in Chemical Engineering.** (½ to 1 course) (Formerly numbered Engineering 239E.) Prerequisite: consent of the instructor and additional prerequisites for each offering as announced in advance by the Chemical, Nuclear and Thermal Engineering Department. Advanced and current study of one or more aspects of chemical engineering such as chemical process dynamics and control, fuel cells and batteries, membrane transport, advanced chemical engineering analysis, polymers, optimization in chemical process design. May be repeated for credit when no duplication exists. The Staff, Chemical, Nuclear and Thermal Engineering Department (F,W,Sp)

**239BA-239BZ. Seminar: Current Topics in Transport Phenomena.** (Formerly numbered Engineering 239B.) Prerequisite: consent of the instructor. Review of current literature in an area of transport phenomena in which the instructor has developed special proficiency as a consequence of research interests. Student reports on selected topics. The Staff, Chemical, Nuclear and Thermal Engineering Department

**239CA-239CZ. Seminar: Current Topics in Energy Utilization.** (Formerly numbered Engineering 239C.) Prerequisite: consent of the instructor. Review of current literature in an area of energy utilization in which the instructor has developed special proficiency as a consequence of research interests. Student reports on selected topics. The Staff, Chemical, Nuclear and Thermal Engineering Department

**239DA-239DZ. Seminar: Current Topics in Nuclear Engineering.** (Formerly numbered Engineering 239D.) Prerequisite: consent of the instructor. In odd-numbered years, reactor design will be discussed. In even-numbered years, current literature in an area of nuclear engineering in which the instructor has developed special proficiency as a consequence of research interests will be reviewed. The Staff, Chemical, Nuclear and Thermal Engineering Department (F,W,Sp)

**239EA-239EZ. Seminars in Chemical Engineering.** (½ to 1 course) Prerequisite: consent of the instructor and additional prerequisites for each offering as announced in advance by the Chemical, Nuclear and Thermal Engineering Department. Lectures, discussions, student presentations and projects in areas of current interest. All sections are graded S/U only, and may be repeated for credit. The Staff, Chemical, Nuclear and Thermal Engineering Department (F,W,Sp)

**239S. Chemical, Nuclear, and Thermal Engineering Department Seminar.** (¼ course) (Formerly numbered Engineering 239S.) Prerequisite: graduate standing. A series of lectures by faculty and graduate students in the Department of Chemical, Nuclear and Thermal Engineering. Invited lecturers will also present topics of current interest to Chemical, Nuclear, and Thermal Engineering. To be graded on a S/U basis. The Staff, Chemical, Nuclear and Thermal Engineering Department (F,W,Sp)

## Computer Science

**201. Computer Science Seminar.** (Formerly numbered Engineering 225S.) Prerequisite: graduate standing in computer science. Lectures on current research topics in Computer Science. To be graded on a S/U basis. (May be repeated for credit.) Mr. Berry, Mr. Muntz (F,W,Sp)

**202. Advanced Computer Science Seminar.** (Formerly numbered Engineering 225X.) Prerequisite: completion of Major Field Examination in Computer Science or consent of instructor. Current computer science research into theory of, analysis and synthesis of, and applications of information processing systems. Each member will complete one tutorial and one or more original pieces of work in the specialized area. May be repeated for credit. Mr. Estrin, Mr. Karplus (F,W,Sp)

**211A. Analytic Models in Operating Systems.** (Formerly numbered Engineering 226C.) Prerequisite: Computer Science courses 111 and 212A. Time-sharing system queuing models. Courses of program behavior, multilevel memory allocation, paging algorithms. Analysis of file structures. I/O scheduling. Measurement techniques and analysis. Mr. Muntz (W)

**212A. Queueing Systems: Theory and Applications.** (Formerly numbered Engineering M223A.) Prerequisite: Engineering 120A or consent of instructor. Analysis of queueing (waiting line) systems. Discrete- and continuous-time Markov processes; birth-and-death processes; baby queueing theory. Equilibrium results for single and multiple server queues; method of stages. Priority queueing. Applications to communication systems, data-processing systems, time-shared processors, computer and communication networks. Mr. Kleinrock (F)

**212B. Advanced Queueing Theory and Applications.** (Formerly numbered Engineering M223B.) Prerequisite: Computer Science 212A. Advanced topics in queueing theory: including Lindley's Integral Equation; Pollaczek method; busy period; virtual waiting time; method of collective marks; inequalities, bounds, and approximations; tandem queues; and algebra for queues. Applications to communication and computer nets, computer systems and time-sharing systems. Mr. Kleinrock (W)

**212C. Computer Communications Networks.** (Formerly numbered Engineering 223C.) Prerequisite: Computer Science 212A. Computer communication network models, analysis and design techniques are examined. Experience with an existing international network (the ARPANET) is discussed and the operational procedures and pitfalls are presented. Measured performance and cost effectiveness of large scale computer networks are considered. Mr. Kleinrock (Sp)

**219. Current Topics in Computer System Modeling Analysis.** (½ to 3 courses) Prerequisite: consent of the instructor. Review of current literature in an area of Computer System Modeling Analysis in which the instructor has developed special proficiency as a consequence of research interests. Student reports on selected topics. May be taken for credit more than once with consent of the instructor. The Staff, Computer Science Department (F,W,Sp)

**231A. Advanced Topics in Programming Languages.** (Formerly numbered Engineering 225P.) Prerequisite: Computer Science 131. Presentation, analysis and discussion of specialized programming languages, new higher level languages and new and/or advanced features of programming languages. Mr. Berry, Mr. Melkanoff (W)

**232A. Operational Semantics of Programming Languages.** (Formerly numbered Engineering 225K.) Prerequisite: Computer Science courses 123B and 131. (May be taken concurrently.) Interpreter Models of Programming Language Semantics: information structure models, Vienna definition language, lambda calculus, LISP definition, interpreter equivalence and correctness. Mr. Berry, Mr. Melkanoff (F)

**232B. Semantics of Programming Languages.** (Formerly numbered Engineering 225L.) Prerequisites: Computer Science M123B or equivalent, or consent of the instructor. Syntax-directed semantics of context-free languages. Knuthian semantic systems (K-systems) and their mathematical formulation. K-system formulation of programming language semantics; translational and denotational semantics. Properties of K-systems; equivalence of K-systems. Applications of current research interest.

Mr. Martin (F)

**234A. Correctness Proofs.** Prerequisite: consent of the instructor. Theoretical and practical aspects of correctness proofs. Partial correctness, total correctness, and termination. Axiomatic semantics and proof systems. Abstraction and correctness of implementations. Formulation, execution, and assessment of correctness proofs. Topics of current research interest.

Mr. Martin (W)

**239. Current Topics in Computer Science-Programming Languages and Systems.** (½ to 4 courses) (Formerly numbered Engineering 226Z.) Prerequisite: consent of the instructor. Review of current literature in an area of computer science programming languages and systems in which the instructor has developed special proficiency as a consequence of research interests. May be repeated for credit, provided no duplication exists.

The Staff, Computer Science Department (F,W,Sp)

**241A. Data Management Systems.** (Formerly numbered Engineering 226D.) Prerequisite: Computer Science 131 or Management 113A-113B, or equivalent; Computer Science 141 or equivalent. Information and file handling in higher level languages, storage devices and operating systems. Secondary index organizations. Models and architecture of data management systems. Logical and physical structures. Query languages. Commercially available generalized file management and data base management systems. Management information systems.

Mr. Cardenas, Mr. Muntz, Mr. Popek (F,W,Sp)

**249. Current Topics in Data Structures.** (½ to 3 courses) Prerequisite: consent of the instructor. Review of current literature in an area of Data Structures in which the instructor has developed special proficiency as a consequence of research interests. Student reports on selected topics. May be taken for credit more than once with the consent of the instructor.

The Staff, Computer Science Department (F,W,Sp)

**252A. Computer Science Design: Arithmetic Processors.** (Formerly numbered Engineering 225A.) Prerequisite: Computer Science courses 151A and 151B. Concepts of number systems, digital numbers, algorithms; logic and organization of digital arithmetic processors; conventional arithmetic; algorithm acceleration; floating-point and significance arithmetics; redundant, signed-digit, residue number systems; error detecting codes for digital arithmetic; algorithm evaluation by analysis and simulation.

Mr. Avizienis, Mr. Ercegovac (F,Sp)

**253A. Computer System Design: Fault Tolerance.** (Formerly numbered Engineering 225C.) Prerequisite: Computer Science courses 151A and 151B. Fault masking at the level of components, logic circuits, and subsystems. Diagnosis of logic nets. Techniques of automatic replacement and reorganization. Reliability estimation of fault-tolerant systems. Recovery from fault-induced errors.

Mr. Avizienis (F)

**253B. Advanced Topics in Fault-Tolerant Computing.** Prerequisite: Computer Science 252A and 253A. Analysis and discussion of the modeling, design, and evaluation of fault-tolerant computer systems. Emphasis on current research results and new systems in the stages of design and development.

Mr. Avizienis (W)

**254A. Computer Memories and Memory Systems.** (Formerly numbered Engineering 225D.) Prerequisite: Computer Science 151B or consent of instructor. Generic types of memory systems; control, access modes, hierarchies and allocation algorithms. Characteristics, system organization and device considerations of ferrite memories, thin film memories and semiconductor memories.

Mr. Chu, Mr. Estrin (F,Sp)

**255A. Data Communications in Computer Systems.** (Formerly numbered Engineering 225F.) Prerequisite: Engineering 120A and either Computer Science course 171 or 151B. Intraprocessor Communications: communication between processor, memory and input/output. Multiprocessor communication, switching and multiplexing. Multicomputer systems: interprocess communications, synchronization, flow control, file allocation and dead lock problems. Communications with remote multiple terminals: measurements and modeling, error detection and handling, optimal block size, line control protocol, and multiplexing.

Mr. Chu (W)

**257A. Computer System Design: Comparative Architecture and Synthesis Methods.** (Formerly numbered Engineering 225B.) Prerequisite: Computer Science 252A. Advanced topics in Computer System Architecture. Elucidate important properties of computer systems and study methods for modeling, evaluating, and synthesizing them.

Mr. Chu (W)

**259. Current Topics in Computer Science-System Design (Architecture).** (½ to 4 courses) (Formerly numbered Engineering 225Z.) Prerequisite: consent of the instructor. Review of current literature in an area of Computer Science System Design, in which the instructor has developed special proficiency as a consequence of research interests. Student reports on selected topics.

May be repeated for credit, provided no duplication exists.

The Staff, Computer Science Department (F,W,Sp)

**271A. Computer Methodology: Continuous Systems Simulation.** (Formerly numbered Engineering 224A.) Prerequisite: Computer Science courses M124A and 171. The organization, operation and areas of application of analog-digital computer systems. Error analysis, numerical analysis aspects, digital simulation languages for continuous systems characterized by ordinary differential equations.

Mr. Karplus, Mr. Levine (Sp)

**271B. Computer Methodology: Distributed Parameter Systems.** (Formerly numbered Engineering 224B.) Prerequisite: Computer Science M124A. A survey of the mathematical formulation and computer solution of engineering field problems governed by partial differential equations. Emphasis on digital simulation methods, including finite difference approximations, Monte Carlo methods and the use of modern problem-oriented languages.

Mr. Karplus, Mr. Vidal (F)

**275A. Information Processes in Nervous Systems.** (Formerly numbered Engineering 223K.) Prerequisite: consent of the instructor. Conceptual discussion of acquisition and transfer of information in the nervous system and of the role of computers in the analysis and interpretation of neurophysiological data.

Mr. Vidal (W)

**276A. Statistical Pattern Recognition.** (Formerly numbered Engineering 225M.) Lecture, three hours; recitation, one hour. Prerequisites: Engineering 120A or 193A, or Mathematics 150A or the equivalent. Computer methodology in the processing of large data sets. Multidimensional measurements. Adaptation and learning the mean of a normal distribution. Bayesian statistics and loss functions. Learning algorithms and clustering processes.

Mr. Klinger (F,W)

**276B. Structural Pattern Recognition.** Lecture, three hours; recitation, one hour. Prerequisite: Computer Science M123B. Descriptive methods in computer processing of patterned data. Formal languages and pattern description languages. Syntactic analysis and recognition. Introduction to scene analysis. Applications to pictures, alphabetic characters, speech and chromosome data.

Mr. Klinger (Sp)

**279. Current Topics in Computer Science-Methodology.** (½ to 4 courses) (Formerly numbered Engineering 224Z.) Prerequisite: consent of the instructor. Review of current literature in an area of Computer Science Methodology in which the instructor has developed special proficiency as a consequence of research interests. Students report on selected topics. May be repeated for credit, provided no duplication exists.

The Staff, Computer Science Department (F,W,Sp)

**M284A. Context-Free Languages.** (Same as System Science M284A.) (Formerly numbered Engineering 228E.) Prerequisite: Computer Science M123B or Engineering M123B. Detailed study of context-free languages and their restrictions and generalizations, including: grammars, derivation trees, ambiguity, normal forms; operations, closure properties, pushdown acceptors; topics from parsing, deterministic machines and languages, LR (k) grammars, macro grammars.

Ms. Friedman, Ms. Greibach (W)

**M285A. Automatic Deduction: Theory and Applications.** (Same as System Science M285A.) (Formerly numbered Engineering 223D.) Prerequisite: some knowledge of logic, list-processing languages and programming. Historical development of automatic deduction programs. The resolution principle. Program structure and efficiency strategies. Fundamental meta theorems. Rules of inference for equality and decision procedures. Formalization and axiomatization.

Mr. Goguen, Mr. Melkanoff (F)

**286A. Heuristic Programming and Artificial Intelligence.** (Formerly numbered Engineering 223E.) Prerequisite: Computer Science course 141 or 131 or consent of instructor. Survey of a body of computer programs which successfully perform tasks generally agreed to require some intelligence. The objective is to develop understanding of current research and possibilities of limitations implied by existing experiments in automating intelligent behavior.

Mr. Goguen, Mr. Klinger (F,Sp)

**M287A. Theory of Computation.** (Same as System Science M287A.) (Formerly numbered Engineering 223F.) Prerequisite: some background in automata, formal languages, and computability (e.g., Computer Science M123B or Engineering M123B or System Science 228B or Mathematics 114), and consent of the instructor. Introduction to the theory of formalized flow charts and models of computer programs; emphasis on program and recursion schemata; problems of equivalence, optimization, correctness, translatability.

Ms. Greibach, Mr. Melkanoff (F)

**288A. Algebraic Foundations of Computer Science.** Prerequisite: Mathematics 112B or equivalent, or consent of the instructor. A systematic algebraic approach to certain basic problems in computer science, including: verification of program and hardware correctness; data structures; compiler correctness; structured programming; tree manipulation; automata; program schemes; recursiveness; and various approaches to semantics.

Mr. Goguen (F,W,Sp)

**289. Current Topics in Computer Theory.** (½ to 3 courses) (Formerly numbered Engineering 223Z.) Prerequisite: consent of the instructor. Review of current literature in an area of Computer Theory in which the instructor has developed special proficiency as a consequence of research interests. Student reports on selected topics.

The Staff, Computer Science Department (F,W,Sp)

**596. Directed Individual or Tutorial Studies.** (½ to 2 courses)

Prerequisite: graduate status in Engineering; consent of instructor. Petition forms to request enrollment may be obtained from the Assistant Dean, Graduate Studies. Supervised investigation of advanced technical problems. To be graded on a S/U basis.

The Staff, Computer Science Department (F,W,Sp)

**597A. Preparation for M.S. Comprehensive Examination.** (½ to 3 courses) Prerequisite: graduate status in Engineering; consent of instructor. Petition forms to request enrollment may be obtained from the Assistant Dean, Graduate Studies. Reading and preparation for M.S. comprehensive examination. To be graded on a S/U basis.

The Staff, Computer Science Department (F,W,Sp)

**597B. Preparation for Ph.D. Preliminary Examinations.** (½ to 4 courses) Prerequisite: graduate status in Engineering; consent of instructor. Petition forms to request enrollment may be obtained from the Assistant Dean, Graduate Studies. To be graded on a S/U basis.

The Staff, Computer Science Department (F,W,Sp)

**597C. Preparation for Ph.D. Oral Qualifying Examination.** (½ to 4 courses) Prerequisite: graduate status in Engineering; consent of instructor. Petition forms to request enrollment may be obtained from the Assistant Dean, Graduate Studies. Preparation for Oral Qualifying Examination, including preliminary research on dissertation. To be graded on a S/U basis.

The Staff, Computer Science Department (F,W,Sp)

**598. Research for and Preparation of the Master's Thesis.** (½ to 3 courses) Prerequisite: graduate status in Engineering; consent of the instructor. Petition forms to request enrollment may be obtained from the Assistant Dean, Graduate Studies. Supervised independent research for M.S. candidates, including thesis prospectus. To be graded on a S/U basis.

The Staff, Computer Science Department (F,W,Sp)

**599. Research for and Preparation of the Doctoral Dissertation.** (½ to 4 courses) Prerequisite: graduate status in Engineering; consent of instructor. Petition forms to request enrollment may be obtained from the Assistant Dean, Graduate Studies. To be graded on a S/U basis.

The Staff, Computer Science Department (F,W,Sp)

## Electrical Sciences and Engineering

**210A. Advanced Circuit Theory I.** (Formerly numbered Engineering 210A.) Prerequisite: Engineering 110B; concepts of linear algebra and complex function theory. State equations for linear circuits. Characterization of n-ports and multi-terminal elements. Introduction to, and applications of, the scattering matrix, and related topics.

Mr. Orchard (F)

**210B. Advanced Circuit Theory II.** (Formerly numbered Engineering 210B.) Prerequisite: Electrical Sciences and Engineering 210A. Analytical techniques for active circuits: return difference, Blackman's formula for an active impedance. Characterization of nonlinear elements. State equations for nonlinear circuits. Stability of nonlinear circuits: Liapunov's direct method. Theory of nonlinear transistor circuits.

Mr. Willson (W)

**210C. Advanced Network Synthesis.** (Formerly numbered Engineering 210C.) Prerequisite: Engineering 110C. Theory and practical development of lossless ladder networks. Lattice and constant-resistance networks. Loss-phase relations in minimum-phase networks. The Hilbert transform. Allpass functions and networks. Design of linear-phase polynomials.

Mr. Orchard, Mr. Temes (W)

**210D. Active, Passive, and Digital Filters.** (Formerly numbered Engineering 210D.) Prerequisite: Electrical Sciences and Engineering 210C or consent of the instructor. Approximation theory. Realization of passive filters. Electro-mechanical filters. Active filters with lumped and/or distributed elements. Switched and digital filters.

Mr. Orchard, Mr. Temes (Sp)

**210E. Digital Signal Processing.** (Formerly numbered Engineering 210E.) Prerequisite: Engineering 110B. Relationship between continuous-time and discrete-time signals. The z-transform. The discrete Fourier transform. The fast Fourier transform. State equations for discrete-time systems. Network structures for digital filtering. Introduction to digital filter design techniques.

Mr. Willson (F)

**210F. Theory and Design of Digital Filters.** Prerequisite: Electrical Sciences & Engineering 210E. Approximation of filter specifications. Use of design charts. Structures for recursive digital filters. FIR filter design techniques. Comparison of IIR and FIR structures. Implementation of digital filters. Limit cycles. Overflow oscillations. Discrete random signals. Wave Digital filters. Distributed arithmetic structures.

Mr. Willson (Sp)

**213A. Quantum Electronics I.** (Formerly numbered Engineering 215C.) Prerequisite: Electrical Sciences and Engineering 215A or consent of the instructor. (Not open to students who have taken course 215C prior to Winter Quarter 1973.) Optical beams and resonators, interaction of light with atoms including amplification and saturation, properties of lasers including power output and mode effects.

Mr. Caspersen, Mr. Stafsudd (W)

**213B. Quantum Electronics II.** (Formerly numbered Engineering 215E.) Prerequisite: graduate status, or consent of the instructor. (Not open to students who have taken course 215E prior to Spring Quarter 1973.) Quantum electronic systems, modulation, non-linear optics, and some advanced laser topics.

Mr. Caspersen, Mr. Stafsudd (Sp)

**213C. Quantum Electronics III.** (Formerly numbered Engineering 213C.) Prerequisite: Electrical Sciences and Engineering 213A or consent of the instructor. Properties of laser oscillators including transient phenomena, quantum mechanical effects, and behavior of high gain laser media. Mr. Casperson, Mr. Stafsudd (Sp)

**213S. Quantum Electronics Seminar.** (¼ course) (Formerly numbered Engineering 213S.) Prerequisite: Electrical Sciences and Engineering 213A or consent of the instructor. A series of lectures and student presentations on topics of current research interest in quantum electronics, modern optics, and laser physics. May be repeated for credit. Mr. Casperson, Mr. Stafsudd (F,W,Sp)

**214A. Plasma Waves and Instabilities.** (Formerly numbered Engineering 214A.) Prerequisite: Engineering 100B and M118 or Physics M122. Wave phenomena in plasmas described by the macroscopic fluid equations. Emphasis on homogeneous plasmas in uniform magnetic fields. Microwave propagation, plasma oscillations, ion acoustic waves, cyclotron waves, hydromagnetic waves, whistlers and helicon waves, and their classification. Illustrative experiments. Mr. Chen (W)

**214B. Advanced Plasma Waves and Instabilities.** (Formerly numbered Engineering 214B.) Prerequisite: Engineering M118 or Physics M122, and Electrical Sciences and Engineering 214A or Physics 222. Interaction of intense electromagnetic waves with plasmas: waves in inhomogeneous and bounded plasmas, nonlinear wave coupling and damping, parametric instabilities, anomalous resistivity, shock waves, echoes, laser heating. Emphasis on experimental considerations and techniques. Mr. Chen (Sp)

**214C. Principles of Thermonuclear Fusion.** (Formerly numbered Engineering 214C.) Prerequisite: Engineering M118 or Physics M122 and consent of the instructor. Principles of confinement and heating of plasmas in magnetic fields. Field configurations: pinches, magnetic mirrors and wells, toruses. Methods of plasma stabilization. Plasma production and heating. Advantages of thermonuclear reactors and considerations in their design. Mr. Chen (F, odd years)

**M214E. Seminar in Fusion Reactor Technology.** (Formerly numbered Engineering M214E.) (Same as Chemical, Nuclear and Thermal Engineering M236G.) Prerequisite: consent of the instructor. Non-plasma problems in the design of fusion reactors: environmental hazard, lithium blankets, radiation damage, first-wall materials, tritium handling, super-conducting magnets, energy storage fuel injection and ash removal, reactor stability and control, transmutation of radioactive wastes, and other current topics. Mr. Chen (W, odd years)

**215A. Solid State Electronics I.** (Formerly numbered Engineering 215A.) Prerequisite: Engineering 115A, 115B, 115C. Review of quantum mechanics, matrix methods, approximation methods, crystal field theory, interaction of radiation and matter. Mr. Viswanathan (F)

**215B. Solid State Electronics II.** (Formerly numbered Engineering 215B.) Prerequisite: Electrical Sciences and Engineering 215A. Energy band theory, equilibrium in semiconductors, transport properties, high frequency (microwave and optical frequencies) properties, superconductors. Mr. Pan (W)

**215C. Microwave Semiconductor Devices.** (Formerly numbered Engineering 215C.) Prerequisite: Engineering 115D or consent of the instructor. Physical principles and design considerations of microwave solid-state devices: IMPATT and TRAPATT diodes, BARRITT diodes, transferred electron devices, tunnel diodes, optoelectronic devices and acoustic surface wave devices. Mr. F.G. Allen (Sp)

**215D. Physics of Solid State Devices.** (Formerly numbered Engineering 215D.) Prerequisite: Engineering 115D. Physical principles and design considerations of modern solid state devices; minority carrier devices; field effect devices; optoelectronic devices; acoustic electric devices. Mr. F.G. Allen, Mr. Viswanathan (Sp)

**216A. Advanced Electronics.** (Formerly numbered Engineering 216A.) Prerequisite: Engineering 110B, 116B. Active network theory with particular reference to linear integrated circuits. Design of multistage low pass amplifier. Multistage feedback amplifier, high frequency band pass amplifier, and coupling and matching networks. Mr. Willis (F,Sp)

**216B. Modern Electronic and Parametric Devices.** (Formerly numbered Engineering 216B.) Prerequisite: Engineering 116B. Critical examination of modern electron devices, with emphasis upon basic operating principles and behavior and performance in system usage. Specific devices to be analyzed may be grouped as follows: semiconductor microwave, parametric, and quantum electronic devices. Mr. Willis (W)

**216C. Integrated Circuit Design.** (Formerly numbered Engineering 216C.) Prerequisite: Engineering 116B, 116C, 115D. Electrical Sciences and Engineering 216A. Integrated circuit device components, layout and interaction; optimization of processes and system performance, reliability, yield; competing IC technologies, high-speed linear and logic circuits, memories, converters, special function IC's, hardware/software tradeoffs. Mr. Knorr (Sp)

**217A-217B. Advanced Engineering Electrodynamics.** (Formerly numbered Engineering 217A-B.) Prerequisite: Engineering 117A, 117B or equivalent. Advanced treatment of concepts in electrodynamics and their applications to modern engineering problems. Waves in anisotropic, inhomogeneous and dispersive

media. Guided waves in bounded and unbounded regions. Radiation and diffraction, including optical phenomena. Partially coherent waves, statistical media. Mr. Alexopoulos, Mr. C.W. Yeh (217A-F; 217B-W)

**217C. Microwave Circuits.** (Formerly numbered Engineering 217C.) Prerequisite: Engineering 117A. Transmission line review, application to strip line and microstrip. Multiport microwave networks; scattering and immittance matrices; devices. Inhomogeneously filled guides. Surface guides. Excitation of guided waves. Periodic structures and filters. Mr. Elliott, Mr. Schott (Sp)

**219A. Seminars on Advanced Topics in Electromagnetics.** (Formerly numbered Engineering 219A.) Prerequisite: Engineering 117A, 117B or equivalent. Current topics in electromagnetics, such as wave interaction with ferrites, moving media, data processing antennas, waves in statistically varying media, numerical methods applied to electromagnetic problems, holograms and partially coherent waves. May be repeated for credit. Staff, Electrical Sciences and Engineering Department (Sp)

**219B. Seminars on Advanced Topics in Solid State Electronics.** (Formerly numbered Engineering 219B.) Prerequisite: Electrical Sciences and Engineering 215A, 215B. Current research areas, such as radiation effects in semiconductor devices, diffusion in semiconductors, optical and microwave semiconductor devices, nonlinear optics, and electron emission. Staff, Electrical Sciences and Engineering Department (F)

**219C. Seminar: Special Topics in Applied Electronics.** (Formerly numbered Engineering 219C.) Prerequisite: Electrical Sciences and Engineering 216C or consent of the instructor. Current topics in applied electronics and electronic systems, such as: Fourier optics, optical data processing, communication systems and techniques, parametric electronics and devices. May be repeated for credit. Staff, Electrical Sciences and Engineering Department (F)

**219D. Special Topics in Electric Circuit Theory.** (Formerly numbered Engineering 219D.) Prerequisite: Electrical Sciences and Engineering 210B or 210C or 210D. Advanced treatment of topics chosen from research areas in electric circuit theory. The Staff, Electrical Sciences and Engineering Department (Sp)

**219E. Special Topics in Quantum Electronics.** (Formerly numbered Engineering 219E.) Prerequisite: Electrical Sciences and Engineering 213A or consent of the instructor. Advanced treatment of topics chosen from research areas in quantum electronics such as guided wave optics, unconventional laser systems, optical detection, and coherent optical imagery. May be repeated for credit. Mr. Casperson, Mr. Cordero, Mr. Stafsudd (Sp)

**219X. Advanced Electrical Science and Engineering Seminar.** (¼ course) (Formerly numbered Engineering 219X.) Prerequisite: passing of the Ph.D. major field examination or instructor's approval. Seminar on current research topics in solid state and quantum electronics (Section 1) or in electronic circuit theory and applications (Section 2). Each student will report on a tutorial topic and on a research topic in his dissertation area. May be repeated for credit. To be graded on S/U basis. Mr. Viswanathan (F,W,Sp)

## Engineering Systems

**270A. Synthesis of Industrial Engineering Systems.** (Formerly numbered Engineering 270A.) Prerequisite: design background and Engineering 173 or equivalent. The logic and quantitative formulations for the transdisciplinary design of engineering systems to meet advanced industrial requisites in productivity, profitability, environments, and resource conservation. Facilities, energy, processes, equipment, operations, cost-benefit, and safety considerations. Application areas will vary from year to year. Mr. Nottage, Mr. O'Brien (Sp)

**271A. Dynamic Systems Optimal Control.** (Formerly numbered Engineering 271A.) Prerequisite: Engineering 171C, or consent of the instructor. Optimal control problem formulation. Performance criteria for deterministic dynamic systems. Variational methods and Pontryagin's maximum principle for continuous and discrete-time models. Inequality constraints. Sensitivity analysis. Numerical computation methods for solving boundary value problems of optimal control. Applications in various fields. Mr. DiStefano, Mr. Leondes (F,Sp)

**271B. Dynamic Systems Stochastic Estimation and Control.** (Formerly numbered Engineering 271B.) Prerequisite: Engineering 171C, 193A; Engineering Systems 271A, or consent of the instructor. Applied treatment of optimal state estimation and stochastic control problems for continuous and discrete time dynamic models with state-space descriptions. Kalman filtering, smoothing and prediction algorithms. Stochastic optimal controllers: the separation principle. Emphasis on efficient numerical computations. Applications in various fields. Mr. DiStefano, Mr. Leondes (F,W)

**271C. Dynamic Systems Identification, Stability and Adaptive Control.** (Formerly numbered Engineering 271C.) Prerequisite: Engineering Systems 271A; 271B is recommended; or consent of the instructor. Nonlinear system stability. Dynamic systems modeling, identification and parameter estimation techniques.

Combined identification and control and self-adaptive control. Mr. Leondes (W)

**271D. Seminar and Special Topics in Dynamic Systems Control.** (Formerly numbered Engineering 271D.) Prerequisite: consent of the instructor. Seminar on current research topics in dynamic systems modeling, control and applications. Topics selected from process control, differential games, nonlinear estimation, adaptive filtering, industrial and aerospace applications, etc. Mr. Leondes (Sp)

**\*1272D. Advanced Topics in Operations Research and Large Scale Systems.** (Formerly numbered Engineering 272D.) Prerequisite: System Science 272A, 272BA-BZ, 272C or consent of the instructor. Advanced topics of current interest in operations research chosen from among identification and optimization problems for static and dynamic systems, sensitivity theory, aggregation of stochastic systems, controllability, resource allocation, modeling techniques and other topics. Mr. Leondes

**274A. Problem Solving and Decision Making (I).** (Formerly numbered Engineering 274A.) Prerequisite: Engineering 193A or 174A or consent of the instructor. Formal models of problem structures. Heuristic techniques for mechanized problem-solving. Foundations of quantitative coding of qualitative information. Theories of subjective-probabilities and utility. Relation between artificial-intelligence and decision-analysis. Information-processing models of human decision-making and problem-solving behavior. Mr. Pearl, Mr. Rubinstein (W)

**274B. Problem Solving and Decision Making (II).** (Formerly numbered Engineering 274B.) Prerequisite: Engineering Systems 274A. Topics and projects in the methodology of problem solving and knowledge representation by humans and machines. Foundation of homomorphisms between qualitative, numerical and symbolic relational structures. Value of information and the processing of judgmental data. Computerized theory formation, knowledge acquisition and knowledge-based systems. Mr. Goguen, Mr. Pearl (Sp)

**274C. Computer Methods of Data-Analysis and Model Formation.** (Formerly numbered Engineering 274C.) Prerequisite: Engineering 193A or 120A or consent of the instructor. Techniques of using computers to interpret, summarize and form theories of empirical observations. Mathematical analyses of tradeoffs between the computational complexity, storage requirements and precision of computerized models. Mr. Pearl, Mr. Vidal (W)

**274K. Perspectives on Systems Representation for Analysis and Synthesis.** (Formerly numbered Engineering 274K.) Prerequisite: Engineering Systems 274A or consent of the instructor. Mathematical and conceptual models used in analysis and synthesis of Engineering, Socio-Technical systems. Mathematical representations of interpretative models. Decomposition using tools of graph theory and information theory. Guides to choice of models. Interaction of human and computer in the modeling process. Mr. Rubinstein (Sp)

**\*1M275A. Statistical Design of Engineering Experiments.** (Formerly numbered Engineering M275A.) (Same as Management M215F.) Prerequisite: Engineering 193A, 193B. Matrix treatment of linear hypotheses in engineering experimentation. Statistical estimation, tests of hypotheses, analysis of variance, regression models. Randomized blocks, factorial, Latin square, multiple factor and level experiments. Principles of orthogonality, confounding, fractional replication, incomplete block designs with engineering applications. Mr. Carlyle, Mr. Miller

**\*1275B. Reliability Theory with Applications.** (Formerly numbered Engineering 275B.) Prerequisite: Engineering 193A, 193B or consent of the instructor. Basic graduate course in reliability theory. Reliability models for complex systems, coherent structures, modular decomposition, reliability bounds. Constant, monotone hazard functions. Optimization problems in reliability: redundancy allocations, maintenance policies, stress-strength and safety considerations in engineering design. Statistical problems, current topics. Mr. Jacobsen, Mr. Rubin

**276A. Computer-Aided Design.** (Formerly numbered Engineering 276A.) Prerequisite: Engineering 106B or equivalent and 129L. Seminar in computer-aided design of engineering systems and products. Organization of the design process, its decision points and back-up information, for automatic machine processing of the specifications to provide full design data for a family of products. Mr. Rosenstein (Sp)

**\*1277A. Advanced Engineering Economics I.** (Formerly numbered Engineering 277A.) Prerequisite: Engineering 177A and 177B or equivalent or consent of the instructor. Optimal investment decisions. Advanced theory of capital and its relationship to economic growth. Role of technology in economic development. Theoretical basis for cost of capital and discount rates in private and public sectors. Working capital decisions. Applications to engineering projects. Mr. English (Sp)

**\*1277B. Advanced Engineering Economics II: Seminar.** (Formerly numbered Engineering 277B.) Prerequisite: Engineering Systems 277A or equivalent or consent of the instructor. The economics of engineering and social systems. Long-range investment concepts. Physical analogy to Walras' model. An entropy approach to financial decision making. Term projects. Mr. English (F)

**280A. Advanced Biotechnology.** (Formerly numbered Engineering 280A.) Prerequisite: Engineering 180A or 180B or consent of the instructor. Review and analysis of contemporary bioscience

research which bears on problems of engineering component and system design. Emphasis is on methodological and scientific factors underlying man-machine-environment interactions.

Mr. Lyman (W)

**280B. Advanced Biotechnology.** (Formerly numbered Engineering 280B.) Prerequisite: Engineering 180A or 180B or consent of the instructor. Specialized coverage of "human factors" and "human engineering" with orientation toward obtaining design optimization of the functions of humans in relation to engineering parameters of environment, communication and control.

Mr. Lyman (Sp)

**284A. Surface Water Hydrology.** (Formerly numbered Engineering 284A.) Prerequisite: Engineering 184A or consent of the instructor. In-depth study of the surface water components of the hydrologic cycle. Instantaneous units hydrograph, dynamic wave equations, rainfall-runoff models using system investigation and physical hydrology. Stochastic hydrology; time series analysis, Markovian streamflow generating models, and generation of multivariate synthetic streamflows. Applications.

Mr. W.G. Yeh (W)

**284B. Groundwater Hydrology.** (Formerly numbered Engineering 284B.) Prerequisite: Engineering 184A or consent of the instructor. Theory of the movement and occurrence of water in subterranean aquifers. Steady flow in confined and unconfined aquifers. Mechanics of wells; steady and unsteady radial flows in confined and unconfined aquifers. Theory of leaky aquifers. Sea Water intrusion. Numerical methods. Applications.

Mr. W.G. Yeh (Sp)

**284C. Water Resources Systems Engineering.** (Formerly numbered Engineering 284C.) Prerequisite: Engineering 129L, 184B. Application of mathematical programming techniques to water resources systems. Topics include reservoir regulation, optimal timing, sequencing and sizing of water resources projects and real-time conjunctive operation of ground water and surface water resource systems. Emphasis is on the management of water quantity.

Mr. Dracup, Mr. W.G. Yeh (Sp)

**284D. Advanced Water Quality Control Systems.** (Formerly numbered Engineering 284D.) Prerequisite: Engineering 184D. Physical, chemical and biological bases for design of advanced water and wastewater quality control systems. Includes treatment processes, standards and requirements; concepts in physical, organic and colloidal chemistry; bacteriology and limnology; reservoir, stream, estuary, and ocean outfall management; water quality modeling. Field trips.

Mr. Dracup, Mr. Stenstrom (W)

**284E. Saline Water Conversion.** (Formerly numbered Engineering 284E.) Prerequisite: Engineering 137A and Chemistry 110A-110B or equivalent. Current research and development in saline water conversion, in the fields of distillation, electro dialysis, freezing, reverse osmosis and chemical extraction. A study of process optimization and economics of combined water power systems.

Mr. McCutchan, Mr. Van Vorst (W)

**284F. Selected Topics in Water Resources. (½ course)** (Formerly numbered Engineering 284F.) Prerequisite: graduate status; consent of the instructor. Review of recent research and development in the management of resources. Water and hydroelectric supply systems. Water quality management. Water law and institutions. Economic planning and optimization of water resources development. May be repeated twice for credit.

Mr. Dracup (F)

**284G. Engineering Economics of Water and Related Natural Resources.** (Formerly numbered Engineering 284G.) Prerequisite: one or more of the following courses recommended: Engineering 177A, Economics 1, 2, 100, 101A, 101B, or consent of the instructor. Economic theory and applications in the management of water and related natural resources; application of price theory to water resource management, electric power supply, petroleum and natural gas management and renewable resources; benefit-cost analysis with applications to water resources planning.

Mr. Dracup (W)

**284H. Mathematical Models for Water Quality Management.** (Formerly numbered Engineering 284H.) Prerequisite: Engineering 129L, 184D. Development of mathematical models relating pollutant inputs to water quality. Scheduling of treatment plants capacity expansion. Regional water quality system models. Emphasis is on use of analytical and simulation techniques to manage water quality in streams, lakes, and estuaries.

Mr. Dracup, Mr. Stenstrom (Sp)

**M288A. Urban Transportation Planning Policy.** (Formerly numbered Engineering M288A.) (Same as Architecture and Urban Planning M241A.) Prerequisite: Engineering 106A, 193A, or AUP 207, or equivalent. Historical over-view of urban transportation planning and the current political and administrative frameworks for planning, the economic and social basis for travel; measuring the performance of urban transportation systems; basic approaches to transportation systems evaluation.

Mr. Campbell (F)

**M288B. Urban Travel Demand Analysis.** (Formerly numbered Engineering M288B.) (Same as Architecture and Urban Planning M241B.) Prerequisite: Engineering 106A, 193A, M288A; or AUP 277 or equivalent; AUP 220A-B-C or equivalent; AUP M241A. Methods of modeling and forecasting travel in urban transportation systems; basic data collection methods; models of trip generation, distribution, modal split, traffic assignment; direction demand models; behavioral demand models; case studies of

travel analysis in Los Angeles and elsewhere.

Mr. Campbell (W)

**M296A. Biocybernetics I.** (Formerly numbered Engineering M296A.) (Same as Medicine M296A.) Prerequisite: Engineering 171C or equivalent; M196B (may be taken concurrently). Development of modern systems/biocybernetic methods applicable to problems in life sciences and medicine. Emphasis on dynamical modeling, advanced analysis methods and their limitations, biological system quantification (identification), experimental design and hypothesis testing, the limitations of biological data, and computational methods.

Mr. Campfield, Mr. DiStefano (F)

**M296B. Biocybernetics II.** (Formerly numbered Engineering M296B; Same as Medicine M296B.) Prerequisite: Engineering Systems M296A. Physiology 100 or Biology 166 or equivalent is recommended. Continued development of modern systems/biocybernetics methodology and identification of biological systems. Critical survey of their application in the life sciences. The systems viewpoint of regulation in selected biological systems. Applications to human pathophysiology, diagnosis and therapy.

Mr. Campfield, Mr. DiStefano (W)

**M296C. Seminar: Advanced Topics in Biocybernetics.** (Formerly numbered Engineering M296C; same as Medicine M296C.) Prerequisite: consent of the instructor. Interactive seminar on current research topics in biocybernetics. Dynamic systems modeling of physiological processes, with emphasis on specific applications in physiology and clinical medicine. Students will be involved in one or more class projects.

Mr. Campfield, Mr. DiStefano (Sp)

## Materials

**240A. Principles of Materials Science A (Microstructural Thermodynamics).** Prerequisite: Engineering 105A or equivalent; Engineering 141 or equivalent. Thermodynamical equilibrium criteria for multicomponent materials in electric, magnetic and stress fields. Relationship between crystal symmetry and general stiffness and compliance tensor components. Stability analysis, first and second order transitions. Thermodynamics of non-uniform solutions; diffuse interface and critical nucleus. The diffusion equation in concentrated solutions.

Mr. deFontaine (F)

**240B. Principles of Materials Science B (Structure of Materials).** Prerequisite: Engineering 145A or equivalent. Atomic, electronic, and crystalline structure of materials; particles and waves, free electron model, binding in solids; crystal structure, real and reciprocal lattices; amorphous solids, kinematical theory of scattering, electrons in a periodic potential, pseudopotentials, conduction of electrons in solids.

Mr. Wagner (W)

**240C. Principles of Materials Science (Theory of Imperfections).** (Formerly numbered Engineering 245A.) Prerequisite: Engineering 143A or equivalent. Topics in theory of lattice defects: continuum and atomistic treatments of point defects, dislocations and planar faults; interactions between various defects; selected applications to physical and mechanical behavior of solids.

Mr. Ono (Sp)

**\*1241. Oxidation of Metals.** (Formerly numbered Engineering 241.) Prerequisite: Engineering 141, or equivalent, or consent of the instructor. The kinetics and mechanism of gas-solid reactions. Adsorption and phase-boundary reactions. Nucleation of reaction products, defect structure of oxides, crystal structure and morphology of oxide films, factors influencing adherence of surface films.

Mr. Douglas

**242A. Plasticity Theory Applied to Metal Working I.** (Formerly numbered Engineering 242A.) Prerequisite: Engineering 158A. Fundamental concepts describing the mechanics of plastic deformation of homogeneous solids. Yield criteria. Methods of solution, including slip line field, of problems involving plastic deformation, with examples involving plane strain and axisymmetric deformation. Extrusion problem. Application of methods of solution.

Mr. Shabaik (Sp)

**243A. Fracture of Structural Materials.** (Formerly numbered Engineering 243A.) Prerequisite: Engineering 158A or equivalent. The engineering and scientific aspects of crack nucleation, slow crack growth and unstable fracture. Fracture mechanics, dislocation models, fatigue, fracture in reactive environments, alloy development, fracture-safe design.

Mr. Telman (W)

**243B. Design for Fatigue Reliability.** (Formerly numbered Engineering 243B.) Prerequisite: Engineering 14 or equivalent and consent of the instructor. The prediction of fatigue life of machines and vehicles with a statistical confidence. Probabilistic consideration of service loads and life. Design concepts to accommodate fatigue behavior. Detail design concepts to improve fatigue life.

Mr. Sines (Sp, odd years)

**243C. Strengthening Mechanisms in Solids.** (Formerly numbered Engineering 243C.) Prerequisite: Materials 240C. Dislocation mechanisms of yielding, work hardening and other strengthening methods. Creep and grain boundary sliding. Micro-structure-strength correlations and thermomechanical treatments in steels, superalloys, and high strength non-ferrous alloys.

Mr. Ono (F)

**244. Electron Microscopy.** (Formerly numbered Engineering 244.) Prerequisite: Engineering 145A or equivalent. Essential features of the electron microscope, geometry of electron diffraction, kinematical and dynamical theories of electron

diffraction including anomalous absorption, applications of theory to defects in crystals, Moire fringes, direct lattice resolutions, Lorentz microscopy, laboratory applications of contrast theory.

Mr. Ardell (F, odd years)

**245C. Diffraction Methods in Science of Materials.** (Formerly numbered Engineering 245C.) Prerequisite: Engineering 145A or equivalent. Theory of the diffraction of waves (x-rays, electrons, and neutrons) in crystalline and non-crystalline materials. Long- and short-range order in crystals, structural effects of plastic deformation, solid-state transformations, arrangements of atoms in liquids and amorphous solids.

Mr. Wagner (F, even years)

**246A. Mechanical Properties of Nonmetallic Crystalline Solids.** (Formerly numbered Engineering 246A.) Prerequisite: Engineering 146A. Material and environmental factors affecting the mechanical properties of nonmetallic crystalline solids, including atomic bonding and structure, atomic-scale defects, microstructural features, residual stresses, temperature, stress state, strain rate, size, and surface conditions. Methods for evaluating mechanical properties.

Mr. Mackenzie, Mr. Sines (F, odd years)

**246B. Structure and Properties of Glass.** (Formerly numbered Engineering 246B.) Prerequisite: Engineering 146A. Structure of amorphous solids and glasses. Conditions of glass formation and theories of glass structure. Mechanical, electrical and optical properties of glass, and relationship to structure.

Mr. Mackenzie (Sp, odd years)

**\*1246D. Electronic and Optical Properties of Ceramics.** (Formerly numbered Engineering 246D.) Prerequisite: Engineering 146A. Principles governing electronic properties of ceramic single crystals and glasses and effects of processing and microstructure on these properties. Electronic conduction, ferroelectricity, and photochromism. Magnetic ceramics. Infrared, visible, and ultraviolet transmission. Unique application of ceramics.

Mr. Mackenzie

**247A. Solid State Reactions.** (Formerly numbered Engineering 247A.) Prerequisite: Engineering 142. Phenomenology and atomistic mechanisms of solid-state diffusion. Nucleation theory. Theory of diffusional growth processes, kinetics of diffusional transformations in solids. Precipitation in solids. Spinodal decomposition.

Mr. deFontaine (W)

**247C. Advanced Solidification.** (Formerly numbered Engineering 247C.) Prerequisite: Materials 247A or equivalent. Liquid state concept of constitutional supercooling; nucleation from the liquid phase; solute redistribution during liquid-solid transformation; fluid motion; interface morphology; eutectic growth; determination of phase diagrams; student reports on current topics in solidification.

Mr. Yue (F, even years)

**248A. Experimental Methods in Materials Synthesis.** (Formerly numbered Engineering 248A.) Prerequisite: a bachelor's degree in chemistry, physics, or engineering. Techniques used in materials synthesis temperature measurement, vacuum techniques, methods of heating and quenching, consolidation and refining of metals, crystal growth, thin film deposition and thick film deposition. Laboratory experiments and demonstrations carried out.

Mr. Bunshah (F)

## Mechanics and Structures

**250A. Foundations of Fluid Dynamics.** (Formerly numbered Engineering 250A.) Prerequisite: Engineering 150A or consent of the instructor. The course develops and applies the fundamental theorems of fluid dynamics. Ideal fluids, potential flow, vortex motion, and viscous flow are treated. The history of fluid dynamics is illustrated with problems drawn from mechanics, aerodynamics, and geophysics.

Mr. Cole, Mr. Crow (F)

**250B. Viscous and Turbulent Flows.** (Formerly numbered Engineering 250B.) Prerequisite: Engineering 150A or consent of the instructor. The course applies the fundamental principles of fluid dynamics to the study of fluid resistance. States of fluid motion are discussed in order of advancing Reynolds number; wakes, boundary layers, instability, transition, and turbulent shear flows.

Mr. Cole, Mr. Crow (W)

**250C. Compressible Flows.** (Formerly numbered Engineering 250C.) Prerequisite: Engineering 150A or 150B or consent of the instructor. Effects of compressibility in viscous and inviscid flows. Steady and unsteady inviscid subsonic and supersonic flows; method of characteristics; small disturbance theories (linearized and hypersonic). Shock dynamics.

Mr. Charwat, Mr. Cole (Sp)

**251A. Stratified and Rotating Fluids.** (Formerly numbered Engineering 251A.) Prerequisite: Engineering 150A or equivalent or consent of the instructor. Fundamentals of fluid flows with density variations or rotation, illustrated by examples with environmental, geophysical or technical importance. Linear and finite amplitude wave motion. Flow past bodies; blocking phenomena. Viscous effects. Instabilities. Turbulent shear flows, wakes, plumes, and gravity currents.

Mr. Kelly (F, even years)

**251B. Marine Hydrodynamics.** (Formerly numbered Engineering 251B.) Prerequisite: Engineering 150A or equivalent; or consent of the instructor; Engineering 193A-193B or equivalent. Basic hydrodynamics; small amplitude and shallow water theories; waves on beaches; ship waves; mathematical hydraulics; breaking of a dam.

Mr. Charwat, Mr. Cole (W, odd years)

**251C. Fluid Dynamics of Pollution.** (Formerly numbered Engineering 251C.) Prerequisite: Engineering 150A or consent of the instructor. (Not the same as 251C prior to Spring Quarter

1972.) The course is designed to introduce to engineers and/or scientists of various disciplines the fluid mechanical aspect of pollution problems. The lectures will discuss in depth the fluid dynamics of photochemical smog, oil slicks and pollution in waterways. Mr. Liu (Sp)

**252A. Stability of Fluid Motion.** (Formerly numbered Engineering 252A.) Prerequisite: Engineering 150A or equivalent or consent of the instructor. Mechanisms by which laminar flows can become unstable and lead to turbulence of secondary motions. Linear stability theory; thermal, centrifugal, and shear instabilities; boundary layer instability. Nonlinear aspects: sufficient criteria for stability, subcritical instabilities, supercritical states, transition to turbulence. Mr. Kelly (W, odd years)

**252B. Statistical Theory of Turbulence.** (Formerly numbered Engineering 252B.) Prerequisite: Engineering 150A or consent of the instructor. The course develops statistical methods of wide utility in engineering, then applies them to turbulent flows. Topics covered are stochastic processes, kinematics of turbulence, energy decay. Kolmogorov similarity, analytical theories, and origins of Reynolds stress. Mr. Crow, Mr. Meecham (Sp, odd years)

**252D. Engineering Magnetohydrodynamics.** (Formerly numbered Engineering 252D.) Prerequisite: Engineering 117A and Mechanics and Structures 250A or consent of the instructor. Continuum theory of the motion of a conducting fluid in a magnetic field; typical solutions for incompressible and compressible flow; elements of the theory of conductivity in a plasma; propulsion and power generation applications. Mr. Kelly, Mr. Meecham (Sp, even years)

**253A. Advanced Engineering Acoustics.** (Formerly numbered Engineering 253A.) Advanced studies in Engineering Acoustics includes: three-dimensional wave propagation; propagation in bounded media; Ray acoustics; attenuation mechanisms in fluids. Mr. Stern (F)

**253B. Fundamentals of Aeroacoustics.** (Formerly numbered Engineering 253B.) Prerequisite: Engineering 150A or consent of the instructor. Detailed discussion of plane waves, point sources. Nonlinearity, layered and moving media, multiple reflections. Inhomogeneous wave equation. Monopole, dipole, quadrupole source fields from scattering inhomogeneities and turbulence; Lighthill's theory; moving sources. Similarity methods. Selected detailed applications. Mr. Meecham (W)

**253C. Sound and Vibration.** (Formerly numbered Engineering 253C.) Prerequisite: Engineering 153A or 155A, or consent of the instructor. Theoretical analysis of the interaction of sound and structures; acoustic transmission through fluid layers and walls; structural wave propagation; multidimensional random processes using wave number and frequency space; response and radiation of infinite and finite structures; statistical energy analysis. Mr. Meecham (Sp, odd years)

**\*254A. Special Topics in Aerodynamics.** (Formerly numbered Engineering 254A.) Prerequisite: Engineering 150A-150B, 192A-192B-192C or equivalent or consent of the instructor. Special topics of current interest in advanced aerodynamics. Examples are transonic flow, hypersonic flow, sonic booms, and unsteady aerodynamics. Mr. Cole

**\*254B. Experimental Techniques in Fluid Mechanics.** (Formerly numbered Engineering 254B.) Prerequisites: one of Engineering 150AB or Mechanics and Structures 250AB. Course will study the design and operating ranges of wind tunnels, water tunnels and unsteady flow facilities. This will include laboratory demonstrations and field trips. Modern instrumentation techniques and typical fluids experiments will be studied and criticized. Mr. Barker, Mr. Charwat

**255A. Advanced Dynamics.** (Formerly numbered Engineering 255A.) Prerequisite: Engineering 155 and 169A, or consent of the instructor. Variational principles and Lagrange's equations. Kinematics and dynamics of rigid bodies; procession and nutation of spinning bodies. Mr. Mingori (F)

**255B. Mathematical Methods in Dynamics.** (Formerly numbered Engineering 255B.) Prerequisite: Mechanics and Structures 255A. (Not the same as 255B prior to Spring Quarter 1973.) Concepts of stability; state space interpretation; stability determination by simulation, linearization, and Liapunov's Direct Method; the Hamiltonian as a Liapunov function; nonautonomous systems; averaging and perturbation methods of nonlinear analysis; parametric excitation and nonlinear resonance. Application to mechanical systems. Mr. Mingori (W)

**256A. Mechanics of Deformable Solids.** (Formerly numbered Engineering 256A.) Prerequisite: Engineering 158A or consent of the instructor. Stress and strain tensors, indicial notation, compatibility conditions, equations of motion. Work and energy, uniqueness of solution and extremum principles. Constitutive laws of isotropic elastic solids, thermoelasticity, linear viscoelasticity and incremental plasticity. Mr. Lin, Mr. Muki (F)

**256B. Elasticity.** (Formerly numbered Engineering 256B.) (Not the same as course 256B prior to Winter Quarter 1974.) Prerequisite: Mechanics and Structures 256A, or consent of the instructor. Formulation of elastostatic problems; general, plane strain, plane stress. Reciprocal theorems and variational theorems. Airy's stress function and Papkovitch-Neuber solution. Fundamental singular solutions, stress concentration, thermal stresses, elastic contact, load transfer, St. Venant's principle and applications. Mr. Muki, Mr. Nelson (W)

**256C. Plasticity, Creep and Thermal Stresses.** (Formerly numbered Engineering 256C.) Prerequisites: Engineering 156A or 158A or consent of the instructor. Incremental plastic stress-strain relations. Stress-strain-time relations commonly used in structural analysis. Unified treatment of plastic strain, creep strain and thermal strain. Elastic-plastic and creep analyses of beams, columns, shafts, frames and plates. Mr. Lin (Sp, even years)

**256F. Analytical Fracture Mechanics.** (Formerly numbered Engineering 256F.) Prerequisites: Materials 243A; Engineering 156A, 158A or 166. Review of modern fracture mechanics, elementary stress analyses; analytical and numerical methods for calculation of crack tip stress intensity factors; engineering applications in stiffened structures, pressure vessels, plates and shells. Mr. Westmann (Sp, odd years)

**M257A. Elastic Wave Propagation I.** (Formerly numbered Engineering M257A.) (Same as Earth and Space Sciences M224A.) Prerequisite: Engineering 158A or 159A, or consent of the instructor. Elastic wave equation and elementary solutions; wave motions in elastic half-spaces; reflection and refraction of elastic waves; surface waves; vibrations of rods and plates. Mr. Mal (W, even years)

**M257B. Elastic Wave Propagation II.** (Formerly numbered Engineering M257B.) (Same as Earth and Space Sciences M224B.) Prerequisite: consent of the instructor. Wave propagation in layered media; Green's functions for various geometries; diffraction and scattering of elastic waves; attenuation; inversion problems. Mr. Mal (Sp, even years)

**258A. Continuum Mechanics I.** (Formerly numbered Engineering 258A.) Prerequisite: Mechanics and Structures 256A or 256B, Engineering 291A, or consent of the instructor. Bodies. Motions: referential, spatial and relative description; polar decomposition theorem. Cauchy-Green, stretching spin (vorticity), stress, and couple-stress tensor. Balance principles, mass, linear and angular momentum energy. Entropy production. Mr. Morgan (F)

**258B. Continuum Mechanics II.** (Formerly numbered Engineering 258B.) Prerequisite: Mechanics and Structures 258A. Principle of constitutive invariance. Material symmetries. Simple fluids and solids, sub-fluids, liquid crystals. Thermo dynamics of simple materials: the Clausius-Duhem inequality. Elastic (nonlinear) materials: problems of equilibrium, exact solutions. Contact with classical linear elasticity theory. Mr. Morgan (W)

**\*259A. Seminar on Advanced Topics in Fluid Mechanics.** (Formerly numbered Engineering 259A.) Prerequisite: consent of the instructor. To study advanced topics in fluid mechanics with intensive student participation, involving assignments in research problems leading to a term paper or an oral presentation and possible help from guest lecturers. Mr. Cole, Mr. Kelly

**\*259B. Seminar on Advanced Topics in Solid Mechanics.** (Formerly numbered Engineering 259B.) Prerequisite: consent of the instructor. Advanced study in various fields of solid mechanics on topics which may vary from term to term. Topics cover dynamics, elasticity, plasticity and stability of solids. Mr. Lin, Mr. Muki

**262A. Advanced Mechanisms and Mechanical Systems.** (Formerly numbered Engineering 262A.) Prerequisite: Engineering 162A. The kinematic analysis and synthesis of mechanisms and mechanical systems with special emphasis on use of modern analytical methods are considered. The use of computer techniques is discussed. A broad group of example systems are studied. Mr. Dubowsky (Sp, even years)

**263A. Dynamics and Control of Machines and Electromechanical Systems.** (Formerly numbered Engineering 263A.) Prerequisite: Engineering 163 or consent of the instructor. The analysis of complex machines and electromechanical systems. Emphasis of the performance and dynamic response of systems containing gears, elastic compliances, active feedback elements, and other complex components and subsystems. Both classical methods and modern computer-based techniques are applied. Mr. Dubowsky (Sp, odd years)

**263B. Vehicle Dynamics and Control.** (Formerly numbered Engineering 263B.) Prerequisite: Engineering 163; Mechanics and Structures 255B recommended. Application to a variety of vehicles of advanced methods of dynamics and motion stability analysis, incorporating both classical and modern control theory. Particular emphasis is given to space vehicles and ground transportation vehicles, with special attention to current topics in these fields. Mr. R.R. Allen (Sp, even years)

**264A. Theory of Plates and Shells.** (Formerly numbered Engineering 264A.) Prerequisite: Engineering 158A, 166, or consent of the instructor. Small and large deformation theories of thin plates; energy methods; free vibrations; membrane theory of shells; axisymmetric deformations of cylindrical and spherical shells including bending. Mr. Nelson, Mr. Roberts (W)

**264B. Advanced Theory of Shells.** (Formerly numbered Engineering 264B.) Prerequisite: Mechanics and Structures 264A or consent of the instructor. Elements of differential geometry for surfaces; fundamental field equations for small deformations of thin shells; applications to shells of revolution; free vibrations; selected current topics in shell theory research. Mr. Nelson, Mr. Roberts (Sp, odd years)

**265A. Advanced Structural Analysis.** (Formerly numbered Engineering 265A.) Prerequisite: Engineering 165B. Review of elasticity theory; theorem on virtual work, stationary value of

potential and complementary potential; Castigliano, Maxwell-Betti theorems; stiffness, flexibility matrices for truss, beam elements; matrix force and displacement analysis of trusses, frames; introduction to finite element methods. Mr. Nelson (F)

**265B. Finite Element Analysis of Structures.** (Formerly numbered Engineering 265B.) Prerequisites: Engineering 166; Mechanics and Structures 265A or consent of instructor. Direct energy formulations for deformable systems; solution methods for linear equations; analysis of structural systems with one dimensional elements; introduction to variational calculus; discrete element displacement, force, and mixed methods for membrane, plate, shell structures; instability effects. Mr. Dong, Mr. Schmit (W)

**265C. Nonlinear Structural Analysis.** (Formerly numbered Engineering 265C.) Prerequisite: Engineering 265B or consent of instructor. Classification of nonlinear effects; material nonlinearities; conservative, nonconservative material behavior; geometric nonlinearities, Lagrangian, Eulerian description of motion; finite element methods in geometrically nonlinear problems; postbuckling behavior of structures; solution of nonlinear equations; incremental, iterative, programming methods. Mr. Nelson (Sp, even years)

**266A. Stability of Structures I.** (Formerly numbered Engineering 266A.) Prerequisite: Engineering 165B, 166 or equivalent. Elastic buckling of bars. Different approaches to stability problems. Inelastic buckling of columns and beam columns. Columns and beam columns with linear, nonlinear creep. Combined torsional and flexural buckling of columns. Buckling of plates. Mr. Dong, Mr. Schmit (Sp)

**266B. Stability of Structures II.** (Formerly numbered Engineering 266B.) Prerequisite: Mechanics and Structures 266A. Continuation of the structural stability theory of course 266A, applied to rings, plates, and shells, dynamic stability of elements subject to transient and periodic forces. Mr. Dong, Mr. Nelson (W, odd years)

**267A. Optimum Structural Design.** (Formerly numbered Engineering 267A.) Prerequisite: Mechanics and Structures 265A. Synthesis of structural systems; analysis and design as optimization problems; techniques for synthesis and optimization; application to aerospace and civil structures. Mr. Felton, Mr. Schmit (W)

**267B. Advanced Topics in Optimum Structural Design.** (Formerly numbered Engineering 267B.) Prerequisite: Mechanics and Structures 267A. Recent advances in structural synthesis, hybrid methods and approximation concepts; optimum prestressing; optimum design of laminates; configuration and topological considerations; aeroelastic and dynamic response constraints; applications, and current research. Mr. Felton, Mr. Schmit (Sp, odd years)

**267C. Advanced Reinforced Concrete Design.** (Formerly numbered Engineering 267C.) Prerequisite: Engineering 167B. Ultimate strength and seismic design considerations. Concrete mechanical properties. Columns: stability, biaxial bending. Slab design. Slab yield line theory. Footings. Joint design. Bracing systems: diaphragms, trusses and shear walls. Braced and unbraced frame design for gravity, wind and earthquake loads. Mr. Selna (Sp)

**267E. Structural Loads and Safety for Civil Structures.** (Formerly numbered Engineering 267E.) Prerequisite: Engineering 167A or 167B or 167C, and 169A which may be taken concurrently. Concept of structural safety. Factors of safety and quantification of loads in building codes. Probability of failure and quantification of loads in probabilistic approaches to structural safety. Relationships between factor of safety and probability of failure. Mr. Hart (F, odd years)

**267S. Advanced Steel Design.** (Formerly numbered Engineering 267S.) Prerequisites: Engineering 167A. Working and ultimate load methods. Emphasis on seismic design. Brittle fracture, fatigue and local buckling. Compression members. Element design for complex loading including torsion. Braced and unbraced frames. Drift requirements. Steel frame design for gravity, wind and earthquake loads. Mr. Rea (W)

**268A. Experimental Structural Analysis.** (Formerly numbered Engineering 268A.) Prerequisite: consent of instructor. Study of modern techniques in experimental mechanics, including dimensional analysis, measurement theory and measurement techniques. Emphasis will be placed on techniques of modern optics, e.g., holography, Moire analysis, photoelasticity and speckle interferometry. Mr. Felton, Mr. Fournay (Sp, odd years)

**268B. Failure of Structural Systems.** (Formerly numbered Engineering 268B.) Prerequisite: Engineering 165B. Philosophy of structural safety. Principles of design for prevention of failure (other than buckling). Fatigue, brittle failure, delayed cracking, creep, design of efficient joints, environmental effects. Emphasis on current problems in actual structures. Mr. Sines (F, even years)

**269A. Dynamics of Structures.** (Formerly numbered Engineering 269A.) Prerequisite: Engineering 169A. Principles of dynamics. Determination of normal modes and frequencies by differential and integral equation solutions. Transient and steady state response. Emphasis on derivation and solution of governing equations using matrix formulation. Mr. Dong, Mr. Friedmann (F)

**269B. Advanced Dynamics of Structures.** (Formerly numbered Engineering 269B.) Prerequisite: Mechanics and Structures 265A,

269A. Analysis of linear and nonlinear response of structures to dynamic loadings. Stresses and deflections in structures. Structural damping and self-induced vibrations.  
Mr. Dong, Mr. Friedmann (W)

269C. **Introduction to Probabilistic Dynamics.** (Formerly numbered Engineering 269C.) Prerequisite: Engineering 169A. Response of structural and mechanical systems to random vibrations. Stationary and nonstationary excitations. Response of systems with random parameters. Discrete and continuous linear systems. Applications to earthquakes, wind sway of buildings, gust response, vibrations due to gearing inaccuracies, train vibrations.  
Mr. Friedmann, Mr. Hart (Sp, even years)

269D. **Aeroelastic Effects in Structures.** (Formerly numbered Engineering 269D.) Prerequisite: Mechanics and Structures 269A. Presentation of field of aeroelasticity from unified viewpoint applicable to flight structures, suspension bridges, buildings and other structures. Derivation of aeroelastic operators and unsteady airloads from governing variational principles. Flow induced instability and response of structural systems.  
Mr. Friedmann (Sp, odd years)

285A. **Shear Strength of Soil and Stability of Slopes.** (Formerly numbered Engineering 285A.) Prerequisite: Engineering 185A. Detailed study of fundamental concepts of shear strength of soils, strength determining factors, methods of strength measurement. Slope stability and stability analysis techniques using circular and noncircular failure surfaces, effect of side forces, total and effective stress analyses.  
Mr. Lade (F)

285B. **Foundation Engineering.** (Formerly numbered Engineering 285B.) Prerequisite: Engineering 185A; Mechanics and Structures 285A. Principles of foundation design including theory of consolidation, impeded drainage, stress distribution, settlement analysis, allowable bearing capacity for shallow foundations, piles and piers; laterally loaded piles.  
Mr. Lade (W)

285C. **Soil Dynamics.** (Formerly numbered Engineering 285C.) Prerequisites: Engineering 185A; Mechanics and Structures 285A. Design of foundation for vibrating equipment. Strength and stress-strain relations for soil under cyclic loading conditions. Fundamentals of earthquakes as applied to seismic response of earth structures and foundations. Design of embankments, retaining walls, and foundations for earthquake loading.  
The Staff, Mechanics and Structures Department (F, even years)

285D. **Earth Pressures and Earth Retaining Structures.** (Formerly numbered Engineering 285D.) Prerequisite: Engineering 185A; graduate standing. The basic concepts of the theory of earth pressures behind retaining structures is presented with special application to the design of retaining walls, bulkheads and excavation bracing; the effects of flexibility of bulk bulkheads, creep in soils and construction techniques are also discussed in detail.  
The Staff, Mechanics and Structures Department (F, odd years)

\*1285E. **Seminar on Advanced Topics in Soil Mechanics.** (Formerly numbered Engineering 285E.) Prerequisites: graduate standing in Engineering and consent of the instructor. Topics may vary from term to term to cover subjects as earth dam design, seepage through soils, consolidation, constitutive laws, finite difference and finite element methods with special application in soil mechanics, theories of elasticity and plasticity, and case histories.  
Mr. Lade, Mr. Westman

\*1285L. **Advanced Soil Mechanics Laboratory.** (Formerly numbered Engineering 285L.) Lecture, one hour; laboratory, six hours. Prerequisites: Engineering 185A, 185B; Mechanics and Structures 285A, 285B. Lectures and laboratory studies of advanced aspects of soil properties and their application to design. Permeability, consolidation, strength testing, pore water pressure measurements, advanced instrumentation and measurement techniques. Preparation of engineering reports.  
Mr. Lade

286A. **Earthquake Engineering.** (Formerly numbered Engineering 286A.) Prerequisites: Mechanics and Structures 256A or 265A or 285A or Engineering 169A. Engineering seismology: strong earthquake motion, microtremors, wave velocity and damping, induced vibrations, spectral analysis. Risk of earthquakes and fault breaks. Site evaluation. Structure-earth system response. Introduction to earthquake resistive design of buildings, bridges and dams. Theory and field experiments.  
Mr. Duke, Mr. Hart (W)

286B. **Structural Response to Ground Motions.** (Formerly numbered Engineering 286B.) Prerequisite: Mechanics and Structures 269A or consent of the instructor. Spectral analysis of ground motions; response, time and Fourier spectra. Response of structures to ground motions due to earthquakes and nuclear explosions. Computational methods to evaluate structural response. Response analysis including evaluation of contemporary design standards. Limitations due to idealizations.  
Mr. Duke, Mr. Rea (Sp)

M291A. **Analytical Methods of Engineering I.** (Formerly numbered Engineering 291A.) (Same as Systems Science M291A.) Prerequisite: Mathematics 131A and 132. Application of abstract mathematical methods to engineering problems. Review of elements of measure and integration,  $L_2$ -theory—linear spaces and operators. Eigenvalue problems. Introduction to Spectral theory—elementary distribution theory. Applications to problems in engineering.  
Mr. Morgan (F)

M291B. **Analytical Methods of Engineering II.** (Formerly numbered Engineering 291B.) (Same as System Science M291B.) Prerequisite: Mechanics and Structures M291A or Systems Science M291A or consent of the instructor. Application of modern mathematical methods to engineering problems. Review of spectral theory. Green's functions and eigenvalue problems for second order ordinary differential equations and their adjoints. Discrete and continuous spectra for ordinary and partial differential equations. Initial and boundary value problems.  
Mr. Cole (W)

M292A. **Asymptotic and Perturbation Methods I.** (Formerly numbered Engineering M292A.) (Same as Mathematics M274A.) Prerequisite: Engineering 192A or equivalent; Mathematics 132 or equivalent. The fundamental mathematics of asymptotic analysis, asymptotic expansions of Fourier integrals, method of stationary phase, Watson's lemma, method of steepest descent, uniform asymptotic expansions, elementary perturbation problems.  
Mr. Cole, Mr. Muki (F)

M292B. **Asymptotic and Perturbation Methods II.** (Formerly numbered Engineering M292B.) (Same as Mathematics M247B.) Prerequisite: Engineering 192A or equivalent; Mathematics 132 or equivalent. The fundamental mathematics of asymptotic analysis, limit process expansions, regular and singular perturbation problems, matching of asymptotic expansions, multiple scale methods, application to partial differential equations, near and far fields.  
Mr. Cole, Mr. Muki (Sp)

## System Science

201A-201ZZ. **Seminars in System Science.** Prerequisite: consent of the instructor, and additional prerequisites for each offering as announced in advance by the Department of System Science. Lectures, discussions, student presentations and projects in areas of current interest. Some sections are intended for advanced students in a particular field and for students undertaking doctoral dissertations in the field. All sections are graded S/U only, and may be repeated for credit.  
The Staff, System Science Department (F,W,Sp)

220A. **Stochastic Theory of Queuing Systems I.** (Formerly numbered Engineering 220A.) Prerequisite: Engineering M120C or consent of the instructor. Stochastic Point Processes. Topics in the theory of queues; the Imbedded Markov Chain Method; equilibrium results for multiple server queues; method of stages; applications to communication, control, and systems optimization, operations research.  
Mr. Balakrishnan, Mr. Miller, Mr. Rubin (W)

220B. **Stochastic Theory of Queuing Systems II.** (Formerly numbered Engineering 220B.) Prerequisite: System Science 220A. Advanced topics in queuing theory and systems; transient behavior, virtual waiting time and busy period, integral equation method, series of queues and priority queues. Inventories, communication, control and systems problems.  
Mr. Miller, Mr. Rubin (Sp)

220G. **Graphs and Network Flows.** (Formerly numbered Engineering 220G.) Prerequisite: Engineering 129L recommended or consent of instructor. Solution to analysis and synthesis problems which may be formulated as flow problems in capacity constrained (or cost constrained) networks. Tools of network flow theory are developed using graph theoretic methods and are applied to communication, transportation and transmission problems.  
Ms. Greibach, Mr. Jacobsen, Mr. Rubin (F,W)

221. **Linear Optimal Control.** (Formerly numbered Engineering 221.) Prerequisite: Engineering 128A; Engineering 122A or equivalent (may be taken concurrently) or consent of the instructor. An introduction to optimal control, with emphasis on detailed study of LQR, or linear regulators with quadratic cost criteria. Relationships to classical control system design.  
Mr. Levan, Mr. Wang (W,Sp)

222A. **Nonlinear Control.** (Formerly numbered Engineering 222A.) Prerequisite: System Science 221. Techniques for studying nonlinear control systems, with emphasis on their stability; Liapunov's direct method; input-output stability; Popov's method; linearization.  
Mr. Wang, Mr. Wiberg (F)

222B. **Stochastic Control.** (Formerly numbered Engineering 222B.) Prerequisite: Engineering 120B and System Science 221. Estimation and control of linear discrete-time and continuous-time stochastic systems; separation theorem and applications; Kalman filtering.  
Mr. Aoki, Mr. Balakrishnan, Mr. Mortensen (W)

222C. **Optimal Control.** (Formerly numbered Engineering 222C.) Prerequisite: System Science 221. Applications of variational methods. Pontryagin's maximum principle, dynamic programming and nonlinear programming to problems of optimal control theory and practical systems.  
Mr. Wang, Mr. Wiberg (Sp)

222EA-222EZ. **Topics in Control.** (Formerly numbered Engineering 222E.) Prerequisite: consent of the instructor, and additional prerequisites for each offering as announced in advance by the Department of System Science. Thorough treatment of one or more aspects of control theory and applications, such as: computational methods for optimal control; stability of distributed systems; identification, adaptive control; nonlinear filtering; differential games; applications to flight control, nuclear reactors, process control, biomedical problems. May be repeated for credit when no duplication exists.  
Mr. Aoki, Mr. Mortensen, Mr. Wiberg (F)

M222F. **Biological Control Systems.** (Formerly numbered Engineering M222F.) (Same as Anesthesiology M222.)

application of control theory to the modeling and analysis of biological control systems, such as the respiratory system, cardiovascular system and neuromuscular system. Emphasis on solving problems of current interest in biomedicine.  
Mr. Wiberg (Sp)

M222G. **Control and Coordination in Economics.** (Formerly numbered Engineering M222G.) (Same as Economics M240.) Prerequisite: graduate standing in Economics or Engineering, consent of the instructor. Appropriate mathematics course recommended. Stabilization policies, short- and long-run dynamics and stability analysis; decentralization, coordination in teams; certainty equivalence and separation theorems; stochastic and learning models, Bayesian approach to price and output rate adjustment.  
Mr. Aoki (W)

227A. **Signal Detection and Digital Communication.** (Formerly numbered Engineering 227A.) Prerequisite: Engineering 120B or consent of the instructor. Applications of statistical decision theory to signal detection in radar and communication; coherent and noncoherent detection of known signals in noise; detection of stochastic signals; binary and multiple-signal digital communication; sequential detection.  
Mr. Carlyle, Mr. Yao (F)

227B. **Information Theory and Coding.** (Formerly numbered Engineering 227B.) Prerequisite: System Science 227A. Information theory and coding from the viewpoint of digital communication systems, digital transmission and block coding; linear codes; convolutional codes, maximum likelihood decoding, and sequential decoding; ensemble error performance bounds of block and convolutional codes.  
Mr. Massey, Mr. Omura, (W)

227C. **Estimation and Filtering.** (Formerly numbered Engineering 227C.) Prerequisite: Engineering 120B; System Science 227A recommended. Methods of determination of optimal statistical estimators, applied to problems in stochastic processes, communication systems, analog modulation and demodulation.  
Mr. Balakrishnan, Mr. Mortensen, Mr. Yao (Sp)

227EA-227EZ. **Topics in Communication.** (Formerly numbered Engineering 227E.) Prerequisite: consent of the instructor, and additional prerequisites for each offering as announced in advance by the Department of System Science. Topics in one or more special aspects of communication systems, such as phase-coherent communication systems, optical channels, time-varying channels, feedback channels, broadcast channels, networks, coding and decoding techniques. May be repeated for credit when no duplication exists.  
Mr. Massey, Mr. Omura, Mr. Yao (F)

\*127F. **Algebraic Coding Theory.** (Formerly numbered Engineering 227F.) Prerequisite: System Science 227B or consent of the instructor. Fundamentals of linear or parity-check codes and decoding algorithms based on the algebraic theory of finite groups and fields; cyclic codes; Hamming; Reed-Muller, Bose-Chaudhuri-Hocquenghem, and Reed-Solomon codes, and corresponding decoding algorithms.  
Ms. Greibach, Mr. Massey, Mr. Omura

227G. **Rate Distortion Theory and Data Compression.** (Formerly numbered Engineering 227G.) Prerequisite: System Science 227B or consent of the instructor. Sources and distortion measures, rate distortion function and its evaluation for discrete and continuous sources, source coding theorems, block and tree source encoding techniques, and application to data compression. Student presentations of current research.  
Mr. Omura, Mr. Rubin, Mr. Yao (W)

228A. **Foundations of Continuous-State System Theory.** (Formerly numbered Engineering 228A.) Prerequisite: Engineering 128A and 291A. Fundamental characterization of "state" for systems described in input-output sets, and consequences; relation to system identification problems.  
Mr. Levan (W)

228B. **Computability and Complexity.** (Formerly numbered Engineering 228B.) Prerequisite: consent of the instructor; Engineering 128D or M123B or comparable background recommended. Concepts fundamental to the study of discrete information systems and theory of computing, with emphasis on: regular sets of strings, Turing-recognizable (recursively enumerable) sets, closure properties, machine characterizations, nondeterminism, decidability, unsolvable problems, "easy" and "hard" problems, PTIME/NPTIME.  
Mr. Carlyle, Ms. Friedman (Sp)

228CA-228CZ. **Topics in Algorithms and Computational Complexity.** (Formerly numbered Engineering 228C.) Prerequisite: consent of the instructor, and additional prerequisites for each offering as announced in advance by the Department of System Science. Topics selected from the design, analysis, and implementation of algorithms for numerical and combinatorial problems, details of computational practice in systems applications, theories of computational complexity, and evaluations or bounds for complexities of problems, functions, systems, and processes. May be repeated for credit when no duplication exists.  
Mr. Carlyle, Mr. Yao (F)

228D. **Discrete State Systems.** (Formerly numbered Engineering 228D.) Prerequisite: consent of the instructor; Engineering 128D recommended. Finite-state machines, transducers and their generalizations; regular expressions, transduction expressions, realizability; decomposition, synthesis, and design considerations; topics in state and system identification and faulty diagnosis, linear machines, probabilistic machines, applications in coding,

communication, computing, system modeling and simulation.

Mr. Carlyle, Mr. Massey (Sp)

**229A. Numerical Techniques in Systems Optimization.** (Formerly numbered Engineering 229A.) Prerequisite: Engineering 291A; Engineering 129A or System Science 272A or similar background recommended. Computational methods for constrained extrema of functionals.

Mr. Balakrishnan, Mr. Karplus (F)

**229B. Functional Analysis and Optimization.** (Formerly numbered Engineering 229B.) Prerequisite: Engineering 291A and consent of the instructor. Functional analysis approach to optimization problems for dynamic systems—lumped and distributed. Emphasis on computational aspects.

Mr. Balakrishnan, Mr. Fattorini, Mr. Levan (Sp)

**229C. Stochastic Differential Systems.** (Formerly numbered Engineering 229C.) Prerequisite: Engineering 120B, System Science M273B, Engineering 291A or equivalent, and consent of the instructor. Integration with respect to continuous-parameter martingales; Radon-Nikodym derivatives in metric spaces; applications to filtering and stochastic control.

Mr. Balakrishnan, Mr. Mortensen (Sp)

**229EA-229EZ. Topics in Optimization.** (Formerly numbered Engineering 229E.) Prerequisite: consent of the instructor, and additional prerequisites for each offering as announced in advance by the Department of System Science. Comprehensive treatment of one or more selected topics in such areas as system optimization theory and numerical techniques, system identification, stochastic systems, finite graphs, network flows, queueing systems, etc. May be repeated for credit when no duplication exists.

Mr. Balakrishnan, Mr. Jacobsen (F,W)

**229J-229K-229L. Public Systems Analysis.** (Formerly numbered Engineering 229J-229K-229L.) Prerequisite: graduate standing or consent of the instructor. Exploration of the relevance of system science methodologies to research activities directed toward improvements in the systems that provide education, health care, transportation, communication, housing, environmental quality, and public safety services in urban areas.

Mr. Chaiken, Mr. Rubin (229J F; 229K W; 229L Sp)

**272A. Nonlinear Programming.** (Formerly numbered Engineering 272A.) Prerequisite: Engineering 129A and 129L or equivalent, or consent of the instructor. Basic graduate course in nonlinear programming. Convex sets and functions and their basic properties. Kuhn-Tucker saddle-point, and nonlinear or conjugate duality theory. Development of algorithms and convergence theory.

Mr. Aoki, Mr. Jacobsen, Mr. Miller (F,Sp)

**272BA-272BZ. Topics in Operations Research.** (Formerly numbered Engineering 272B.) Prerequisite: consent of the instructor, and additional prerequisites for each offering as announced in advance by the Department of System Science. Treatment of one or more selected topics from areas such as: integer programming; combinatorial optimization; network synthesis; scheduling, routing, location and design problems; implementation considerations for mathematical programming algorithms; stochastic programming; applications in engineering, computer science, economics. May be repeated for credit when no duplication exists.

Mr. Miller, Mr. Rubin (W)

**272C. Optimization Methods for Large-Scale Systems.** (Formerly numbered Engineering 272C.) Prerequisite: Engineering 129L and System Science 272A or consent of the instructor. Theory and computational procedures for decomposing large-scale mathematical programming problems. Generalized linear programming, decomposition algorithms, column generation, economic implications. Application to stochastic programming and optimal control. Topics in nonconvex programming; minimizing concave functions on convex polyhedra, reverse convex programming.

Mr. Balakrishnan, Mr. Jacobsen (W)

**273A. Dynamic Programming.** (Formerly numbered Engineering 273A.) Prerequisite: Engineering 120A and 129L or equivalent. Introduction to the mathematical analysis of sequential decision processes. The finite horizon model in both the deterministic and stochastic cases. The finite state infinite horizon model. Methods of solution. Detailed examples from inventory theory, finance, and transportation systems.

Mr. Aoki, Mr. Miller (W)

**M273B. Probability Theory for Applications.** (Formerly numbered Engineering M273B.) (Same as Math M282A.) Prerequisite: Mathematics 131A, and either Engineering 120A or Mathematics 150A-150B or Mathematics 152A-152B; or consent of the instructor. This course is not open for credit to students with credit in Mathematics 275A. This course is designed to prepare students for graduate courses in statistics and applied stochastic processes. Summary of measure and integration as applicable to probability theory, distribution and characteristic functions, conditioning, independence, convergence of random variables, limit theorems.

Mr. Carlyle, Mr. Jacobsen, Mr. Rubin (F)

**273CA-273CZ. Topics in Stochastic Processes.** (Formerly numbered Engineering 273C.) Prerequisite: consent of the instructor, and additional prerequisites for each offering as announced in advance by the Department of System Science. Selected topics in such areas as: renewal processes; Markov decision processes; optimization in stochastic processes; applications in operations research, system analysis, inventory and replacement problems; random fields; point process theory with application to signal detection, queueing and communication networks. May be repeated for credit when no duplication exists.

Mr. Balakrishnan, Mr. Miller, Mr. Rubin (W,Sp)

**M284A. Context-Free Languages.** (Formerly numbered Engineering 228E.) (Same as Computer Science M284A.) Prerequisite: Computer Science M123B or Engineering M123B. Detailed study of context-free languages and their restrictions and generalizations, including: grammars, derivation trees, ambiguity, normal forms; operations, closure properties; pushdown acceptors; topics from parsing, deterministic machines and languages, LR (k) grammars, macro grammars. Ms. Friedman, Ms. Greibach (W)

**284XA-284XZ. Topics in Automata and Languages.** (Formerly numbered Engineering 228K.) Prerequisite: consent of the instructor, and additional prerequisites for each offering as announced in advance by the Department of System Science. Comprehensive treatment of one or more topics from areas such as: families of formal languages and operators; realtime computation; resource-bounded computation; theories of machines, grammars, data structures, programs, semantics; picture grammars and pattern recognition; biological models and development systems. May be repeated for credit when no duplication exists.

Mr. Carlyle, Ms. Greibach (F)

**M285A. Automatic Deduction: Theory and Applications.** (Formerly numbered Engineering 223D.) (Same as Computer Science M285A.) Prerequisite: some knowledge of logic list-processing languages and programming. Historical development of automatic deduction programs. The resolution principle. Program structure and efficiency strategies. Fundamental meta theorems. Rules of inference for equality and decision procedures. Formalization and axiomatization.

Mr. Goguen, Mr. Melkanoff (F)

**M287A. Theory of Computation.** (Formerly numbered Engineering 223F.) (Same as Computer Science M287A.) Prerequisite: some background in automata, formal languages, and computability (e.g., Computer Science M123B or Engineering M123B or System Science 228B or Mathematics 114), and consent of the instructor. Introduction to the theory of formalized flow charts and models of computer programs; emphasis on program and recursion schemata; problems of equivalence, optimization, correctness, translatability.

Ms. Greibach, Mr. Melkanoff (F)

**M291A. Analytical Methods of Engineering I.** (Formerly numbered Engineering 291A.) (Same as Mechanics and Structures M291A.) Prerequisite: Mathematics 131A and 132. Application of abstract mathematical methods to engineering problems. Review of elements of measure and integration,  $L_2$ -theory—linear spaces and operators. Eigenvalue problems. Introduction to Spectral theory—elementary distribution theory. Applications to problems in engineering.

Mr. Carlyle (F)

**M291B. Analytical Methods of Engineering II.** (Formerly numbered Engineering 291B.) (Same as Mechanics and Structures M291B.) Prerequisite: Mechanics and Structures M291A or System Science M291A or consent of the instructor. Application of modern mathematical methods to engineering problems. Review of spectral theory. Green's functions and eigenvalue problems for second order ordinary differential equations and their adjoints. Discrete and continuous spectra for ordinary and partial differential equations. Initial and boundary value problems.

Mr. Carlyle (W)

## INTERDISCIPLINARY COURSES

**291C. Integral Equations in Engineering.** Prerequisite: Mathematics 250B. Introduction to generalized function theory and Green's functions. Conversion of partial equations to integral equations and classification of integral equations. Solution to integral equations with degenerate kernels; discussions of successive approximations and Fredholm and Hilbert-Schmidt theory.

Mr. Westmann (Sp)

**298. Seminar in Engineering.** (½ to 1 course) Prerequisite: graduate status in engineering; consent of the instructor. Seminars may be organized in advanced technical fields. Course may be repeated provided no duplication exists. If appropriate, field trips may be arranged.

The Staff, the School of Engineering and Applied Science

**495. Teaching Assistant Training Seminar.** Prerequisite: graduate standing in Engineering and appointment as a Teaching Assistant. Seminar on communication of Engineering principles, concepts and methods, preparation, organization of material, presentation, use of visual aids, grading, advising and rapport with the students. To be graded on S/U basis only.

Mr. Willson (F)

**501. Cooperative Program.** (½ to 2 courses) Prerequisite: approval of UCLA Graduate Adviser and Graduate Dean. Approval of host campus Instructor, Department Chairman and Graduate Dean. The course is used to record the enrollment of UCLA students in courses taken under cooperative arrangements with neighboring institutions. To be graded S/U.

The Staff

**\*18470A-470D. The Engineer in the Technical Environment.** (¾ course each) Prerequisite: acceptance in the Engineering Executive Program. Theory and application of quantitative methods in the analysis and synthesis of engineering systems for the purpose of making management decisions. Optimization of outputs with respect to dollar costs, time, material, energy, information and manpower. Includes case studies and individual projects.

Mr. O'Neill

**\*18471A-471B-471C. The Engineer in the General Environment.** (¾, ¾, 1½ courses) Prerequisite: acceptance in the Engineering Executive Program. Influences of human relations, laws,

social sciences, humanities, and fine arts on the development and utilization of natural and human resources. The interaction of technology and society past, present and future. Change agents and resistance to change. 471B-471C is offered on an In Progress basis, which requires students to complete the full 2 quarter sequence, at the end of which time a grade is given for all quarters of work.

Mr. Campbell

**\*18472A-472B-472C-472D. The Engineer in the Business Environment.** (¾, ¾, ¾, 1½ courses) Prerequisite: acceptance in the Engineering Executive Program. The language of business for the engineering executive. Accounting, finance, business economics, business law, and marketing. Laboratory in organization and management problem-solving. Analysis of actual business problems of the firm, the community, and the nation, provided through cooperation and participation with California business corporations and government agencies.

Mr. Ruskin

**\*18473A-473B. Analysis and Synthesis of a Large-Scale System.** (¾ course each) Prerequisite: acceptance in the Engineering Executive Program. Credit to be given only upon completion of 473B. A problem area of modern industry or government is selected as a class project and its solution is synthesized using quantitative tools and methods. The project also serves as a laboratory in organization for a goal oriented technical group. IP grading.

Mr. Campbell

**596. Directed Individual or Tutorial Studies.** (½ to 2 courses) Prerequisite: graduate status in engineering; consent of the instructor. Petition forms to request enrollment may be obtained from the Assistant Dean, Graduate Studies. Supervised investigation of advanced technical problems. To be graded on a S/U basis.

The Staff (F,W,Sp)

**597A. Preparation for M.S. Comprehensive Examination.** (½ to 3 courses) Prerequisite: graduate status in engineering; consent of the instructor. Petition forms to request enrollment may be obtained from the Assistant Dean, Graduate Studies, Reading and preparation for M.S. comprehensive examination. To be graded on a S/U basis.

The Staff (F,W,Sp)

**597B. Preparation for Ph.D. Preliminary Examinations.** (½ to 4 courses) Prerequisite: graduate status in engineering; consent of the instructor. Petition forms to request enrollment may be obtained from the Assistant Dean, Graduate Studies. To be graded on a S/U basis.

The Staff (F,W,Sp)

**597C. Preparation for Ph.D. Oral Qualifying Examination.** (½ to 4 courses) Prerequisite: graduate status in engineering; consent of the instructor. Petition forms to request enrollment may be obtained from the Assistant Dean, Graduate Studies. Preparation for Oral Qualifying Examination, including preliminary research on dissertation. To be graded on a S/U basis.

The Staff (F,W,Sp)

**598. Research for and Preparation of the Master's Thesis.** (½ to 3 courses) Prerequisite: graduate status in engineering; consent of the instructor. Petition forms to request enrollment may be obtained from the Assistant Dean, Graduate Studies. Supervised independent research for M.S. candidates, including thesis prospectus. To be graded on a S/U basis.

The Staff (F,W,Sp)

**599. Research for and Preparation of the Doctoral Dissertation.** (½ to 4 courses) Prerequisite: graduate status in engineering; consent of the instructor. Usually taken after student has been advanced to candidacy. Petition forms to request enrollment may be obtained from the Assistant Dean, Graduate Studies. To be graded on a S/U basis.

The Staff (F,W,Sp)

## ENGLISH

(Department Office, 2225 Rolfe Hall)

Calvin Bernard Bedient, Ph.D., *Professor of English*

Vinton A. Dearing, Ph.D., *Professor of English*

Robert William Dent, Ph.D., *Professor of English*

Robert A. Georges, Ph.D., *Professor of English*

Gerald Jay Goldberg, Ph.D., *Professor of English*

George Robert Guffey, Ph.D., *Professor of English*

Charles Bennett Gullans, Ph.D., *Professor of English*

Paul Alfred Jorgensen, Ph.D., *Professor of English*

Henry Ansgar Kelly, Ph.D., *Professor of English and of Medieval-Renaissance Studies*

Jascha Messer, Ph.D., *Professor of English*

Robert Starr Kinsman, Ph.D., *Professor of English*

Murray Krieger, Ph.D., *University Professor of English*

Richard Alan Lanham, Ph.D., *Professor of English*

Richard D. Lehan, Ph.D., *Professor of English*

Blake Reynolds Nevius, Ph.D., *Professor of English*

Maximilian Erwin Novak, D.Phil., Ph.D., *Professor of English*

James Emerson Phillips, Jr., Ph.D., *Professor of English*

Joseph N. Riddel, Ph.D., *Professor of English*

Florence Ridley, Ph.D., *Professor of English*

Alan Henry Roper, Ph.D., *Professor of English*

George S. Rousseau, Ph.D., *Professor of English and Eighteenth-Century Studies*

William David Schaefer, Ph.D., *Professor of English*

Paul Roland Sellin, Ph.D., *Professor of English*

Georg Bernhard Tennyson, Ph.D., *Professor of English*

Peter Larsen Thorslev, Jr., Ph.D., *Professor of English (Chairman of the Department)*

Alexander Welsh, Ph.D., *Professor of English*.  
 D.K. Wilgus, Ph.D., *Professor of English and Anglo-American Folklore*.  
 Robert Martin Adams, Ph.D., *Emeritus Professor of English*.  
 Robert Paul Falk, Ph.D., *Emeritus Professor of English*.  
 John Jenkins Espey, B.Litt., M.A., (Oxon.), *Emeritus Professor of English*.  
 Charles V. Hartung, Ph.D., *Emeritus Professor of English*.  
 Leon Howard, Ph.D., L.H.D., *Emeritus Professor of English*.  
 Claude Jones, Ph.D., *Emeritus Professor of English*.  
 Alfred Edwin Longueil, Ph.D., *Emeritus Professor of English*.  
 Ada Blanche Nisbet, Ph.D., *Emeritus Professor of English*.  
 Franklin Prescott Rolfe, Ph.D., *Emeritus Professor of English*.  
 Hugh Thomas Swedenberg, Jr., Ph.D., Litt.D., *Emeritus Professor of English*.  
 Michael J.B. Allen, Ph.D., *Associate Professor of English*.  
 Walter Eldon Anderson, Ph.D., *Associate Professor of English*.  
 Charles Linwood Batten, Jr., Ph.D., *Associate Professor of English*.  
 Charles Ashton Berst, Ph.D., *Associate Professor of English*.  
 A. R. Braunnmuller, Ph.D., *Associate Professor of English*.  
 Frederick Lorrain Burwick, Ph.D., *Associate Professor of English*.  
 Daniel G. Calder, Ph.D., *Associate Professor of English*.  
 Edward Ignatius Condren, Ph.D., *Associate Professor of English and of Medieval Studies*.  
 Richard Keith Cross, Ph.D., *Associate Professor of English*.  
 Patrick K. Ford, Ph.D., *Associate Professor of English and of Celtic Studies*.  
 Ronald E. Freeman, Ph.D., *Associate Professor of English*.  
 Christopher Waldo Grose, Ph.D., *Associate Professor of English*.  
 Gordon L. Kipling, Ph.D., *Associate Professor of English*.  
 G. Jackson Kolb, II, Ph.D., *Associate Professor of English*.  
 Kenneth Robert Lincoln, Ph.D., *Associate Professor of English*.  
 Robert M. Maniquis, Ph.D., *Associate Professor of English*.  
 Paul Douglas Sheats, Ph.D., *Associate Professor of English*.  
 Thomas Richard Wortham, Ph.D., *Associate Professor of English*.  
 Ruth B. Yeazell, Ph.D., *Associate Professor of English*.  
 Stephen Irwin Yenser, Ph.D., *Associate Professor of English*.  
 Ruth E. Armentrout, Ph.D., *Assistant Professor of English*.  
 James Edward Goodwin, Ph.D., *Assistant Professor of English*.  
 Robert H. Hirst, Ph.D., *Assistant Professor of English*.  
 Albert David Hutter, Ph.D., *Assistant Professor of English*.  
 Roney T. Keys, Ph.D., *Assistant Professor of English*.  
 Joseph F. Nagy, Ph.D., *Assistant Professor of English*.  
 Barbara Lee Packer, Ph.D., *Assistant Professor of English*.  
 Raymond Arthur Paredes, Ph.D., *Assistant Professor of English*.  
 Joyce Elaine Peterson, Ph.D., *Assistant Professor of English*.  
 Karen Elizabeth Rowe, Ph.D., *Assistant Professor of English*.  
 Mary E. Taylor, Ph.D., *Assistant Professor of English*.  
 Donald L. Weber, Ph.D., *Assistant Professor of English*.

Jerome Cushman, A.B., B.S.L.S., *Senior Lecturer, Literature for Children and Adolescents*.  
 Everett L. Jones, M.A., *Senior Lecturer in English*.  
 David Stuart Rodes, Ph.D., *Lecturer in English*.  
 Peter Ladefoged, Ph.D., *Professor of Phonetics*.  
 Robert Paul Stockwell, Ph.D., *Professor of Linguistics*.

## ENGLISH AS A SECOND LANGUAGE

(Section Office, 3303 Rolfe Hall)

J. Donald Bowen, Ph.D., *Professor of English (Acting Vice Chairman of the Department)*.  
 Russell Norman Campbell, Ph.D., *Professor of English*.  
 John Frederick Povey, Ph.D., *Professor of English*.  
 Clifford Holmes Prator, Ph.D., *Professor of English*.  
 Lois McIntosh, Ph.D., *Emeritus Professor of English*.  
 Marianne Ceke-Murcia, Ph.D., *Associate Professor of English*.  
 Evelyn R. Hatch, Ph.D., *Associate Professor of English*.  
 Earl James Rand, Ph.D., *Associate Professor of English*.  
 Diane Larsen Freeman, Ph.D., *Assistant Professor of English*.  
 John H. Schumann, Ph.D., *Assistant Professor of English*.  
 Jose L. Galvan, ABD, *Acting Assistant Professor of English*.  
 Frances B. Hinofotis, Ph.D., *Acting Assistant Professor of English*.

Peter Ladefoged, Ph.D., *Professor of Phonetics*.  
 Arlene I. Moskowitz, Ph.D., *Assistant Professor of Linguistics*.

Students must have passed Subject A (either examination or course) before taking any course in English. For regulations concerning Subject A, see Index.

### Preparation for the Major

English 4 or 20, 10A, 10B, 10C taken in sequence, each course being a prerequisite for the next course; completion of English 4 or 20 satisfies the College of Letters and Science "D" requirement in English composition.

*Extra-Departmental Requirement for Foreign Literature or Foreign Language Background.* All English majors must have completed either (1) the fifth course or its equivalent in any one foreign language or (2) any combination of five courses in foreign language and foreign literature, including Foreign Literature in Translation and Humanities (see Courses of Instruction). (High school language courses count toward this requirement in number 1 but not number 2.) These courses may be taken P/NP.

### The Major

English 141A (Chaucer), 142A and 142B (Shakespeare), 143

(Milton), at least one "Specialized Study" course from the 180 series, and a minimum of seven additional upper division English courses, with the provision that (1) at least five of the seven courses must be chosen from courses numbered 150-190; (2) at least one of the seven courses must be in literature before 1800 (150 series).

All majors are encouraged to choose additional electives from the courses numbered 140 through 190. English 140 (Criticism) is especially recommended for students intending graduate work in literature.

### Special Programs

The Department offers special programs in American Studies and General Literature, for both of which the regular "Preparation for the Major" courses as well as the departmental foreign language requirement apply. Because of the specialized nature of these programs, students planning to do graduate work in English should consult the departmental adviser before selecting either of them.

*American Studies:* This program consists of nine upper division English courses and six related upper division courses taken in other departments. The nine English courses must include 142A-142B (Shakespeare); three courses chosen from 170, 171, 172, 173, 174 (American Literature); one course pertaining to "American Studies" chosen from the 180 series (Specialized Studies) or the 190 offerings (Literature and Society), taken preferably in the senior year. The remaining three English courses and the six upper division courses from other departments must be chosen in consultation with the departmental adviser. A complete listing of acceptable courses arranged into possible emphases under this program (American Civilization, Popular Culture, Folklore, Ethnic Studies), as well as suggestions for fulfilling the College "Breadth Requirements," may be obtained from the Department of English (Rolfe Hall 2225).

*General Literature:* This program consists of nine upper division courses in English or American Literature, and six upper division courses in Foreign Literatures (at least one of which must be taught in the original language, not a study of works in translation). The nine English courses must include course 142A-142B (Shakespeare); 141A (Chaucer) or 143 (Milton); at least one course from the 150 series, one from the 160 series, and one from the 170 series; and three electives chosen from courses numbered 140 through 190 (those intending graduate study in literature are especially encouraged to take English 140). A listing of acceptable courses arranged into possible emphases under this program may be obtained from the Department of English (Rolfe Hall 2225).

### Creative Writing Major

Students in this major must satisfy all requirements listed under "Preparation for the Major" including the foreign language requirement. This major consists of course 142A-142B (Shakespeare), and a minimum of ten additional upper division English courses: three Creative Writing courses from the 133-135 series, taken in a single genre (poetry, short story, or drama); three literature courses paralleling the creative writing specialization (of these required three genre courses paralleling the 133-135 series, the following pairs are recommended: 100A and 101B for 133, 100C and 101C for 134, and 100B and 101D for 135) and four electives chosen from courses numbered 121, 122, and 140 through 190. Students will be admitted to this program only upon recommendation of their instructor after completing 133A or 134A or 135A. Students planning on choosing this major are recommended to take English 20; for further details see the Department of English (Rolfe Hall 2225).

### Major for Foreign Students

The Department offers a special major in English open optionally to bona fide foreign students whose mother tongue is a language other than English. As preparation for this major, the requirements are: English 3, 4 or 20, 10A, 10B, 10C in sequence. The following 12 courses are required for the major itself: English 103J, 106J, and 109J; two courses in the 100 series: 122K, 142A and 142B; and four additional courses from those numbered 140-199. The student may fulfill the department foreign language requirement with his native language. Students who complete this major and wish to pursue graduate study should consult with the department counselor about programs of study and requirements for admission.

### Teaching Credential Candidates

*Teaching of English.* Students wishing to obtain a teaching credential should declare this intention at the beginning of their Junior Year and seek the advice of the departmental adviser in planning a coherent program. The Department requires 120A or 120B or 120C and 130 as part of, or in addition to, the Major. Candidates shall elect one course in Drama (100B, 135A-135B-135C, 152, 156, 167) as part of the major; they must also complete 300 before they can be certified to begin student teaching. Students are encouraged to choose additional courses in language and in Children's Literature, Literature for Young Adults, American Literature and Literature for Minorities as some of their electives. Note: students who enter the School of Education seeking a credential to teach English must, before beginning their required practice teaching assignment, be certified by the Department of English as prepared to teach this subject; the Department will not certify any student who has not completed 120A or 120B or 120C, 130 and 300. For additional

information on courses leading to the teaching credential, consult the Graduate School of Education (Moore Hall 201) and the Department of English (Rolfe Hall 2225).

### The Honors Course in English

Majors with a 3.25 overall grade-point average and a 3.5 grade-point average in English courses are encouraged to enter the honors program in English. This program consists of two courses from the 180 series of Specialized Study courses and one Special Study tutorial (English 199H). Students are advised to apply to the program during the second quarter of their junior year. Departmental honors will be awarded only to students who achieve at graduation at least 3.25 overall and 3.5 in upper division English courses.

### Requirements for Admission to Graduate Courses

The requirement is ordinarily a distinguished undergraduate record in English. Prospective students are required to take the Graduate Record Examination (both Aptitude and Advanced Test in Literature) and to have their scores reported to the Department of English. A graduate student in another department who wishes to take a graduate course in English must secure the permission of the professor teaching the course.

### Requirements for the Master's Degree

1. For general requirements, see the statement of the Graduate Division (above). Two M.A. programs are offered. Plan A is designed specifically for students planning to teach English in two-year colleges. Plan B is intended for students who seek more comprehensive study of literature at the graduate level. (Neither plan is preliminary to the doctoral program, and students seeking the Ph.D. should apply for that program.) The Department follows the Comprehensive Examination Plan (see p. 00 above); examinations for the M.A. are given three times a year.

2. *Foreign Language.* Students may fulfill the language requirement by demonstrating a reading knowledge of any foreign language. If required, the reading test should be taken at the beginning of the first quarter of residence, but in any event no later than the mid-term of the quarter in which all degree requirements in either Plan A or Plan B are to be completed. For further details consult the Department.

3. *Plan A.* This M.A. program includes four subject areas suitable to differing teaching interests. All students must complete at least nine courses, including 120B; 140 or 201; and 270A-270B. Additional course requirements in each of the four areas are as follows:

(a) *Literature:* three courses numbered 220 to 259, at least one of which must be a seminar (240-259); elective in English; unrestricted elective.

(b) *Language:* two courses numbered 220 to 259; 121 or 122; 213; 240, 241, or 242.

(c) *Creative Writing:* two courses numbered 220 to 259; three courses selected from 133-135.

(d) *English for Minority Groups:* two courses numbered 220 to 259; 123; 272 or 274; unrestricted elective. (122 may be substituted for 120B.)

In all areas *except* Creative Writing six of the nine courses must be at the graduate level (200 series); in the Creative Writing area five of the nine courses must be at the graduate level. For recommended electives in all areas, consult the Department.

*Plan B.* This M.A. program requires completion of nine courses, all at the graduate level. Among these the student must include: 201 or 259; one course from the philology series (210-213, 240-242); and two courses from contiguous periods in the historical series (220-228, 244-255). One of the nine courses must be a seminar (240-259). (Although not required, the student is encouraged to take from one to three literature courses outside the department, these not to count toward the nine course requirement except by special petition.)

4. *Comprehensive Examination.* Upon the completion of all requirements, the student will be given a comprehensive oral examination of no less than one hour designed to test his intellectual grasp of the major literary documents presented to him during his graduate study and his ability to analyze a work of literature.

(The M.A. degree is also granted to eligible students who have been admitted to the doctoral program and have passed the First Qualifying Examination. See Requirements for the Doctor's Degree, below.)

### Statute of Limitations for Master's Candidates

Students must conform to the following schedule in proceeding toward the M.A. degree:

1. A maximum of three and one quarter calendar years from the time of entrance to taking the oral examination:
2. A maximum of fifteen courses before taking the oral examination.

### Requirements for the Doctor's Degree

1. For general requirements, see the statement of the Graduate Division (above). The Ph.D. is primarily a research degree and the Department's program is designed for students intending to teach in college and universities. Qualifying examinations are given twice a year.



2. *Foreign Language.* In addition to fulfilling the departmental philology requirements, students will normally be expected to have a reading knowledge of two foreign languages (e.g., French, German, Italian, Spanish, Greek, or Latin). As an option to the two-language requirement, students may elect to pursue study of a single language in order to attain a superior proficiency. For details about this option and the possibility of offering a second language other than those named above, the student should consult Department advisers. One of the two languages must be satisfied before the student is admitted to the First Qualifying Examination, and the second before the student is advanced to candidacy.

3. *Departmental Program. First Stage:* In the first stage, which leads to the master's degree, the student must take a minimum of nine English courses from the 200 series. Two courses, 200 and 210, are required. Students entering with an M.A. in English are presumed to have fulfilled the nine-course requirement, but must take 200 or its equivalent.

Upon successful completion of these courses (and the reading test in one foreign language), the student will take the First Qualifying Examination. This consists of four written examinations of four hours each. One of these may be taken in a genre (novel, drama, folklore, or literary criticism) or an alternate field (proposed by the student and approved by the Department's Graduate Committee). At least three of the examinations must be taken in any of the following chronological periods: the Middle Ages; the Renaissance; the Earlier Seventeenth Century; the Restoration-Eighteenth Century; the Romantic period; the Victorian period; American Literature to 1828; American Literature: 1828-1900; and either Twentieth-Century American Literature or Twentieth-Century British Literature. No student may write on more than two American fields, and those who elect a genre or literary criticism field may choose only one field in American literature.

**Breadth Requirement.** With the exception of courses 200 and 210, there are no specific course requirements in this first stage of the program, but students must take at least one course (200-259) in each of two chronological periods not chosen for the qualifying examination. These courses may be taken either before or after the First Qualifying Examination, but in no case later than the second quarter in residence following that examination. In lieu of taking these two courses, a student may request an oral examination in any two chronological fields not chosen for the qualifying examination; this oral must be passed within six months after the examination.

**Philology requirement.** In addition to English 210, the student is required to take two other courses from those numbered 211-215 and 240-242. This so-called philology requirement may be taken at any time during the first or second stage of the program, but before the Second Qualifying Exam. Students with an interest in the fields of Anglo-Saxon or Medieval literature should take the introductory courses in this area (211-215) as early as possible.

4. *Departmental Program. The Candidate Stage:* In this stage of the program the student must take six courses from the 200 series, and a minimum of three English seminars. The student is encouraged to take as many seminars as possible (any graduate seminar may be repeated for credit) as well as suitable courses in other departments, and at some time before the Second Qualifying Examination he must have taken one seminar in some field other than that of his specialization. When through course work and independent study the student is deemed sufficiently well prepared, and after he has passed the test in a second foreign language, he takes the Second Qualifying Examination. The Second Qualifying Examination consists of an oral examination of no less than two hours (and probably more) in length, to be administered by a committee of five, including a chairman and two other members from the department, and two members from outside the department. (The student should seek out a dissertation director as soon as possible after passing the First Qualifying Examination, so that his preparation will not be prolonged unnecessarily.) The examination will be based on a dissertation prospectus (a substantially researched document approved by the committee chairman) which must be made available to all members of the committee at least one week before the scheduled examination. The student must also submit, with the chairman's approval, a list of at least ten significant scholarly or critical works that bear on his field of specialization and are directly relevant to the method or subject matter of his dissertation. The chairman of the committee is responsible for defining, in conjunction with the candidate, the degree of comprehensiveness (the related literature) for which the student is answerable during the examination.

5. *Departmental Program. The Dissertation Stage:* When a student has passed the Second Qualifying Examination, he is advanced to Candidacy and proceeds with the writing of the dissertation which must be approved by the three Certifying Members of his Doctoral Committee (two from the English Department, one from another department). A final oral examination may also be required.

#### Statute of Limitations for Doctoral Candidates

Students must conform to the following schedule in proceeding toward the Ph.D.:

1. A maximum of two calendar years from time of entrance to taking the Part I qualifying examination.
2. A maximum of two calendar years between Part I and Part II qualifying examinations.

3. A maximum of three calendar years from advancement to candidacy to completion of the degree.

#### Lower Division Courses

\*1. **Introduction to Uses of Language in Exposition.** (0) A course designed to develop the proficiency in expository writing required for successful University work. Lectures, readings, class discussions and writing assignments focusing on the nature and function of language.

3. **English Composition Rhetoric and Language.** (Formerly numbered 1A-1B.) Prerequisite: completion of English 1 (Subject A) requirement. Principles and methods of exposition and argumentation, with readings and analysis of passages of prose. Topics vary: special interest sections are set aside in the class schedule for social and life sciences, and fine arts students. Other sections concentrate on literature or on rhetoric and stylistics. Minimum of six 3-5 page essays.

4. **Critical Reading and Writing.** Prerequisite: either course 3 or its equivalent or proficiency demonstrated by examination (see Department counselor for details). An introduction to literary analysis, with close reading and carefully written exposition of selections from one or more of the principal modes of literature: poetry, prose fiction, and drama. Minimum of six papers.

10A. **English Literature to 1660.** Prerequisite: course 2. A study of selected works of the major writers of the period, beginning with selections from Old English poetry, and including Chaucer, Spenser, Shakespeare, Donne, and Milton. Minimum of three 3-5 page papers or equivalent.

10B. **English Literature, 1660-1832.** Prerequisite: course 10A. A study of selected works by the major writers of the period, including Dryden, Pope, Swift, Wordsworth, and Keats. Minimum of three 3-5 page papers or equivalent.

10C. **English Literature, 1832 to the Present.** Prerequisite: course 10B. A study of selected works by the major writers of the period, including Tennyson, Arnold, Browning, Yeats, Joyce, and Eliot. Minimum of three 3-5 page papers or equivalent.

20. **Introduction to Creative Writing.** Prerequisites: either course 3 (formerly numbered 1A or 1B) or its equivalent or proficiency demonstrated by examination (see Department counselor for details). In addition, student must obtain departmental consent, following submission of samples of creative or expository writing to a screening committee. A course designed to introduce the fundamentals of creative writing. Each class will focus on either poetry, fiction, or drama depending upon the wishes of the instructor(s) during any given quarter. Readings from assigned texts and weekly writing assignments. May be substituted in lieu of course 4 (formerly numbered 2).

70. **Major British Authors before 1800.** (Formerly numbered 100.) Not open for credit to English majors or students who have had 10A or 10B. A study of selected masterpieces of English literature before 1800, including the works of such writers as Chaucer, Shakespeare, Milton, Swift, Pope, Johnson, and Fielding.

75. **Major British Authors, 1800 to the Present.** (Formerly numbered 101.) Not open for credit to English majors or students who have had 10B or 10C. A study of selected masterpieces of English literature, 1800 to the present, including such writers as Wordsworth, Coleridge, Keats, Dickens, Tennyson, Browning, Arnold, Yeats, and T.S. Eliot.

80. **Major American Authors.** (Formerly numbered 102.) Not open for credit to English majors or students who have had any courses in the 170 series. An introduction to the chief American men of letters, with emphasis upon the poetry, nonnarrative prose, and short fiction of such writers as Poe, Emerson, Whitman, Twain, Frost, and Hemingway.

85. **The American Novel.** (Formerly numbered 104.) Not open for credit to English majors or students who have had former 104. The development, with emphasis on form, of the American novel from its beginning to the present day. Included are works of such novelists as Hawthorne, James, Fitzgerald, and Faulkner.

90. **Shakespeare.** (Formerly numbered 103.) Not open for credit to English majors or students who have had 142A or 142B. A survey of Shakespeare's plays, including comedies, histories, and tragedies selected to represent Shakespeare's breadth, artistic progress, and total dramatic achievement.

#### Upper Division Courses

Subject A is prerequisite for courses 100-123, except 104, 105, 106. Subject A and English 4 or 20 are prerequisites for courses 130-135; consent of the instructor following submission of samples of creative work is required for enrollment in courses 133-135. Subject A, English 4 or 20, and English 10A-10B-10C are prerequisite for courses 140-199.

100A. **Introduction to Poetry.** (Formerly 110C.) Prerequisite: Subject A. (Not open to students who have had former English 110C.) A study of critical issues (metrics, diction, figurative language, symbolism, irony and ambiguity, form and structure) and aesthetic issues, including evaluative criteria; followed by the close critical analysis of a selection of representative poems. This course is particularly recommended for teaching credential candidates.

100B. **Introduction to Drama.** (Formerly 110B.) Prerequisite: Subject A. (Not open to students who have had former English 110B.) Examination of representative plays: readings may range from Greek to modern drama. Emphasis on critical approaches to the dramatic text; study of issues such as plot construction, characterization, special uses of language in drama, methods of evaluation.

100C. **Introduction to Fiction.** (Formerly 110A.) Prerequisite: Subject A. (Not open to students who have had former 110A.) An introduction to prose narrative, its techniques and forms. Analysis of short and long narratives, and of critical issues such as plot, characterization, setting, narrative voice, realistic and non-realistic forms.

100D. **Introduction to Special Genres.** Prerequisite: Subject A. A study of a particular genre or sub-genre, such as Satire, Biography, Autobiography, Detective Fiction, or Science Fiction.

Mr. Guffey, Mr. Thorslev

101A. **Recent British Literature.** (Formerly 116C.) Prerequisite: Subject A. (Not open to students who have had former 116C.) Recent trends and developments in British fiction and poetry since World War II.

Mr. Keys

101B. **Recent American Poetry.** (Formerly 116B.) Prerequisite: Subject A. (Not open to students who have had former 116B.) Recent trends and developments in American poetry since World War II.

Mr. Kessler

101C. **Recent American Fiction.** (Formerly 116A.) Prerequisite: Subject A. (Not open to students who have had former 116A.) Recent trends and developments in American fiction since World War II.

Mr. Goldberg

101D. **Recent American Drama.** Prerequisite: Subject A. Recent trends and developments in American drama since World War II.

Mr. Best

102. **The Short Story in England and America.** (Formerly 117.) (Not open to students who have had former 117.) A historical survey of the short story as a genre from the eighteenth century to the present day.

Mr. Anderson

103. **Jewish-American Fiction.** Prerequisite: Subject A. The study of the fiction of Jewish writers in America such as Bellow, Malamud, and Roth dealing specifically with the encounter between Jewish ethical ideals and social values and the contemporary environment.

Mr. Novak

104. **Afro-American Literature and Black Studies.** (Formerly 118.) The Black experience as reflected in the development of Black American literature and/or the portrayal of Blacks in relationship to salient cultural and social conditions. It may explore recurrent and characteristic attitudes, themes, techniques, and genres.

Mr. Keys

105. **The Chicano Experience in Literature.** The study of literature in English by and about Chicanos. The course surveys the depiction of the Chicano experience in American literature generally and focuses on the development of Chicano literature itself, its cultural backgrounds, and distinctive uses of language.

Mr. Paredes

106. **Native American Literary Studies.** The study of Native American oral cultures through translated documents (song-poems, life-stories, myths, tales, dream visions, speeches) and/or the images in writing about Native Americans (poetry, fiction, history, anthropology, sociology).

Mr. Lincoln

M107. **Women in Literature.** (Same as Women's Studies M107.) Prerequisite: Subject A. A survey of literary works by and about women which examines the delineation of women in English and American literature; studies in historical and contemporary themes, the evolution of forms and techniques in poetry, fiction, biography.

Ms. Rowe, Ms. Yeazell

108A-108B. **The English Bible as Literature.** (Formerly numbered 113A-113B.) The principal literary monuments of the Old and New Testaments in the King James Version.

Mr. Dearing

109. **Interdisciplinary Approaches to Literature.** The study of British or American literature in relation to other disciplines, such as film, history, politics, psychology. May be repeated for credit.

Mr. Goodwin

110. **Studies in Individual Authors.** The specialized study of a single poet, dramatist, or novelist.

M11A. **The Literature of Myth and Oral Tradition.** (Same as Folklore M111.) A study of myth, dramatic origins, oral epic, folktale and ballad, emphasizing Indo-European and Semitic examples.

M11B. **Anglo-American Folk Song.** (Same as Folklore M106.) Prerequisite: junior standing. A survey of Anglo-American balladry and folk song, with attention to historical development, ethnic background, and poetic and musical values.

Mr. Wigus

M11C. **British Folklore and Mythology.** (Same as Folklore M121.) Prerequisite: junior standing. A survey of the folklore of the peoples of Britain, with attention to their history, function, and regional differences.

Mr. Georges

M11D. **Introduction to Celtic Folklore and Mythology.** (Same as Folklore M122.) A general course for the student in folklore, with emphasis on the types of folklore research currently practiced in Ireland and the mythic traditions of the Irish and Welsh.

Mr. Ford

**M11E. Survey of Medieval Celtic Literature.** (Same as Folklore M12.) A general course dealing with Celtic literature from the earliest times to the fourteenth century. No knowledge of Irish or Welsh is required. Mr. Ford

**112. Children's Literature.** A study of the historical backgrounds and development of types of children's literature, folklore and oral tradition, levels of interest, criticism and evaluation, illustration and bibliography. Mr. Cushman

**113. Literature for Adolescents and Young Adults.** Prerequisite: Subject A. This course will analyze and evaluate the literature intended mainly for students in junior and senior high schools. It will also review mature books that are popularly suggested for this age group, and study the interests and reading habits of young adults. Mr. Cushman

**114. World Literatures in English.** Prerequisite: consent of instructor. A survey of contemporary literature from English speaking regions of the world, reviewing the major genres from several countries and making cross-comparisons with the literatures. Generalizations concerning the nature of the English used by such writers will be examined. May be repeated for credit. Mr. Povey

**115. American Popular Literature.** A study of the main currents of popular and cultural taste as reflected in such genres as dime novels, detective fiction, and Western stories. Mr. Paredes

**120A. Language Study for Teachers: Elementary School.** Prerequisite: Subject A. A survey of topics in English linguistics of special interest to elementary school teachers. Subjects include: approaches to English grammar; language acquisition and development; language attitudes; regional and social dialects of American English; bilingual schooling; contribution of English language study to the teaching of reading, writing, spelling and literature.

**120B. Language Study for Teachers of English: Secondary and Post-Secondary.** Prerequisite: Subject A. A rapid review of English grammar and an introduction to basic concepts in socio-linguistics, dialectology, and stylistics, applied to the analysis and evaluation of writing samples from students in junior and senior high school and junior college.

**120C. Language Study for Teachers of Subjects Other Than English: Secondary and Post-Secondary.** Prerequisite: Subject A. A course designed to introduce teachers of subjects other than English to basic concepts in language acquisition, dialectology, socio-linguistics, and composition.

**121. The History of the English Language.** A study directed toward English majors of the main features in the grammatical, lexical and phonetic condition of the English language from Indo-European up to the present time. Mr. Calder

**122. Introduction to the Structure of Present-Day English.** An introduction to the techniques of linguistic description as applied to the pronunciation, grammar and vocabulary of modern English.

**123. Afro-American English.** Prerequisite: course 120 or Linguistics 100; pre- or co-requisite: English 122 or the equivalent. A detailed study, involving the analysis of tapes and documents, of the characteristics of urban Afro-American Speech and writing.

**130. Composition for Teachers.** Prerequisite: Subject A, English 2. Preparation for future teachers of English composition in the writing and criticism of the kinds of prose discourse usually taught in primary and secondary schools and in junior college. Ms. Taylor

**131. Exposition.** Prerequisite: Subject A, English 2. Further work in expository composition, designed especially to meet the needs of upper-division students, including transfers who desire training beyond that offered in freshman composition.

**133A-133B-133C. Creative Writing: Poetry.** Prerequisite: consent of the instructor required, following submission of samples of writing. Weekly exercises in the writing of poetry, with practice in the standard forms and metres and the study of techniques. Classroom discussion based on student work. Mr. Gullans, Mr. Kessler

**134A-134B-134C. Creative Writing: Short Story.** Prerequisite: consent of the instructor required, following submission of samples of writing. The completion of three stories of average length during each quarter. Some of these may, with the instructor's permission and the student's wish, be a substantial revision of one of the other stories presented. Classroom discussion based on student stories. Mr. Goldberg, Mr. Kessler

**135A-135B-135C. Creative Writing: Drama.** Prerequisite: consent of the instructor required, following submission of samples of writing. An exploration of the capacity of each student to write for the theater. Class discussion of student writing, individual conferences, rehearsed readings, and laboratory productions. Mr. Kessler, Mr. Rodes

**136A-136B-136C. Journal and Textbook Editing.** Prerequisite: consent of instructor. Editing in the field of humanistic approaches to professional problem-solving and in preparation of school texts and anthologies; including writing, soliciting contributors, evaluating and editing submissions, layout, and integration.

**140. Criticism.** Prerequisite: course 10C. An introduction to some types of literary criticism. The student will study such matters as reader's response and rationales of literary description, analysis, and evaluation. He will read literary works in the context of both practical and theoretical criticism. Mr. Kolb

**141A. Chaucer, The Canterbury Tales.** Prerequisites: Subject A, English 2, and English 10A-10B-10C. Introductory study of Chaucer's language, versification, historical and literary background, reading, and discussion of his long major poem, *The Canterbury Tales*. Mr. Calder, Mr. Condren, Ms. Ridley

**141B. Chaucer, Troilus and Criseyde and Selected Minor Works.** Prerequisites: Subject A, English 2, and English 10A-10B-10C, 141A. Intensive study of *Troilus and Criseyde* and selected minor works of Chaucer, such as *The Book of the Duchess*, *The House of Fame*, *The Parliament of Fowls*, etc. Mr. Condren, Mr. Kelly, Ms. Ridley

**142A. Shakespeare: The Poems and Early Plays.** For English majors (and non-majors who have completed 10A-10B-10C). An intensive study of selected poems and representative comedies, histories, and tragedies through *Hamlet*. Mr. Braunmuller, Mr. Kinsman, Mr. Rodes

**142B. Shakespeare: The Later Plays.** Prerequisite: course 142A. For English majors (and non-majors who have completed 10A-10B-10C). An intensive study of representative problem plays, major tragedies, Roman plays and romances. Mr. Allen, Mr. Dent, Mr. Jorgensen

**142C. Shakespeare: Selected Topics.** Prerequisites: course 142A and 142B. This course is designed for students interested in further study of Shakespeare. Limits of investigation will be set by the individual instructor. Mr. Allen, Mr. Braunmuller, Mr. Jorgensen

**143. Milton.** A study of the major works of Milton with emphasis on *Paradise Lost*. Mr. Grose, Ms. Rowe, Mr. Sellin

**150. Later Medieval Literature.** Reading and historical explication of the major writers of the fourteenth and fifteenth centuries; e.g., the Gawain-poet, Langland, Gower, Malory, miracle and morality plays, prose, lyrics, and the minor poems of Chaucer. The more difficult texts will be read in modernized form. Mr. Condren, Mr. Kipling

**151. Elizabethan Literature.** A study of English literature of the sixteenth century, with special emphasis on the development and interrelationships of poetry, prose, fiction, and literary theory and criticism during the reign of Elizabeth I. Mr. Kinsman, Mr. Lanham

**152. The Drama to 1642.** A study of the English drama, excluding Shakespeare, from the beginning to the closing of the theaters, with special emphasis on plays of the Elizabethan and Jacobean periods. Mr. Braunmuller, Mr. Dent, Mr. Kipling

**153. Literature of the Early Seventeenth Century (1600-1660).** A study of the major works as literary documents and as products of seventeenth-century thought. The work of Milton is excluded. Mr. Guffey, Mr. Grose, Mr. Sellin

**154. Literature of the Restoration and Earlier Eighteenth Century (1660-1730).** A study of major works as literary documents and as products of Restoration and earlier eighteenth-century thought. Mr. Batten, Mr. Roper, Mr. Rousseau

**155. Literature of the Later Eighteenth Century (1730-1798).** A study of major works as literary documents and as products of later eighteenth-century thought. Mr. Batten, Mr. Roper, Mr. Rousseau

**156. The Drama, 1660-1842.** A survey of the English drama from the Restoration to the Licensing Act. Mr. Batten, Mr. Rodes

**157. The Novel to 1832.** A survey of the major English novelists from Defoe through Scott. Mr. Novak, Mr. Rousseau

**160. Earlier Romantic Poetry and Prose.** An intensive study of the poetry and prose of Blake, Wordsworth, and Coleridge, with collateral readings from such authors as Godwin, Burke, Paine, Burns, Southey, Lamb, DeQuincy, and Scott. Mr. Burwick, Mr. Maniquis, Mr. Sheats

**161. Later Romantic Poetry and Prose.** An intensive study of the poetry and prose of Keats, Shelley, and Byron, with collateral readings from such authors as Hazlitt, Hunt, Landor, Clare, Moore, and Peacock. Mr. Burwick, Mr. Maniquis, Mr. Sheats

**162. Earlier Victorian Poetry and Prose.** A study of the Victorian age from the passage of the First Reform Bill through the high Victorian period, including Tennyson, Browning, Arnold, Carlyle, Mill, and Newman. Mr. Freeman, Mr. Kolb, Mr. Tennyson

**163. Later Victorian Poetry and Prose.** A study of the later Victorian age from Pre-Raphaelitism through the Aesthetic and Decadent Movements, along with other intellectual trends, including such authors as Ruskin, Swinburne, Pater, Hopkins, Hardy, Wilde, and Yeats. Mr. Freeman, Mr. Kolb, Mr. Tennyson

**164. The Novel, 1832-1900.** A survey of the major English novelists from Dickens through Hardy. Mr. Anderson, Mr. Hutter, Mr. Lincoln

**165. Twentieth-Century British Poetry and Prose.** A study of the dominant trends of the twentieth century, with emphasis on experimental work in short fiction, poetry, and the contemporary critical sensibility. Mr. Bedient, Mr. Keys

**166. The Novel, 1900 to the Present.** A survey of the major English novelists from Conrad to the present. Mr. Bedient, Ms. Yeazel

**167. The Drama, 1842 to the Present.** A survey of British and American drama with its principal continental influences. For

Theater Arts majors the prerequisite of courses 10A-10B-10C is waived. Mr. Berst, Mr. Braunmuller, Mr. Goodwin

**170. American Literature to 1800.** A historical survey of American literature through the Colonial and Early National Periods.

**171. American Literature, 1801-1865.** A historical survey of American literature, including fiction, from the beginning of the nineteenth century to the end of the Civil War. Mr. Hirst, Mr. Wortham

**172. American Literature, 1866-1912.** A historical survey from Whitman to the founding of *Poetry* magazine. Mr. Nevius, Mr. Wortham, Ms. Yeazel

**173. Twentieth-Century American Poetry.** The development of American poetry since 1912, including Frost, Eliot, Pound, and Stevens. Mr. Bedient, Mr. Riddel, Mr. Yenser

**174. Twentieth-Century American Fiction.** The development of the American novel and short story since 1912, including Hemingway, Fitzgerald, and Faulkner. Mr. Goldberg, Mr. Goodwin, Mr. Lehan

**Specialized Studies.** These courses (180 through 189) are designed to permit a small group of students (limit: 15) to specialize in a period which they find attractive, and in which they have taken adequate upper division background courses. For the author, group or genre to be studied, see the Schedule of Classes for any given quarter. Enrollment for each course are handled in the department office (Rolle Hall 2225) at the time of pre-enrollment in the quarter preceding that in which the course is offered. May be repeated for credit.

**180. Specialized Studies in Medieval Literature.**

**180X. Specialized Studies in Literature.** Studies in genres, themes, problems, relationships of literature with other disciplines.

**181. Specialized Studies in Renaissance Literature.**

**182. Specialized Studies in Seventeenth-Century Literature.**

**183. Specialized Studies in Eighteenth-Century Literature.**

**184. Specialized Studies in Romantic Literature.**

**185. Specialized Studies in Victorian Literature.**

**186. Specialized Studies in Twentieth-Century British Literature.**

**187. Specialized Studies in Colonial American Literature.**

**188. Specialized Studies in Nineteenth-Century American Literature.**

**189. Specialized Studies in Twentieth-Century American Literature.**

**190. Literature and Society.** Prerequisites: courses 1, 2, 10A, 10B, 10C. A record of some aspect of the relationship between literature and social, economic or political history. May be repeated for credit.

**199. Special Studies in English. (½ to 1 course)** Prerequisite: consent of the instructor required. An intensive directed research project. Enroll in the Department.

**199H. Honors Tutorial.** A tutorial course for students enrolled in the Honors Program. Each student will be expected to prepare a long paper of a critical or research nature. The Staff

## Graduate Courses

**200. Approaches to Literary Research.** The bibliographical tools of English and American literary scholarship; an introduction to descriptive bibliography, and basic methods of research. Mr. Gullans, Mr. Wortham

**201. Approaches to Literary Criticism.** The study of the various applications, approaches, and pre-suppositions of literary criticism as it relates to the interpretation and evaluation of texts. Mr. Krieger

**202. Enumerative and Descriptive Bibliography.** Problems in bibliography, texts, and editions, with practical application in compiling bibliographies, editing texts, and approaching literature through textual criticism. Mr. Dearing

**203. Computer and Literary Research.** Practice in writing and using computer programs for the analysis of literary style, content, and authorship. No previous knowledge in this area is necessary. Mr. Dearing

**M205. Perspectives in American Folklore Research.** (Same as Folklore and Mythology M205.) Prerequisite: Folklore 101 and one other upper-division folklore course. An examination of American folklore studies compared and contrasted with investigations in other countries, with emphases upon the principal conceptual schemes and research orientations employed in the study of folklore in American society.

**210. History of the English Language.** A detailed study of the history, characteristics, and changing forms of the language from its origin until about 1900. Mr. Condren

**211. Old English.** Study of Old English grammar, lexicon, phonology, and pronunciation to enable the student to read the literature silently and aloud. Reading of as much of the more interesting Old English prose and poetry as can be read in a quarter. Mr. Calder, Mr. Condren

**212. Middle English.** Prerequisite: course 211. Detailed study of the linguistic aspects of Middle English and of representative examples of the better prose and poetry. Ms. Ridley

**213. Modern English.** Detailed study of the language's history and characteristics since 1500. Phonological, grammatical and lexicographical developments will be studied in relation to accompanying intellectual, political and social changes.

**215. The Structure of Present-day English.** Prerequisite: course 122K or 122. Investigation in depth of the basic constructs and sub-systems of English structure as described by grammarians of various theoretical persuasions. Ms. Celce-Murcia

**216A-216B. Old Irish.** Prerequisite: consent of instructor. Studies in grammar. Readings in the glosses and other texts. Comparative considerations. Mr. Ford

**217A-217B. Medieval Welsh.** Prerequisite: consent of instructor. Studies in grammar. Readings in the Mabinog and other texts. Comparative considerations. Mr. Ford

**218. Celtic Linguistics.** Prerequisite: consent of instructor. A survey of salient features of the Celtic linguistic stock in its Gaelic and British branches, with reference to the position of Celtic within Indo-European languages. Mr. Ford

### Graduate Readings

These courses stress wide reading in major works and their cultural background. Students with adequate undergraduate preparation in a period may proceed directly to a seminar.

**220. Readings in Medievalism.** Mr. Kelly, Ms. Ridley

**221. Readings in the Renaissance.** Mr. Jorgensen, Mr. Kinsman, Mr. Lanham

**222. Readings in the Earlier Seventeenth Century.** Mr. Guffey, Mr. Gullans, Mr. Sellin

**223. Readings in the Restoration and Eighteenth Century.** Mr. Dearing, Mr. Novak, Mr. Rousseau

**224. Readings in Romanticism.** Mr. Burwick, Mr. Maniquis, Mr. Sheats

**225. Readings in Victorianism.** Mr. Freeman, Mr. Tennyson, Mr. Welsh

**226A. Readings in American Literature to 1828.**

**226B. Readings in American Literature: 1828-1900.** Mr. Nevius

**227. Readings in Twentieth-Century American Literature: 1912 to the Present.** Mr. Lehan, Mr. Riddell

**228. Readings in Twentieth-Century British Literature.** Mr. Bedient, Mr. Cross, Mr. Kessler

### Graduate Seminars

Seminars are open to all graduate students with adequate preparations, and may be repeated for credit. Enrollment is by consent of the instructor, and continuing students must sign up for seminars before the end of the preceding quarter. A prospectus announcing topics for all seminars will be available in the department office by June 1 for the ensuing academic year.

**240. Studies in the History of the English Language.** Individual seminars will deal with: any single historical period from the Old English period to the present; or the development of a particular linguistic characteristic, phonology, syntax, semantics, dialectology, through various periods. Mr. Calder

**241. Studies in the Structure of the English Language.** Prerequisite: consent of the instructor. Topics in various aspects of the structure of Modern English, especially syntax and semantics. Mr. Stockwell

**242. Language and Literature.** The application of linguistics to literary analysis. Individual seminars will deal with: an historical period, Medieval and Renaissance, Neo-classical, or nineteenth century and modern; specific authors; or the contributions of specific groups of linguists to literary analysis. Mr. Lanham

**M243A. The Ballad.** (Same as Folklore M243A.) Prerequisite: consent of the instructor. A study of the English and Scottish popular ballads and their American derivatives, with some attention to European analogues.

**M243B. Problems in Ballad Scholarship.** (Same as Folklore M243B.) Prerequisites: course M243A or consent of the instructor. Intensive investigation of a problem or problems in the study of the popular ballad. Mr. Wilgus

**244. Old and Medieval English Literature.** Studies in the poetry and prose of Old and Medieval English Literature; limits of investigation to be set by the individual instructor. Mr. Calder, Ms. Ridley

**245. Chaucer.** Mr. Condren, Mr. Kelly, Ms. Ridley

**246. Renaissance Literature.** Studies in the poetry and prose of Renaissance English Literature, exclusive of Shakespeare; limits of investigation to be set by the individual instructor. Mr. Dent, Mr. Lanham, Mr. Phillips

**247. Shakespeare.** Mr. Dent, Mr. Jorgensen, Mr. Phillips

**248. Earlier Seventeenth-Century Literature.** Studies in the poetry and prose of seventeenth-century English Literature up to

the Restoration; limits of investigation to be set by the individual instructor. Mr. Guffey, Mr. Gullans, Mr. Sellin

**249. Milton.** Studies in the poetry and prose of John Milton; particular emphases to be set by the individual instructor. Mr. Grose, Mr. Sellin

**250. Restoration and Eighteenth-Century Literature.** Studies in English poetry and prose, 1669-1800; limits of investigation to be set by the individual instructor. Mr. Novak, Mr. Roper, Mr. Rousseau

**251. The Romantic Writers.** Mr. Burwick, Mr. Sheats, Mr. Thorslev

**252. Victorian Literature.** Studies in English poetry and prose of the Victorian period; limits of investigation to be set by the individual instructor. Mr. Freeman, Mr. Tennyson, Mr. Welsh

**253. Contemporary British Literature.** Mr. Bedient, Mr. Kessler

**254. American Literature to 1900.** Studies in colonial and nineteenth-century American Literature; limits of investigation to be set by the individual instructor. Mr. Nevius

**255. Contemporary American Literature.** Studies in contemporary American poetry and prose; limits to be set by the individual instructor. Mr. Lehan, Mr. Riddell

**256. Studies in the Drama.** Studies in the drama as a genre from its beginning to the present; limits of investigation to be set by the individual instructor. Mr. Berst, Mr. Dent

**257. Studies in Poetry.** Studies in various themes and forms of poetry from Old English to the present; limits of investigation to be set by the individual instructor. Mr. Bedient, Mr. Kessler, Mr. Riddell

**258. Studies in the Novel.** Studies in the evolution of the genre from its beginnings to the present; limits of investigation to be set by the individual instructor. Mr. Lehan, Mr. Novak, Mr. Welsh

**259. Studies in Criticism.** Mr. Krieger

### Special Courses for the Master's Degree

**270A-270B. English for the Two-Year College.** Prerequisite: course 120. The courses will involve both discussion and practice of two-year college instruction in reading and composition. They are offered on an "in Progress" basis which requires students to complete the full two quarter sequence, at the end of which time a grade is given for all quarters of work. Ms. Peterson

**271. Studies in African Literature in English.** Prerequisite: English 114 or consent of the instructor. Continuation of English 114. Special problems and trends of African literature in English. Mr. Povey

**272. Current Issues in the Teaching of English.** Prerequisite: course 120 or Linguistics 100. The course will focus each time on one of a variety of topics of special current interest. Mr. Lanham

**273. Studies in Afro-American Literature.** Intensive research and study of major themes, issues, and writers in Afro-American Literature. Discussions and research on the esthetic, cultural, and social backgrounds of Afro-American writing.

**274. Teaching English to Minority Groups.** Pre- or co-requisite: course 120 or Linguistics 100. The special cultural, social, psychological, and methodological considerations involved in the English instruction of minority groups in American schools and colleges.

### Professional Course in Method

**275. Stylistics and the Teaching of English.** An introduction to the study of language and style and its application to the teaching of English, including rhetoric, linguistics, and grammar. Required of all applicants for the Teaching Assistantship in English. Ms. Taylor

**300. The Teaching of English.** Required of candidates for the single subject credential in English. Study of theories of rhetoric, composition, reading, and literature as they apply to the secondary school English curriculum.

**495. Supervised Teacher Preparation.** Prerequisite: Teaching assistant, involved in freshman composition program. Seminar for teaching assistants who are associated with the freshman composition program. Required for first quarter assistants. May be repeated for credit.

**496. Directed Individual Study in Pedagogy. (½ course)** Prerequisite: must be teaching assistant working under member of the faculty. Supervised individual instruction in teaching, including monitoring of teaching assistant's pedagogical activities and regular consultation with assistant concerning all of his teaching responsibilities.

**501. Cooperative Program. (¼ to 2 courses)** Prerequisite: approval of UCLA Graduate Adviser and Graduate Dean. Approval of host campus instructor, Department Chairman, and Graduate Dean. The course is used to record the enrollment of UCLA students in courses taken under cooperative arrangements with neighboring institutions. To be graded S/U.

### Individual Study and Research

**596. Directed Individual Study.** May not be used to satisfy any course requirement for a degree. M.A. students may enroll by petition only; Ph.D. students restricted to one course (four units) before the First Qualifying Examination. The Staff

**597. Preparation of the Doctoral Examination.** Ph.D. Candidates restricted to one course (four units) before the Second Qualifying Examination. The Staff

**599. Dissertation Research. (1 or 2 courses)** Enrollment restricted to Ph.D. Candidates unable to enroll in seminars in their fields, or candidates concurrently enrolled in such seminars. (Exception to this rule must be requested by petition.) To be graded S/U. The Staff

## ENGLISH AS A SECOND LANGUAGE

### Undergraduate Courses

Courses 33A-33B-33C, 34, 103J, 106J, and 109J are only for students whose first language was other than English. Courses 33A-33B-33C are not open to those who have received a satisfactory grade in English 1 at the University of California. Permission to enroll in these three courses is given on the basis of the Entrance Examination in English as a Second Language which students whose mother tongue is not English must take instead of the Subject A examination (see Subject A in this bulletin). Depending on the result of this examination, entering students are: (1) exempted from any special English requirement; (2) required to take course 33C; (3) required to take course 33B followed by course 33C; (4) required to take course 33A followed by courses 33B and 33C; or (5) required to spend a quarter studying elementary English exclusively.

### Certificate in the Teaching of English as a Second Language (or Dialect)

To qualify for this certificate students must meet the following requirements: (1) All students, those educated in the United States, as well as those educated in other countries, must have an educational background sufficient to qualify them as teachers in their home state or country. They will normally be admitted to the University as graduate students. With the approval of the Dean of the Graduate Division and the Vice Chairman of the Department of English, graduate admission may be granted to students solely for the purpose of pursuing the courses leading to this certificate, provided they meet general graduate admission requirements. Students who do not meet these requirements may, upon recommendation of the Vice Chairman of the Department of English, be admitted to limited status to pursue the course of study leading to the certificate. (2) Courses normally taken in the fall quarter are English 370K, Linguistics 100 and an elective (appropriate courses in education, folklore, speech, and the structure of the student's mother tongue are especially recommended). Depending on the results of the Entrance Examination in English as a Second Language, nonnative speakers of English may be required to take English 33C in lieu of this elective. Courses normally completed in the winter quarter are English 250K, English 122K, and an elective (English 109K, 261K, 270K, or an appropriate course in English or American literature are recommended). Courses for the spring quarter are English 380K, English 103K (native and some nonnative speakers will be allowed to substitute Linguistics 103 or Linguistics 200A for this), and English 106K or English 107K, English 109K.

### Special Language Requirement for Native Speakers of English

Students whose mother tongue is English will not be held for the first two electives. Instead they must fulfill a special requirement designed to help them acquire or perfect a knowledge of the native language or dialect of the pupils to whom they expect to teach English. This can be done by taking any one of five combinations of two courses: (1) two foreign-language courses; (2) one foreign-language course plus the corresponding course in the Linguistics 220 or 225 series; (3) one foreign-language course plus English 274; (4) English 123 plus English 274; (5) English 111K plus an unrestricted elective. Those particularly interested in working with Mexican-American, Oriental American, or American Indian pupils will normally choose the third of these alternatives; those interested in Afro-Americans will choose the fourth. In case there is doubt as to which foreign language will be most appropriate, a non-European language should be selected.

Students are urged to fulfill the language requirement by courses taken after admission to the Certificate Program. Exemption from the courses may be granted, however, to those who can demonstrate a strong need to take other electives and who have an unusually extensive background of previous foreign-language study. Information regarding the circumstances under which a petition for exemption may be approved can be obtained from the TESL Counselor.

### Requirements for the Master's Degree

To be admitted to the M.A. program, students must have completed the requirements for the Certificate in the Teaching of English as a Second Language with at least a 3.25 grade-point average. Provisional admission can be obtained by a petition presented upon completion of six of the nine Certificate courses. If a student has completed the Certificate requirements while in limited status and has maintained a grade-point average of 3.25, he may, upon

recommendation of the Vice Chairman of the Department of English, be simultaneously given graduate status, admitted to candidacy for the master's degree, and allowed graduate credit for the Certificate courses which are to be counted toward the M.A.: Linguistics 100, English 103K or Linguistics 103, English 122K, and English 250K. Limitations of staff and facilities make it necessary to restrict the number of applicants admitted each year to around 24. In the event that there are more than that number of eligible applicants in a given year, those with the highest grade-point average, the most promising informal statement of research intentions, and the best recommendations from professors with whom they have taken TESL Seminars will be selected. Thus no definite assurance can be given to students, at the time they are originally admitted to the Certificate Program, that they will be able to go on to complete the M.A. in TESL at UCLA. Plan I as established by the Graduate Division (see the Graduate Division), the thesis plan, will be followed for the M.A. in Teaching English as a Second Language. Nine upper division and graduate-level courses, of which at least five must be in the 200 and 500 series, and a thesis are required. These include the four Certificate courses mentioned above, English 400, 598K, and four electives. English 598K should be taken as soon as possible. The electives will be selected as a sequence of four courses related among themselves and relevant to the thesis topic. Among the recommended fields for subspecialization are: teaching English to minority groups, language policy, the teaching of literature (for students with an English major only), the structure of the English language, the linguistics of a particular geographical area, phonetics, dialectology, psycholinguistics and language learning, and sociolinguistics. There are no special language requirements for the M.A. other than those included among the Certificate requirements.

Except under the most extraordinary circumstances candidates will be expected to fulfill all the M.A. requirements, including the filing of the completed thesis, within three years of the beginning of the quarter in which, having completed the Certificate in TESL, they first enroll in courses required for the M.A.

#### Lower Division Courses

**33A. Intermediate English as a Second Language. (2 courses)** Meets ten hours weekly. Intensive drill in pronunciation, structural patterns, vocabulary, conversation, and composition. The Staff

**33B. Intermediate English as a Second Language.** Meets five hours weekly. Continuation of 33A. The Staff

**33C. Intermediate English as a Second Language.** Meets five hours weekly. Continuation of 33B with emphasis on composition. The Staff

**34. Oral Communication Skills for Foreign Students.** Prerequisite: exemption on the English as a Second Language Placement Examination or successful completion of English 33C, plus the consent of the instructor. English 34 will develop oral language skills that will prepare non-native speakers of English to participate in class discussions, make oral presentations (lectures, debates, thesis defense, etc.) before an audience and respond to questions, and continue to improve through self-evaluation of speech. Ms. Hinoftis, Ms. Freeman

#### Upper Division Courses

**103J. Phonetics for Foreign Students.** Prerequisite: course 33C or the equivalent. A detailed and systematic study of the sounds of American English and the way in which they are put together in connected speech, applied to the improvement of the student's own accent. Language laboratory. The Staff

**103K. Phonetics for Teachers of English as a Second Language.** Prerequisite: consent of the instructor. Analysis of the phonological structure of contemporary English, with attention to the differences between British and American speech. Laboratory drill directed toward individual needs. Mr. Bowen, Mr. Prator

**106J. Advanced Composition for Foreign Students.** Prerequisite: course 33C or the equivalent. Exercises in writing based on readings dealing with American life and thought, with the aim of developing control of idiomatic expression. Mr. Povey

**106K. Writing in the ESL Context.** Limited to TESL Certificate or M.A. Candidates. Provides opportunities for practice and improvement in writing skills and thus fulfills the composition requirement for the TESL Certificate. Surveys important theoretical and methodological issues related to the teaching of writing/composition to ESL students and examines appropriate classroom materials. Mr. Schumann

**107K. Reading in the ESL Context.** Limited to TESL Certificate or M.A. Candidates. Provides opportunities for practice and improvement in writing skills and thus fulfills the composition requirement for the TESL Certificate. Surveys important theoretical and methodological issues related to the teaching of reading to ESL students and examines appropriate classroom materials. Ms. Hatch

**109J. Introduction to Literature (for Foreign Students).** Prerequisite: course 33C or the equivalent. Selections from English and American literature presented so as to make full allowance for the students' linguistic and cultural problems and to contribute to an increasing mastery of the English language. Mr. Povey

**109K. Literature in the ESL Context.** Limited to TESL Certificate or M.A. Candidates. Provides opportunities for practice and

improvement in writing skills and thus fulfills the composition requirement for the TESL Certificate. Surveys important theoretical and methodological issues related to the teaching of literature to ESL students and examines appropriate classroom materials. Strongly emphasizes the cultural basis for literature. Mr. Povey

**111K. Background Language for Teachers of English as a Second Language.** Prerequisite: consent of the instructor. Fulfills the foreign-language requirement for the Certificate in the Teaching of English as a Second Language. Beginning course in a non-Indo-European language taught as a demonstration of recommended pedagogical techniques and designed to acquaint prospective language teachers with a wide variety of linguistic structures. Ms. Freeman

**122K. Introduction to the Structure of Present-Day English (for Teachers of English as a Second Language).** Prerequisites: course 120 or Linguistics 100 and consent of the instructor. Introductory study of the phonological and grammatical structure of English leading to familiarization with the terminology and assumptions of traditional, structural, and transformational grammar. Ms. Celce-Murcia, Ms. Freeman

#### Graduate Courses

**210K. Role of English as a Second Language in Bilingual Education.** Prerequisites: Linguistics 100, course 370K or consent of instructor. Research and study of major problems and issues in designing and evaluating bilingual, bi-cultural programs in the United States and abroad. Mr. Galvan

**250K. Contrastive Analysis of English and Other Languages. Seminar.** Prerequisites: Linguistics 100, course 370K. Theory and techniques of contrasting the phonological, grammatical, and lexical structures of English with those of other languages. Mr. Campbell, Ms. Freeman, Mr. Galvan

**251K. Bilingual Comparative Studies. Seminar.** Prerequisite: courses 215 and 250K. The relationship of two languages in an incipient bilingual speaker. Further study of the techniques of contrastive analysis as a means of predicting interference between linguistic systems with application to original research projects. Mr. Bowen

**260K. Psycholinguistics and Language Teaching. Seminar.** Prerequisite: courses 370K and 103K and Linguistics 100, or consent of the instructor. An exploration of those areas of psycholinguistics covering foreign language acquisition: types and theories of bilingualism; learning theories underlying the current methods of teaching foreign languages; basic experimental designs to test existing assumptions about learning and teaching foreign languages. Ms. Hatch, Mr. Schumann

**261K. Language Testing for Teachers of English as a Second Language.** Prerequisites: Linguistics 100, course 370K. Theory of testing language competence and performance. Elementary statistical concepts. Functions of a testing program. Construction of various tests. Mr. Rand

**262K. Second-Language Acquisition.** Prerequisite: consent of instructor. The literature on child and adult second-language acquisition forms the basis for this research class. Language variables (phonological, morphological, sentential, and discourse levels) and social and psychological variables which may account for differences in learning are considered. Research on classroom language learning and/or learning in 'natural' environments is required. Mr. Schumann

**270K. Language Policy in Developing Countries. Seminar.** Prerequisite: consent of the instructor. Use of and need for English in countries such as Nigeria and the Philippines; factors affecting language policy in their school systems; applicability of research techniques of socio- and psycholinguistics to problems of language policy. Mr. Prator

**272K. Current Issues in the Teaching of English as a Second Language.** Prerequisites: consent of instructor, course 120 or Linguistics 100. The course will focus each time on one of a variety of topics of special current interest.

#### Professional Courses

**370K. The Teaching of English as a Second Language.** Meets six hours weekly. Prerequisite: consent of the instructor. Bibliography, survey, and evaluation of methods and materials. The nature of language learning. Analysis of the differences between two languages as a basis of instruction. Ms. Hatch, Ms. Celce-Murcia, Mr. Schumann

**380K. Supervised Teaching: English as a Second Language or Dialect.** Prerequisite: course 370K. Team teaching at the elementary, secondary, or adult level under the supervision of a senior staff member. Graded on a S/U basis for graduate students, and a Passed/Not Passed basis for undergraduate students. The Staff

**400K. TESL Colloquium.** Prerequisite: consent of TESL M.A. advisor. Candidates for the M.A. in Teaching English as a Second Language present and defend the results of their thesis research. Enrollment in course in spring quarter required of all candidates but does not count for credit toward degree. Candidates for the Ph.D. in Applied Linguistics may also choose to use this channel to report on their dissertation. Graded satisfactory/unsatisfactory. Mr. Prator

**495KA-495KB. Training and Supervision of Teaching Assistants.** Prerequisite: concurrent appointment as a teaching assistant or Extension-Division instructor. Orientation, preparation, and supervision of graduate students who have the responsibility for teaching ESL courses at UCLA. Syllabus revision and materials preparation. Two or more hours per week for fall and winter quarters. Credit for a total of four units for the two quarters is given but does not count toward M.A. or Certificate in TESL or Ph.D. in Applied Linguistics. Graded Satisfactory/Unsatisfactory. The Staff

#### Individual Study and Research

**596K. Directed Individual Study.** Prerequisite: graduate standing. Credit (one course) allowed only once. Independent study in an area related to English as a Second Language. The Staff

**598K. Research and Thesis Preparation for Candidates for M.A. in Teaching English as a Second Language. (1 to 2 courses)** Prerequisite: admission to M.A. program. Survey of research needs and thesis preparation. In fall includes optional section on experimental design and statistical methods. Credit (four units) toward degree allowed only once, but all M.A. candidates must enroll in the course each quarter they are registered and engaged in thesis preparation. Graded Satisfactory/Unsatisfactory. Mr. Prator, Mr. Rand

## ENVIRONMENTAL SCIENCE AND ENGINEERING (INTERDEPARTMENTAL)

(Office: 3677 Geology Building)

Orson L. Anderson, Ph.D., *Professor of Geophysics*.  
James G. Edinger, Ph.D., *Professor of Meteorology*.  
Christopher S. Foote, Ph.D., *Professor of Chemistry*.  
Malcolm S. Gordon, Ph.D., *Professor of Biology*.  
Chung-Yen Liu, Ph.D., *Professor of Engineering and Applied Science*.  
Robert A. Mah, Ph.D., *Professor of Public Health*.  
William C. Meecham, Ph.D., *Professor of Engineering and Applied Science*.

Richard L. Perrine, Ph.D., *Professor of Engineering and Applied Science (Chairman of the Interdepartmental Committee)*.

Morton G. Wurtele, Ph.D., *Professor of Atmospheric Dynamics*.  
Wilard F. Libby, Ph.D., *Emeritus Professor of Chemistry*.  
John A. Dracup, Ph.D., *Associate Professor of Engineering and Applied Science*.

Alan Z. Ullman, Ph.D., *Assistant Professor of Engineering and Applied Science*.

Climis A. Davos, Ph.D., *Assistant Professor of Public Health and Environmental Science and Engineering in Residence*.

Laura M. Lake, Ph.D., *Adjunct Assistant Professor of Political Science*.  
Leona M. Libby, Ph.D., *Adjunct Professor of Environmental Science and Engineering*.

Robert G. Lindberg, Ph.D., *Lecturer in Environmental Science and Engineering*.

Paul M. Meritfield, Ph.D., *Lecturer in Engineering and Environmental Geology*.

#### Undergraduate Program

Although no undergraduate major is offered encompassing the broad area of environmental science and engineering, studies which readily lead to advanced work or employment in these fields can be arranged along several routes. Students with majors in the natural sciences, public health, or engineering, who have environmental or energy problem-solving as a professional goal, may wish to supplement their course preparation in consultation with the faculty of the Environmental Science and Engineering Program. In preparation for graduate study, attention should be given to requirements for the doctoral program in Environmental Science and Engineering.

#### Master's Program

Preparation for Environmental Science and Engineering is provided through Master of Arts, Master of Science and Master of Public Health degree programs conducted by the academic departments participating in the Program. These departments include Biology, Chemistry, Earth and Space Sciences, and Atmospheric Sciences within the College of Letters and Science; the School of Public Health; and Energy and Kinetics, Engineering Systems, and Mechanics and Structures within the School of Engineering and Applied Science.

Master's students anticipating eventual progress toward a doctoral degree should plan their programs carefully in advance. Faculty members from the student's own participating department who are actively involved in the interdepartmental program should be consulted, and preferably should form the nucleus of the student's committee. It is recommended that the student's program be planned with a view toward the course requirements of the doctoral curriculum. This will ensure both adequate preparation and a smooth transition to more advanced studies.

#### The Doctor of Environmental Science and Engineering Program

Formal entry to the D. Env. program requires a Master's degree in a field within the natural sciences, public health or engineering. The

intent of this requirement is to insure that the student have adequate competence within an established discipline.

The program of study for the D. Env. is supervised by the Interdepartmental Committee for Environmental Science and Engineering. Broadly stated, this program has as its objective the preparation at the highest level of competence of professionals who will evaluate, devise and implement solutions for complex, multidisciplinary environmental and energy problems. In contrast to environment-related research scientists, these individuals will be problem-solvers. Thus the traditional program of study and research culminating in the Ph.D. dissertation has been replaced by a rigorous clinical curriculum involving course work in appropriate disciplines, a year of problem-solving, applied research experience, and an 18-month to two-year professional internship, requiring in total approximately four years beyond the Master's Degree.

#### Areas of Concentration and Breadth

Four areas of concentration are available within the D. Env. program: Air Quality, Water Quality, Energy Utilization, and Urban Problems. Adequate course preparation beyond the Master's degree is required in order to provide the disciplinary and breadth depth required to solve major environmental problems in the four areas of concentration. The time span occupied in satisfying these requirements varies considerably with the preparation of the individual student; the average is about four quarters.

Breadth areas include biology, chemistry, earth and atmospheric sciences, engineering and applied mathematics, and social science (law, political science, economics). A list of current suggested "Breadth Requirement" courses is available from the Program Office. Students are guided in their preparation by their faculty committees.

#### Problems Courses

The completion of breadth requirements is followed by a further year of study to satisfy Problems Course requirements. Problems Courses constitute intensive multidisciplinary, applied team research directed toward the solution of current environmental problems. Often these studies are conducted at the request of a public agency or other interested organization. Usually three or four faculty from different disciplines closely supervise eight to ten students. The rationale for the problems course is that environmental managers should experience as early as possible the rigors of real-time decision making. They learn also the demands that the up-to-date, innovative use of more basic research places on problem solvers. Thus the Problems Courses require students to quantify and measure necessary parameters, perform critical evaluations, edit and process technical and socio-economic information, meet deadlines, and finally, to communicate, through a final report on a complex policy-related science subject, to the competent lay-person as well as to the technical specialist.

During this period satisfactory progress must be made in passing cumulative examinations. Before being advanced to candidacy and to the clinical internship, the student must pass an oral qualifying examination.

#### Internships: Clinical Practice

In the internship, doctoral candidates perform as full-time, salaried professional staff members in local, state, and federal agencies, international organizations, consulting firms, and other private industries. The required period is 18 months to two years. The work is performed under supervision from their doctoral committees as well as day-by-day supervision by appropriate individuals within the host institutions. Thus candidates are exposed to a type and range of experience suited to their needs. Students arrange for their own internship organization according to their interests and geographical preferences, with assistance and guidance from their faculty committee.

#### Final Requirements

A final quarter in residence is required subsequent to the internship to complete requirements for the award of the degree. During this period the students participate in ongoing Problems Courses, demonstrating their proficiency and maturity as problem-solvers. They must also prepare a final report for the University Archives on their work as interns, and pass a final oral examination. Thus the internship experience and the report documenting this work replace the traditional doctoral research and dissertation.

#### Graduate Courses

**400A. Environmental Science and Engineering Problems Course. (2 courses)** Prerequisite: consent of instructor and program chairman; primarily intended for students enrolled in the Environmental Science and Engineering doctoral program. Multidisciplinary technical and socio-economic analysis and prognosis of significant current environmental problems.

**400B. Environmental Science and Engineering Problems Course. (2 courses)** Prerequisite: satisfactory completion of 400A, consent of instructor and program chairman. Continuation of 400A. Multidisciplinary technical and socio-economic analysis and prognosis of significant current environmental problems.

**400C. Environmental Science and Engineering Problems Course. (2 courses)** Prerequisite: satisfactory completion of 400B; consent of instructor and program chairman. Continuation of 400B. Multidisciplinary technical and socio-economic analysis and prognosis of significant current environmental problems.

**400D. Environmental Science and Engineering Problems Course. (2 courses)** Prerequisite: satisfactory completion of 400C and of an internship approved by the Environmental Science and Engineering Interdepartmental Committee. Multidisciplinary technical and socio-economic analysis and prognosis of significant current environmental problems.

**410. Environmental Science and Engineering Workshop. (½ course)** Prerequisite: consent of instructor; primarily intended for students enrolled in the Environmental Science and Engineering doctoral program. Development of analytical or experimental skills essential to the solution of environmental problems studied within courses 400A, 400B, 400C and 400D.

**411. Environmental Science and Engineering Seminar. (½ course)** Prerequisite: consent of instructor and limited to graduate students in Environmental Science and Engineering and participating departments. Current topics in environmental science and engineering. To be given on a S/U basis. May be repeated more than once for credit.

**501. Cooperative Program. (½ to 2 courses)** Prerequisite: approval of UCLA Graduate Advisor, Program Chairman, and Graduate Dean. Approval of host campus Instructor, Department Chairman and Graduate Dean. The course is used to record the enrollment of UCLA students in courses taken under cooperative arrangements with neighboring institutions. To be graded S/U.

**596. Directed Individual or Tutorial Studies. (½ to 2 courses)** Prerequisite: consent of instructor and the Chairman, Environmental Science and Engineering Interdepartmental Committee. Supervised investigation of advanced environmental problems. To be graded on Satisfactory/Unsatisfactory basis.

## ETHNIC ARTS (INTERDEPARTMENTAL)

(Coordinator's Office, 205 Women's Gym)

*Committee in Charge.* Philip Newman, Anthropology; Cecelia Klein, Art; Arnold Rubin, Art; Elsie Dunin, Dance; Judy Susilo, Dance; D. K. Wilgus, Folklore and Mythology; Robert Georges, Folklore and Mythology; Michael Jones, Folklore and Mythology; Marie Louise Gollner, Music; William Hutchinson, Music; Max Harrell, Music; David Morton, Music; Mel Helsten, Theater Arts; John Young, Theater Arts; Allegra Fuller Snyder, Dance, (Coordinator).

The major provides a program of interdisciplinary studies designed to facilitate the cultural and cross-cultural investigation of man's artistic expression. The flexibility of the program allows the student to focus on a particular medium of expressive behavior after having been exposed to general problems and perspectives in the study of art forms of peoples throughout the world.

The major includes: a core of seven courses from Anthropology, Art, Dance, Folklore and Mythology, Music, and Theater Arts; a concentration consisting of nine courses in one of the disciplines; a senior colloquium; and three electives courses.

*Foreign Language Requirement:* At least three quarters in one foreign language at the college level are required of all students. All courses in foreign language, except foreign literature in English translation, may be applied to this requirement.

Students who plan to take the "concentration" in music are advised to select French, German, or Italian.

*General College Requirements:* The student will satisfy the general college requirements (other than foreign language) of his college (Fine Arts or Letters and Science) regardless of the department in which his concentration is located.

Students who wish to see a counselor regarding program planning and major requirements should see Wendy Urfrig, 205 Women's Gym.

#### Requirements for the Bachelor of Arts Degree

1. A core of seven interdepartmental courses: Dance 46A-46B-46C, Folklore 101, Music 5A-5B-5C, Theater Arts 102E, Anthropology 5A, and Art 55.

2. A concentration of nine courses in one of the following areas: (The student will declare a "concentration" by the beginning of the Junior year.)

*Anthropology* 2B, 143, 144, 150, and any five upper division anthropology courses from group one through eight and including one area course from group one.

*Art* one course from 50, 51, 52, 53, 54; eight courses from 103A-103B-103C, 114A-114B-114C-114D, 115A-115B-115C, 118A-118B-118C-118D, 119A-119B-119C.

*Dance* 38B, 47A-47B-47C, 70A, 151A-151B; two courses from 140A-140B-140C; one course from 142, 143, 144, 145, 146; and three courses from 171A-171P.

*Folklore and Mythology* one course from M111, 118, M180; two courses from M106, M123B, 124, M181, Indo-European Studies 140, Classics 161; six courses from M112, M121, M122, M123A, M125, M126, M128, M129, 130, M149, M150, 190, German 134.

*Music* 17A-17B-17C, 26A-26B-26C, 140A-140B-140C.

*Theater Arts* five courses from 20, 120, 140A-140B, 141A-141B, 142A-142B, 160A, 170; four courses from 5A, 5B, 5C, 102A, 103A-103B, 104A-104B, 106C, 110A-110B, 117, Classics 142; English

67, 90, 104A-104B; Scandinavian 144, 145, Humanities M103, 111; Spanish 145A-145B.

3. **Ethnic Arts 190A-190B.** Senior Colloquium. Prerequisite: restricted to senior standing, Ethnic Arts major. Studies of a comparative and integrative nature in the ethnic arts.

4. Three elective courses which may be chosen from the list below. Other courses might also be appropriate. In order to meet degree requirements the electives must be related to the major and approved by the concentration advisor. The three courses chosen to meet this requirement must be upper division courses and from three different areas outside the area of concentration.

#### Upper Division Electives

**Anthropology** 143. The Individual in Culture.

144. Aesthetic Anthropology.

150. Social Anthropology.

#### Any upper division Anthropology course

Art 101A-101B-101C. Egyptian Art and Archaeology.

103A. Greek Art.

103B. Hellenistic Art.

103C. Roman Art.

104B-104C-104D. Architecture and the Minor Arts of Islam in the Middle Ages.

114A. The Early Art of India.

114B. Chinese Art.

114C. Japanese Art.

114D. The Later Art of India.

115A. Advanced Indian Art.

115B. Advanced Chinese Art.

115C. Advanced Japanese Art.

118A. The Arts of Oceania.

118B. The Arts of Pre-Columbian America.

118C. The Arts of Sub-Saharan Africa.

118D. The Arts of Native North America.

119A. Advanced Studies in African Art: The Western Sudan.

119B. Advanced Studies in African Art: The Guinea Coast.

119C. Advanced Studies in African Art: The Congo.

**Classics** 161. Introduction to Classical Mythology.

**Dance** 111A-111B-111C. Analysis of Human Movement.

128. Dance as Culture in Education.

140A-140B-140C. Dance Cultures of the World.

142. Dance in the Balkans.

143. Dance in India.

144. Dance in Indonesia.

145. Dance in Japan.

146. Dance in Latin America.

150A-150B-150C. Advanced Dance.

151A. History of Dance in Western Culture, Origins to 1600.

151B. History of Dance in Western Culture, Early Baroque to the Present.

158A-158B. Philosophical Bases and Trends in Dance.

159. Advanced Dance Notation.

171A-171P. Performance Courses in Ethnic Dance: A-Bali; B-Ghana; E-India; F-Israel; G-Japan; H-Java; J-Mexico; L-Scotland; M-Spain; P-Yugoslavia.

**Folklore and Mythology** M106. Anglo-American Folksong. (English M111B.)

M111. Literature of Myth and Oral Tradition. (English M111A.)

M121. British Folklore and Mythology. (English M111C.)

M122. Celtic Folklore and Mythology. (English M111D.)

M123A. Introduction to Finnish Folklore and Mythology. (Scandinavian Languages M123A.)

M123B. Finnish Folksong and Ballad. (Scandinavian Languages M123B.)

124. Finnish Folk Art and Technology.

M125. Folklore and Mythology of the Lapps. (Scandinavian Languages M125.)

M126. Baltic and Slavic Folklore and Mythology. (Slavic Languages M179.)

M128. Introduction to Hungarian Folklore and Mythology. (Hungarian M135.)

M129. Folklore and Mythology of the Ugric Peoples. (Hungarian M136.)

130. North American Indian Folklore and Mythology Studies.

M149. Folk Literature of the Hispanic World. (Spanish M149.)

M150. Russian Folk Literature. (Russian M150.)

- M154A-154B. The Afro-American Musical Heritage. (Music 154A-154B.)
- M180. Transcription, Analysis, and Classification of Folk Music. (Music M180.)
- M181. Folk Music of Central and Western Europe. (Music M181.)
190. Selected topics in Folklore and Mythology Studies.
199. Special Studies in Folklore.
- German** 134. German Folklore.
- Indo-European** 140. Introduction to Indo-European Mythology.
- Kinesiology** 145. Analysis of Expressive Movement.
- Music** 130. Music of the United States.
- 131A-131B. Music of Hispanic America.
- 132A-132B. Development of Jazz.
- 135A-135B-135C. History of Opera.
136. Music of Legitimate Drama and Dramatic Motion Pictures.
137. Political Influence on Music.
138. Aesthetics of Music.
139. History and Literature of Church Music.
- 140A-140B-140C. Musical Cultures of the World.
- 142A-142B. Music of the Balkans.
- 143A-143B. Music of Africa.
- M144. American Folk and Popular Music.
- 147A-147B. Music of China.
152. Survey of Indian Music.
- 153A-153B-153C. Music of the American Indian.
- M154A-154B. The Afro-American Musical Heritage.
157. Music of Brazil.
- M180. Transcription, Analysis, and Classification of Folk Music.
- M181. Folk Music of Central and Western Europe.
182. Sociology of Music.
184. Music in Culture and Education.
186. Music and Social Psychology.
- Spanish** 151. Folk Song in Spain and Spanish America.
- Theater Arts** 102A-102B. History of European Theater.
- 103A-103B. Black Peoples Theater in America.
- 104A-104B. History of the American Theater.
106. History of African, Asian and Latin American Film.
110. History of Television and Radio.
117. The Puppet Theater.
- 118A. Creative Dramatics.
119. Theater for the Child Audience.
120. Intermediate Acting for the Stage.
122. Makeup for the Stage.
- 140A. Scenic Techniques for the Stage.
- 140B. Advanced Scenery for the Stage.
- 141A. Lighting Techniques for the Stage.
- 141B. Advanced Lighting for the Stage.
- 142A. Theater Costuming Techniques.
- 142B. Advanced Costuming for the Stage.
- 143A. Scenic Design for the Theater.
- 143B. Advanced Scenic Design for the Theater.
- 144A. Theater Sound Techniques.
- 144B. Advanced Theater Sound.
- 146B. Scene Painting Techniques.
- 149A. Basic Drafting Techniques for the Stage.
- 160A. Fundamentals of Play Direction.
- 190A. The Role of Management in Theater.

## FOLKLORE AND MYTHOLOGY (INTERDEPARTMENTAL)

(Department Office, 1041 Graduate School of Management)

Shirley L. Arora, Ph.D., *Professor of Spanish*  
 Margherita Cottino-Jones, Ph.D., *Professor of Italian*  
 Robert A. Georges, Ph.D., *Professor of English and Folklore*  
 Marija Gimbutas, Ph.D., *Professor of European Archaeology*  
 Vladimir Markov, Ph.D., *Professor of Slavic Languages*  
 David Morton, Ph.D., *Professor of Music*  
 Jaan Puhvel, Ph.D., *Professor of Classics and Indo-European Studies*  
 Stanley L. Robe, Ph.D., *Professor of Spanish*  
 Julio Rodriguez-Puertolas, Ph.D., *Professor of Spanish*

Charles Speroni, Ph.D., *Professor of Italian*  
 Robert M. Stevenson, Ph.D., *Professor of Music*  
 Donald J. Ward, Ph.D., *Professor of German and Folklore*  
 D. K. Wilgus, Ph.D., *Professor of English and Anglo-American Folk Song*  
 (Chairman, Folklore and Mythology Committee).  
 Johannes Wilbert, Ph.D., *Professor of Anthropology*  
 Wayland D. Hand, Ph.D., *Emeritus Professor of German and Folklore*  
 Patrick K. Ford, Ph.D., *Associate Professor of English and Celtic Studies*  
 Michael Owen Jones, Ph.D., *Associate Professor of History and Folklore*  
 James Porter, M.A., *Associate Professor of Music and Folklore*  
 David E. Draper, Ph.D., *Acting Assistant Professor of Music*

Marianna D. Birnbaum, Ph.D., *Adjunct Associate Professor in Hungarian*  
 Inkeri Rank, M.A., M.Ed., *Lecturer in Finnish Studies*

Alexander Badawy, Ph.D., *Professor of Art*  
 Henrik Birnbaum, Ph.D., *Professor of Slavic Languages*  
 Kees W. Bolle, Ph.D., *Professor of History*  
 Kenneth G. Chapman, Ph.D., *Professor of Scandinavian Languages*  
 Jerome Cushman, B.S.L.S., *Senior Lecturer in Literature for Children and Adolescents*  
 Elsie Dunin, M.A., *Associate Professor of Dance*  
 Alma Hawkins, Ph.D., *Emeritus Professor of Dance*  
 Charlotte Heth, Ph.D., *Assistant Professor of Music*  
 Melvyn Helstien, Ph.D., *Professor of Theater Arts*  
 Boris A. Kremeniev, Ph.D., *Professor of Music*  
 Hilda Kuper, Ph.D., *Emeritus Professor of Anthropology*  
 Leo J. Kuper, Ph.D., *Emeritus Professor of Sociology*  
 Steven Lattimore, Ph.D., *Associate Professor of Classics and Classical Archaeology*  
 Wolf Leslau, Docteur-es-Lettres, *Emeritus Professor of Hebrew and Semitic Linguistics*  
 Jacques Maquet, Ph.D., *Professor of Anthropology*  
 James R. Massengale, Ph.D., *Associate Professor of Scandinavian Languages*  
 Michael Moerman, Ph.D., *Professor of Anthropology*  
 Philip Newman, Ph.D., *Associate Professor of Anthropology*  
 Wendell H. Oswalt, Ph.D., *Professor of Anthropology*  
 Pier-Maria Pasinetti, Ph.D., *Professor of Italian and Comparative Literature*  
 Douglas Price-Williams, Ph.D., *Professor of Anthropology and Psychiatry in Residence*  
 Florence H. Ridley, Ph.D., *Professor of English*  
 Arnold Rubin, Ph.D., *Associate Professor of Art*  
 Georges Sabagh, Ph.D., *Professor of Sociology*  
 Allegra Snyder, M.A., *Associate Professor of Dance*  
 Eli Sobel, Ph.D., *Professor of German*  
 Paul O. W. Tanner, M.A., *Lecturer in Music*  
 Erik Wahlgren, Ph.D., *Emeritus Professor of Scandinavian and Germanic Languages*  
 Dean S. Worth, Ph.D., *Professor of Slavic Languages*

Although no undergraduate degree program is offered in folklore and mythology, those majoring in the Ethnic Arts Interdisciplinary Studies program may select folklore and mythology as their area of concentration. A variety of undergraduate courses, offered by departments or by faculty participating in the interdepartmental program is also available to all university students. Those with undergraduate preparation in folklore and mythology studies may continue their work on the graduate level. For planning course work, students should consult departmental advisers and the Chairman of the Committee which administers the interdepartmental program.

### M.A. in Folklore and Mythology

The program leading to the degree of Master of Arts in Folklore and Mythology is administered by the interdepartmental Committee on Folklore and Mythology. It is open to students desiring a knowledge of the materials of folklore and mythology and the theoretical bases and techniques of research. Students completing the degree may continue folklore study in conjunction with a program leading to a degree in an allied field.

Admission to the Program. In addition to meeting the requirements of the Graduate Division, the student should have (1) an A. B. Degree, preferably in a field of the humanities or social sciences, and (2) Folklore 101, Introduction to Folklore (or equivalent), and (3) another upper-division course in folklore. (These course requirements may be completed during the first quarter in residence at UCLA, following admission to the program.) Upon admission to graduate status, the student should consult with the Chairman of the Committee which administers the interdepartmental program.

### Requirements for the Master's Degree

*General Requirements.* As throughout the Graduate Division; see Minimum Requirements.

*Language Requirement.* A reading knowledge of French or German. The ETS examination must be taken in or before the third quarter in residence and must be successfully completed by the end of the fifth quarter in residence.

*Program.* All candidates, whether electing the Thesis Plan or the Comprehensive Examination Plan, must complete the following: Folklore 200, 201A-201B, 216; and at least one course chosen from each of the following groups:

Group 1. Folklore M106, M123B, M154A-154B, M181; M183; Music 140A-140B-140C, 142A-142B, 143A-143B, 147, 153A-153B-153C, German 240B.

Group 2. Folklore M121, M122, M123A, M125, M126, M128, M129, 130, M149, M150, M205, M230A-230B, M241, M249, M257; African Languages 150A-150B; German 134, 240A; Scandinavian 141.

Group 3. Anthropology 141, 266; Classics 161; German M245A (or Scandinavian M245); History 124D; Classics 168; Classics 268.

Group 4. Folklore 213, 217, M243A, M243B, 251, M258, 259, M286A-286B-286C; German 262; English 220, Music 255, 280; Spanish 262B.

*Thesis Plan.* The candidate must complete a minimum of nine courses (five in the 200 series) and submit an acceptable thesis, prepared under the direction of a member of the Folklore and Mythology program. Submission of the thesis will be followed by an oral examination covering the fields of folklore and mythology studies.

*Comprehensive Examination Plan.* The candidate must complete a minimum of nine courses (five in the 200 series). After completion of the course work, the candidate will be expected to demonstrate competence in written examinations requiring a grasp of theoretical bases, major documents, and research methods and techniques of folklore and mythology studies; two forms of folklore and mythology; and the folklore and mythology of a specific country, continent, or geographical area. A final oral comprehensive examination will cover the fields of folklore and mythology studies.

Financial aid and research opportunities are available to qualified graduate students in the form of fellowships, research assistantships, teaching assistantships, and collecting stipendia. For further information, students should consult the Director of the Center for the Study of Comparative Folklore and Mythology.

### Lower Division Course

**15. Introduction to American Folklore Studies.** Lecture and discussion. A cultural-historical survey of the role of folklore in the development of American civilization and of the influence of the American experience in shaping folklore in American society; attention will also be given to representative areas of inquiry and analytical procedures. Mr. Jones

### Upper Division Courses

**101. Introduction to Folklore.** Prerequisite: junior standing. A survey of the various forms of folklore and an examination of their historical and social significance. The Staff

**M106. Anglo-American Folk Song.** (Same as English M111B.) Prerequisite: junior standing. A survey of Anglo-American balladry and folk song, with attention to historical development, ethnic background, and poetic and musical values. Mr. Wilgus

**M111. The Literature of Myth and Oral Tradition.** (Same as English M111A.) A study of myth, dramatic origins, oral epic, folktales, and ballad, including Indo-European and Semitic examples. Mr. Wilgus

**M112. Survey of Medieval Celtic Literature.** (Same as English M111E.) A general course dealing with Celtic literature from the earliest times to the fourteenth century. No knowledge of Irish or Welsh is required. Mr. Ford

**118. Folk Art and Technology.** Prerequisite: junior standing. A general course concerned with the material manifestations of folk culture and the theoretical concepts and methodologies utilized in their analysis. Mr. Jones

**M121. British Folklore and Mythology.** (Same as English M111C.) Prerequisite: junior standing. A survey of the folklore of the people of Britain, with attention to their history, function, and regional differences. Mr. Porter

**M122. Celtic Folklore and Mythology.** (Same as English M111D.) A general course for the student in folklore, with emphasis on the types of folklore research currently practiced in Ireland and the mythic traditions of the Irish and Welsh. Mr. Ford

**M123A. Finnish Folklore and Mythology.** (Same as Scandinavian Languages M123A.) The methods and results of Finnish folklore studies and the mythic traditions of the Finns. Special attention is paid to the oral epic, beliefs and legends. Ms. Rank

**M123B. Finnish Folksong and Ballad.** (Same as Scandinavian Languages M123B.) Course M123A is not prerequisite to M123B. A survey of Finnish balladry and folksong, with attention to historical development, ethnic background, and poetic and musical values. Ms. Rank

**124. Finnish Folk Art and Technology.** Material manifestations of Finnish folk culture: village layout and architecture, folk technology, arts and crafts, textiles, costumes and design. Ms. Rank

**M125. Folklore and Mythology of the Lapps.** (Same as Scandinavian Languages M125.) Survey of Lappish beliefs, customs, and various genres of oral tradition including tales, legends, songs and music. Attention is also paid to the material manifestations of Lappish culture: arts and crafts, textiles, costume, folk technology. Ms. Rank

**M126. Baltic and Slavic Folklore and Mythology.** (Same as Slavic Languages M179.) A general course for students interested in folklore and mythology and for those interested in Indo-European mythic antiquities. Ms. Gimbutas

**M128. Hungarian Folklore and Mythology.** (Same as Hungarian M135.) A general course for the student in folklore and mythology, with emphasis on types of folklore and varieties of folklore research. Ms. Birnbaum

**M129. Folklore and Mythology of the Ugric Peoples.** (Same as Hungarian M136.) Survey of the traditions of the smaller Ugric nationalities (Voguls, Ostyaks). Ms. Birnbaum

**130. North American Indian Folklore and Mythology Studies.** Prerequisite: course 101 or consent of the instructor. An examination of folkloristic and mythological data recorded from various North American Indian peoples within the contexts of the principal ideological frameworks which have been evolved historically for the analysis of such data. Mr. Georges

**M140. From Boccaccio to Basile (in English).** (Same as Italian M140.) A study of the origins and the development of the Italian novella in its themes, in its structure, in its historical context, and in its European ramifications. The course is designed for students in other departments who wish to become acquainted with either the premises or the growth of similar literary genres. It is also intended for students majoring in Folklore and Mythology, who will be given an insight into Italian popular tales when these (as in the case of Boccaccio) were translated into highly sophisticated literary forms, as well as when (as in the case of Basile) they became embedded into the folk tradition of the Western world. Ms. Cottino-Jones

**M149. Folk Literature of the Hispanic World.** (Same as Spanish M149.) A study of the history and present dissemination of the principal forms of folk literature throughout the Hispanic countries. Ms. Arora, Mr. Robe

**M150. Russian Folk Literature.** (Same as Russian M150.) Four hours weekly. Lectures and readings in Russian. Mr. Markov

**M154A-154B. The Afro-American Musical Heritage.** (Same as Music M154A-154B.) Prerequisite: Music 1 or consent of the instructor. 154A is prerequisite to 154B. A study of Afro-American rhythm, dance, music, field hollers, work songs, spirituals, blues, and jazz; the contrast between West Africa, Afro-American and Afro Brazilian musical traditions.

**M180. Analytical Approaches to Folk Music.** (Same as Music M180.) Prerequisite: Music 5A-5B-5C or consent of the instructor. An intensive study of the methods and techniques necessary to the understanding of Western folk music. Mr. Porter

**M181. Folk Music of Central and Western Europe.** (Same as Music M181.) Prerequisites: Music 5A-5B-5C, or Music 140A, or Music 140B, or Music 140C, or consent of the instructor. An analysis of the folk musical styles of Europe, excluding the Balkans and Soviet Russia. Particular attention will be paid to the comparative study of European folk music. Mr. Porter

**190. Selected Topics in Folklore and Mythology Studies.** Prerequisite: course 15 or course 101 and consent of instructor. A proseminar focusing upon selected problems, data, or themes in folklore and mythology studies. The Staff

**199. Special Studies in Folklore.** (½ to 1 course) Prerequisite: senior standing and consent of the instructor. The Staff

#### Graduate Courses

**200. Folklore Bibliography, Theory and Research Methods.** Prerequisites: course 101 and one other folklore course in the 100 series. Mr. Georges, Mr. Ward

**201A-201B. Folklore Collecting and Field Research.** (½ course each) Prerequisite: course 200. One quarter of discussion-demonstration concerning the theoretical concepts, methods, and techniques of data gathering and field research in folklore, followed by one quarter of supervised fieldwork. Mr. Jones, Mr. Wilgus

**202A-202B. Folklore Archiving.** (½ course each) Prerequisite: course 200. One quarter of lecture-demonstration in the principles and techniques of the classification and preservation of folklore collectanea, followed by one quarter of directed experience in archiving. Mr. Georges

**M205. Perspectives in American Folklore Research.** (Same as English M205.) Prerequisites: Folklore 101 and one other upper-division folklore course. An examination of American folklore studies compared and contrasted with investigation in other countries, with emphasis upon the principal conceptual schemes and research orientations employed in the study of folklore in American society. Mr. Jones

**213. Folk Belief and Custom.** Prerequisites: course 101 and any one of the following courses: 118, M121, M122, M123A-123B, 124, M125, M126, M128, M149, M150; Anthropology 102, 140; German 134, 240. Mr. Jones, Mr. Ward

**216. The Folktale.** Prerequisite: course 200 or consent of the instructor. Mr. Georges

**217. Folk Speech.** Prerequisites: course 101, M106, or M111; also recommended: Anthropology M146, English 121, or Linguistics 100. A study of the ethnography of communication and its relevance to the study of social and regional dialects, proverbs,

riddles, onomastics, folk poetry and verse, and traditional humor. Mr. Georges

**M230A-230B. Folk Tradition in Italian Literature.** (Same as Italian M230A-230B.) Mr. Speroni

**M241. Folklore and Mythology of the Near East.** (Same as Near Eastern Languages M241.)

**M243A. The Ballad.** (Same as English M243A.) Prerequisite: consent of the instructor. A study of the English and Scottish popular ballads and their American derivatives, with some attention to European analogues. Mr. Wilgus

**M243B. Problems in Ballad Scholarship.** (Same as English M243B.) Prerequisite: course M243A or consent of the instructor. Intensive investigation of a problem or problems in the study of the popular ballad. Mr. Wilgus

**\*1248. Theory and Method in Latin American Folklore Studies.** A historical survey of folklore scholarship in Latin America, with emphasis on the theoretical bases and methods and techniques employed in the study of and analysis of traditional tales, songs, music, linguistic expression.

**M249. Hispanic Folk Literature.** (Same as Spanish and Portuguese M249.) Prerequisite: graduate standing. An intensive study of folk literature as represented in a) ballad and poetry; b) narrative and drama; c) speech. Ms. Arora, Mr. Robe

**251. Seminar in Finno-Ugric Folklore and Mythology.**

**M257. South American-Folklore and Mythology Studies.** (Same as Anthropology M252.) Prerequisite: Anthropology 105A or consent of the instructor. An examination of oral traditions and related ethnological data from various South American Indian societies against the background of the religious systems of these peoples. Mr. Wilbert

**M258. Seminar in Folk Music.** (Same as Music M258.) Prerequisite: consent of instructor. Mr. Porter, Mr. Wilgus

**259. Seminar in Folklore.** Prerequisite: course 200 and consent of the instructor. The Staff

**M286A-286B-286C. Studies in Hispanic Folk Literature.**

M286A. Studies in Hispanic Folk Literature—The Romancero. (Same as Spanish M286A.) Mr. Rodriguez—Puertolas

M286B. Studies in Hispanic Folk Literature—Narrative and Drama. (Same as Spanish M286B.) Ms. Arora, Mr. Robe

M286C. Studies in Hispanic Folk Literature—Ballad, Poetry, and Speech. (Same as Spanish M286C.) Mr. Robe

#### Individual Study and Research

**596. Directed Studies in Folklore.** (½ to 1½ courses)

The Staff

**597. Preparation for Comprehensive Examinations.** (½ to 1½ courses.) This course may not be used in fulfillment of minimum course requirements for the MA. degree. The Staff

**598. Master's Thesis Preparation.** (½ to 1 course) The Staff

#### Related Courses in Other Departments Upper Division Courses

**African Languages 150A-150B.** African Literature in English Translation.

**Anthropology 102.** World Ethnography.

140. Comparative Religion.

141. Social and Psychological Aspects of Myth and Ritual.

**Art 101D.** Art of the Ancient Near East.

117A. Advanced Studies in Pre-Columbian Art: Mexico.

117B. Advanced Studies in Pre-Columbian Art: Central America.

117C. Advanced Studies in Pre-Columbian Art: The Andes.

118A. The Arts of Oceania.

118B. The Arts of Pre-Columbian America.

118C. The Arts of Sub-Saharan Africa.

118D. The Arts of Native North America.

119A. Advanced Studies in African Art: The Western Sudan.

119B. Advanced Studies in African Art: The Guinea Coast.

119C. Advanced Studies in African Art: The Congo.

**Bulgarian 130.** Introduction to Bulgarian Civilization.

**Classics 161.** Introduction to Classical Mythology.

162. Classical Myth in Literature.

166A. Greek Religion.

166B. Roman Religion.

168. Introduction to Comparative Mythology.

**Dance 140A-140B-140C.** Dance Cultures of the World.

142. Dance in the Balkans.

143. Dance in India.

144. Dance in Indonesia.

145. Dance in Japan.

146. Dance in Latin America.

151A. History of Dance.

**English 112.** Children's Literature.

**French 115A-115B-115C.** Medieval French Literature.

**German 134.** German Folklore.

**History 124D.** History of Religions: Myth.

**Music 132A-132B.** Development of Jazz.

140A-140B-140C. Musical Cultures of the World.

141. Music of Japan.

142A-142B. Music of the Balkans.

143A-143B. Music of Africa.

147A-147B. Music of China.

149. Anthropology of Music.

152. Music of India.

153A-153B-153C. Music of the American Indians.

190A-190B. Proseminar in Ethnomusicology.

**Rumanian 130.** Introduction to Rumanian Civilization.

**Scandinavian 141.** Viking Civilization and Literature.

**Slavic 99A-99B.** Slavic Peoples and Cultures.

**Sociology 124.** Ethnic and Status Groups.

130. Social Processes in Africa.

131. Latin American Societies.

132. Population and Society in the Middle East.

133. Comparative Sociology of the Middle East.

**Theater Arts 117.** The Puppet Theater.

**Spanish 151.** Folk Song in Spain and Spanish America.

#### Graduate Courses

**Anthropology 203.** Cultures of Asia.

M247A. Seminar in Ethnographic Film

250. Indians of South America.

254. African Cultures.

261. Selected Topics in Ethnology.

267B-267C. Ethnographic Film Direction.

269F. Selected Topics in Ethnology.

269P. Studies in Symbolic Anthropology.

269U. Selected Topics in African Cultures.

269V. Selected Topics in Arctic Cultures.

269Y. Selected Topics in Cultures of the Pacific Islands.

**Art 216.** Topics in African Art.

217. Topics in Oceanic Art.

218. Topics in Pre-Columbian Art.

219. Topics in Native North American Art.

220. The Arts of Africa, Oceania and Pre-Columbian America.

**Classics 268.** Seminar in Comparative Mythology.

**Comparative Literature M229.** Archetypal Heroes in Literature.

**Dance 226A-226B-226C.** Dance Expressions in Selected Cultures.

**English 220.** Readings in Medievalism.

**French 215A-215E.** The Medieval Language and Literature.

**German 240A.** Theories, Methods and History of Germanic Folklore.

240B. Folksong and Ballad.

240C. Oral Prose Genres.

M245A. Germanic Religions and Mythology.

245B. Germanic Antiquities.

262. Seminar in Germanic Folklore.

**Italian 214E.** *The Decameron*.

217B. Commedia dell'arte and the Theatre.

218C. The Theater, Especially Metastasio, Goldoni, C. Gozzi.

**Music 253.** Seminar in Notation and Transcription in Ethnomusicology.

254A-254B. Seminar in Field and Laboratory Methods in Ethnomusicology.

255. Seminar in Musical Instruments of the Non-Western World.

280. Seminar in Ethnomusicology.

281A-281B. Music of Indonesia.

282. Music of Persia.

283. Music of Thailand.

285. Music of Tibet.

287. Seminar in African Music.

288. Seminar in North American Indian Music.

**Russian** 251A-251B. Old Russian Literature.

291A. Seminar in Old Russian Literature.

**Spanish** 262B. Epic Poetry.

## FOREIGN LITERATURE IN TRANSLATION

The following courses offered in the departments of language and literature do not require a reading knowledge of any foreign language:

**African Languages** 150A-150B-150C. African Literature in English Translation.

**Ancient Near Eastern** 150A, 150C. Survey of Ancient Near Eastern Literatures in English.

**Arabic** 150A-150B. Survey of Arabic Literature in English.

**Armenian** 150A-150B. Survey of Armenian Literature in English.

**Classics** 141. A Survey of Greek Literature in English.

142. Ancient Drama.

143. A Survey of Latin Literature in English.

**Czech** 155A-155B. Survey of Czech Literature.

**Dutch-Flemish and Afrikaans** 112. Dutch, Flemish, Afrikaans Literature in Translation.

**English** 108A-108B. The English Bible as Literature.

**French** 142. Contemporary French Theater in Translation.

143. Modern French Thought.

144A-144C. The French Novel in Translation.

145. Topics in French Literature.

**German** 121A. Older German Literature in Translation.

121B. Classical German Literature in Translation.

121C. Special Problems in Literature.

121D. Modern German Literature in Translation-Narrative Prose I.

121E. Modern German Literature in Translation-Narrative Prose II.

121F. Modern German Literature in Translation-Drama and Lyrics.

121G. Modern German Jewish Literature in Translation.

**Humanities** 1A-1B. World Literature.

**Hungarian** 121A-121B. Survey of Hungarian Literature in Translation.

**Iranian** 150A-150B. Survey of Persian Literature in English.

**Italian** 100A-100B-100C. Main Trends in Italian Literature and their Relation to Other European Literatures (in English).

110A-110B. The Divine Comedy in English.

M140. From Boccaccio to Basile (in English).

150. Modern Italian Fiction in Translation.

**Jewish Studies** 151A-151B. Modern Jewish Literature in English.

**Oriental Languages** 140A-140B-140C. Chinese Literature in Translation.

141A-141B. Japanese Literature in Translation.

**Polish** 152A-152B. Survey of Polish Literature.

**Russian** 119. Survey of Russian Literature to Pushkin.

**Russian** 120A-120B. Survey of Russian Literature.

124A-124F. Studies in Russian Literature.

125. The Russian Novel in its European Setting.

**Russian** 126. Survey of Russian Drama.

**Scandinavian** 138. Survey of Finnish Literature.

141. Viking Civilization and Literature.

142. Scandinavian Literature of the 18th and 19th Centuries.

143. Modern Scandinavian Literature.

144. Ibsen.

145. Strindberg.

146. Kierkegaard.

**Serbocroatian** 154A-154B. Survey of Yugoslav Literature.

**Spanish** 160A. Spanish and Portuguese Literature.

160B. Spanish American and Brazilian Literature.

**Yiddish** 121A. 20th Century Yiddish Poetry in English Translation.

121B. 20th Century Yiddish Prose and Drama in English Translation.

## FRENCH

(Department Office, 160 Haines Hall)

Marc Bension, Ph.D., *Professor of French*

Eric Gans, Ph.D., *Professor of French*.

Hassan el Nouty, Docteur ès Lettres, *Professor of French*.

Oreste F. Pucciani, Ph.D., *Professor of French*.

Milan S. La Du, Ph.D., *Emeritus Professor of French*.

Stephen D. Werner, Ph.D., *Associate Professor of French (Chairman of the Department)*.

Mary-Ann Burke, Ph.D., *Assistant Professor of French*.

Patrick Coleman, Ph.D., *Assistant Professor of French*.

Sara Melzer, Ph.D., *Assistant Professor of French*.

Delphine Perret, Docteur III<sup>e</sup> cycle, *Assistant Professor of French*.

Shuhsi Kao, *Acting Assistant Professor of French*.

Colette Brichant, Docteur de l'Université de Paris, *Lecturer in French*.

Jacqueline Hamel, Licenciée-ès-Lettres, *Lecturer in French*.

Madeleine Korol-Ward, Ph.D., *Lecturer in French*.

Padoue de Martini, B.A., *Lecturer in French*.

### Preparation for the Major

Required: French 1, 2, 3, 4, 5, 6 (or 7), 12, 15.

Before undertaking Upper Division work in *grammar, composition, advanced phonetics or civilization*, the student will be required to take French 1, 2, 3, 4, 5, 6 (or 7) and 15 or their equivalents. Students receiving less than a grade of B in French 6 will take French 7 (minimum grade for continuation C).

Before undertaking Upper Division work in *literature*, the student will, in addition to the above courses, be required to take French 12, "Introduction to the Study of French Literature." The student will normally take French 6 before undertaking French 12 or French 15; highly qualified students who have obtained the grade of A in French 5 may enroll in French 12 concurrently with French 6 with the permission of the instructor.

### The Major

Four majors are offered by the Department.

**Plan A:** Leading to the Bachelor of Arts in French and subsequently to the Master's degree, Plan A, or to the standard elementary or secondary credential. Required: 15 full courses of upper division work, including French 100A-100B-100C, 103, 114A-114B-114C; two quarters from the offerings French 132-135\*; 3 courses in French literature chosen from the offerings 115-120\*\*; three elective courses normally to be chosen from upper division offerings in the Department of French in language, civilization or literature. A maximum of one upper division course outside the Department may be included in the major program with the approval of the major adviser.

\*A course in French History may be substituted for one of these with the permission of the major adviser.

**Plan B:** With emphasis on literature, leading to the Bachelor of Arts in French and subsequently to the Master's degree, Plan B. Required: 15 full courses of upper division work including French 100A-100B-100C, 103, 114A-114B-114C; 6 courses in French literature chosen from the 115-120 offerings\*\*; 2 elective upper division courses to be chosen upon consultation with the major adviser, either from offerings of the Department of French, from the Humanities or Social Sciences Division of the College of Letters and Science, or from the College of Fine Arts.

**Plan C:** French Studies: A core program in French allowing, in addition, for individual selection of relevant courses in related fields in the Humanities, the Social Sciences, Linguistics, etc. Required: 15 full courses of upper division work, including French 100A-100B-100C, 103, 114A-114B-114C; 3 courses of French literature chosen from the offerings 115-120\*\*; 5 upper division elective courses in the fields relevant to French Studies to be chosen in or out of the Department of French upon consultation with the major adviser. This program does not normally prepare admission to the Master's program in French at UCLA (see Plans A and B).

\*\*In all Major Plans one course from the 121 series and/or one undergraduate seminar (French 150-160 not including 157) may be substituted for courses in the 115-120 offerings.

**Plan D:** French and Linguistics: In addition to the normal preparation for the major, students are required to complete the sixth quarter of work in one other foreign language or the third quarter in each of two other foreign languages. Required: French 100A, 100B, 100C, 103, 114A, 114B, 114C; two courses from French 105, 106, 107, 108A; Linguistics 100, 103, 110, 120A, 120B, 160.

It is strongly advised that students who intend to pursue advanced degrees begin preparation for the language requirements at the undergraduate level. Students whose knowledge of French exceeds the preparation usually received in courses preparing for the Major and who demonstrate the requisite attainment in French 100A, 100B, or 100C will substitute for those courses in grammar and composition an equivalent number of upper division courses in the Department of French upon consultation with the major adviser. All prospective French majors who are native or quasi-native speakers of French must see the major adviser before beginning upper division work in the Major.

All major students must complete a minimum of 9 courses of appropriate upper division work in the Department of French.

Course work taken on a Passed/Not Passed basis is *not acceptable* in any area of the Major program.

Students who fail to maintain a C average or better in all upper division work undertaken in fulfillment of their French Major will, upon approval of the Dean of the College of Letters and Science, be excluded from the major in French.

Students intending to major in French must consult a major adviser before registering for upper division courses in fulfillment of the major.

### The Honors Program in French

Majors with a 3.6 grade point average in the Department of French and a 3.3 overall grade point average will be eligible to apply for the Honors Program in French. Interested students should contact the Professor in charge of French 140A, 140B near the end of their Junior year and should make application at that time if they wish to enter the program. Applications should include: (1) a letter in French describing the student's field of interest in French literature and culture; (2) the student's final examination in French 100B, 100C, 103 or a final examination or term paper from a literature course. If these materials meet with approval, the student will be called for an interview. Students admitted to the program will enroll in French 140A-140B. French 140A is a seminar taught by a member of the professorial staff. 140B is to be devoted to the preparation of an individual project, normally related to the topic of 140A; this work will be undertaken under the guidance of a faculty member (not necessarily the instructor of 140A).

### Teaching Credential Requirements

Students desiring a single-subject teaching credential in French must have the approval of the French Department in order to gain admission to student teaching. For the Single Subject Instruction Credential, this approval is contingent upon a major (or the equivalent) in French and the successful completion of French 370 and 495. French 370 and 495 should be taken prior to student teaching. Under exceptional circumstances, the Department may allow the student to enroll in these courses concurrently with a student teaching assignment.

Multiple subject instruction credential candidates who select French in partial fulfillment of the Special Program in Diversified Liberal Arts must complete 310A and 310B prior to student teaching.

For additional information, consult the Graduate School of Education (Moore Hall 201) and the Department of French (Haines Hall 160).

### Graduate Programs

For the purposes of all graduate programs in the Department, the corpus of French literature is considered to be divided into three chronological periods: I Medieval-Renaissance; II Classical (roughly the 17th and 18th centuries); III Modern (since 1800) (with Franco-African literature as an option).

### Requirements for the Master's Degree (M.A.)

The Department offers three Master's programs: Plan A, designed for teachers of French at the secondary and junior college levels; Plans B (comprehensive examination plan) and C (thesis plan), leading to the Ph.D. in French.

**General requirements:** (1) Language: For all candidates for the M.A. in French, the foreign language requirement will be fulfilled by passing a course of at least level 3 in either German, Latin, Spanish, or Italian (Plan A only), or by passing the University reading examination in one of these languages. In special cases, substitution of another foreign language will be accepted, if approved by the Chairman of the Department. Students are required to fulfill this foreign language requirement before taking the M.A. examination (Plans A or B). All candidates for the M.A. must satisfy the Department as to their proficiency in spoken French. (2) All entering graduate students will take a departmental examination to determine whether they will be required to take French 201D.

**Plan A: Course requirements:** At least 12 courses in French including normally 201D, and 310A/310B or 370/495 (or any combination of one theory and one observation course). Among these twelve courses, the student will take at least seven courses in literature including at least three courses in each of two periods (one of which must be the modern period). To meet general University requirements, at least six courses must be of graduate level.

**Comprehensive Examination:** Written examinations of three hours in length in each of the two periods prepared, a two-hour examination in translation and literary composition, a two-hour *explication de texte*, and an oral examination in French. At the discretion of the Department, a candidate may be permitted to take this examination a second (but not a third) time.

### Plans B and C

**Course requirements:** At least 12 courses in French, including normally 201D, at least three courses in each of two periods, and at least one course from 202-207. At least eight of these courses must be of graduate level. Students in Plan C may include 4 units of 598 credit for work on the thesis.

**Plan B: Comprehensive Examination:** Written examinations of four hours in length in each of the two periods prepared, a two-hour *explication de texte*, and an oral examination in French. At the discretion of the Department a candidate may be permitted to take this examination a second (but not a third) time.

**Plan C: Admission Requirements and Oral Qualifying Examinations:** Students may apply to the Chairman of the Department for admission into Plan C after completion of at least six courses of



graduate level (200 series), at least four of which must be literature courses in the French Department. The minimal admission requirements are: (1) 3.5 graduate G.P.A. in French (2) letters from two graduate professors in the Department specifically recommending admission into this plan.

Permission to write the thesis is contingent upon passing the *Oral Qualifying Examination*. This is a one-hour oral examination in the two periods prepared, to be administered by a committee established by the candidate, consisting of three graduate professors in the French Department, including normally at least one specialist in each period. If the candidate fails this examination, the Committee will determine whether he be permitted another attempt, or whether he be advised to take the written comprehensive examination (Plan B).

*Thesis*: The thesis should demonstrate proficiency in the methods and concepts of literary research; a suitable length will normally be about 50 pages.

After passing the Oral Qualifying Examination the candidate should establish a three-member Thesis Committee (normally but not necessarily the same body that administered the Oral), to be appointed by the Dean of the Graduate Division. A tentative outline of the proposed thesis must be approved by all three members *in writing* before work on the thesis is begun. Final approval of the thesis by all three members is also required.

#### Requirements for the Ph.D.

*Admission*: Candidates will be considered for admission to the doctoral program upon completion of all requirements for the M.A. Plan B or C. The candidate's entire graduate record, as well as his performance on the examination or thesis will be taken into account.

*Language requirements*: Two languages up to level 5 and 6 respectively; to be chosen upon approval of the Guidance Committee among the four following: Latin, German, Russian and Spanish. The substitution of another language when warranted by the nature of the student's specialization must be recommended by the student's guidance committee, and approved by the Chairman of the Department. When the nature of the student's specialization requires the knowledge of a third language (aside from the two normally required) the guidance committee is expected to take into account the extra work implied in making its other recommendations.

*Doctoral Guidance Committee*: Upon admission to the doctoral program, the student will establish a Doctoral Guidance Committee consisting of at least three graduate professors, including (1) the Chairman, normally in the student's proposed period of specialization and (2) a specialist in the period not covered at the M.A. level. This committee will administer the written Doctoral Qualifying Examinations.

*Course requirements*: (1) At least three courses from 202-207, including at least one from the 203 series (2) at least four seminars, two of which should be in the candidate's proposed area of specialization (3) at least two graduate courses in other departments related to his area of specialization. In addition, the candidate is expected to follow the Guidance Committee's suggestions in taking courses in preparation for the Doctoral Qualifying Examination.

*Written Doctoral Qualifying Examination*: (1) Four written examinations of four hours each as follows: (a) Focused specifically in the area of the prospective dissertation topic (e.g. an author, a specifically defined theme or genre over a limited period (one generation)). (b) Dealing with a more general subject related to the dissertation topic (i.e., the period of the author, the development of the theme or genre over one or more centuries). (c) In a cognate field related to the methodology or approach the candidate proposes to employ in the dissertation. (d) In the period not covered at the M.A. level.

It is understood that the topics to be dealt with in parts a, b, and c shall be determined by prior consultation of the candidate with the Doctoral Guidance Committee.

Upon passing the written examinations the candidate will be admitted to the *Oral Candidacy Examination*, where the Departmental members of his Doctoral Committee will be joined by two members from other departments. This examination, normally of two hours duration, will bear chiefly on parts (a) and (b) of the written examination, and on the proposed dissertation subject. The candidate is expected to submit a written outline of research plans before the oral examination.

*Final Oral Examination*: (Defense of dissertation): No longer required (this does not prevent individual Doctoral Committees from imposing this examination on a candidate.)

*Candidates holding an M.A. from another institution* must pass a screening exam on two literary periods within the first year of their residence.

#### Lower Division Courses

The ordinary prerequisites for each of the lower division courses are listed under the description of these courses. Students who have had special advantages in preparation may, upon examination or by recommendation of the instructor, be permitted a more advanced program. No credit will be allowed for completing a less advanced course after satisfactory completion of a more advanced course in grammar and/or composition.

**1. Elementary French.** Sections meet five hours weekly. Not available for academic credit for those students who have completed more than one year of high school French or the equivalent. The student will, however, be credited with four units toward their minimum progress requirement.

Ms. Hamel in charge

**1R. Introduction to the Reading of French. (½ course)** Classes will meet three times a week. This course is intended to enable students to acquire basic reading skills in French. Attention will be given at an early stage to the specialized vocabulary of particular scientific and humanistic disciplines. (Should not be taken concurrently with French I. Credit will not be given for both courses.)

Ms. Brichant in charge

**1G. Elementary French for Graduate Students. (No credit)** Sections meet three hours weekly.

Ms. Brichant in charge

**2. Elementary French.** Sections meet five hours weekly. Prerequisite: course 1 or advanced placement standing. Not available for academic credit for those students who have completed two years of high school French or equivalent. The student will, however, be credited with four units toward their minimum progress requirement.

Ms. Hamel in charge

**2R. Intermediate Reading of French. (½ course)** Classes will meet three times a week. This course will pursue the work begun in 1R. It will gradually introduce texts of a more specialized nature in the various disciplines. (Should not be taken concurrently with French II. Credit will not be given for both courses.)

Ms. Brichant in charge

**2G. Elementary French for Graduate Students. (No credit)** Sections meet three hours weekly. Prerequisite: course 1G or the equivalent.

Ms. Brichant in charge

**3. Elementary French.** Sections meet five hours weekly. Prerequisite: course 2 or two years of high school French or advanced placement standing.

Ms. Hamel in charge

**3R. Advanced Reading of French. (½ course)** Classes will meet three times a week. This course will pursue the work begun in 1R and 2R. It will be conducted in groups arranged according to field of study. (Should not be taken concurrently with French III. Credit will not be given for both courses.)

Ms. Brichant in charge

**4. Intermediate French.** Sections meet five hours weekly. Prerequisite: course 3 or three years of high school French or advanced placement standing.

The Staff

**4G. Conversational French for Graduate Students. (No credit)** Classes meet three hours weekly.

The Staff

**5. Intermediate French.** Sections meet five hours weekly. Prerequisite: course 4 or four years of high school French or advanced placement standing.

The Staff

**6. Intermediate French.** Sections meet five hours weekly. Prerequisite: course 5 or advanced placement standing.

The Staff

**7. Advanced French.** Sections meet five hours weekly. Prerequisite: course 6 or advanced placement standing.

The Staff

**10A-10D. French Conversation. (½ course each)** Sections meet three hours weekly. Prerequisite: course 3 with grade A or B or permission of the Department.

The Staff

**12. Introduction to the Study of French Literature.** Classes meet three hours weekly. Prerequisite: course 6 (or 7) or the equivalent or permission of the instructor. Principles of literary analysis as applied to selected texts in poetry and prose.

The Staff

**15. Theory and Correction of Diction.** Classes meet four hours weekly. Prerequisite: course 6 or consent of instructor. French pronunciation, diction, intonation in theory and practice; phonetic transcription, phonetic evolution of the modern language; remedial exercises; recordings.

Ms. Korol-Ward in charge

**31A-31B-31C. France Through the Ages (in English.)** A survey of French civilization with emphasis on social, intellectual and artistic trends.

Ms. Brichant

31A. From the origins through the Renaissance.

31B. From the Renaissance to the 20th century.

31C. Contemporary France.

#### Upper Division Courses

The prerequisites to all upper division courses taken in partial fulfillment of the French Major are French 6 with a grade of B or better (otherwise French 7 with a grade of C or better), French 12, French 15 or their equivalents. All upper division courses except as otherwise indicated are conducted in French. Credit will ordinarily not be allowed for completing a less advanced course after satisfactory completion of a more advanced course in grammar and/or composition. French 104, 105, 106, 107 and 108A are not sequential and may be taken in any order, provided the prerequisites for each course are fulfilled.

**100A. Advanced Grammar I.** Prerequisite: course 6 and (normally) course 15, or the equivalent. A placement examination will be administered and qualified students will be advanced to French 100B or 100C.

The Staff

**100B. Advanced Grammar II.** Prerequisite: course 100A or the equivalent. A placement examination will be administered and

qualified students will be advanced to French 100C or to 103.

The Staff

**100C. Advanced Grammar III.** Prerequisite: course 100B or the equivalent. A placement examination will be administered and qualified students will be advanced to French 103.

The Staff

**103. Advanced Stylistics.** Classes meet three hours weekly. Prerequisite: course 100C or the equivalent. This course is required of all majors as well as of all candidates for the Standard Credential in Elementary or Secondary Teaching.

Ms. Korol-Ward in charge

**104. Literary Composition.** Classes will meet once a week for two hours. Prerequisite: course 103 or the consent of the instructor.

The Staff

**105. French Linguistics.** Classes will meet three hours weekly. Prerequisite: consent of the instructor.

Ms. Perret

**106. Advanced French Phonetics.** Classes meet twice weekly. Prerequisite: consent of the instructor.

Ms. Korol-Ward

**107. Contemporary Spoken French.** Classes will meet three hours weekly; laboratory sessions may be added as needed. Prerequisites: course 103 or consent of the instructor.

The Staff

#### 108A-108C. Advanced Practical Translation.

**108A.** Classes will meet three hours weekly. Prerequisite: course 103 with a grade of B, or consent of instructor. An introduction to the translation of advanced texts of general interest, with work in the theory of translation.

**108B.** Classes will meet three hours weekly. Prerequisite: the former 108 course, or 108A, or consent of instructor. Practice in the translation of technical documents and texts; comparative stylistics of translation.

**108C.** Classes will meet three hours weekly. Prerequisite: course 108B or consent of instructor. Advanced work in areas of general and specialized interest together with exercises in consecutive and simultaneous translation.

The Staff

**114A-114B-114C. Survey of French Literature I, II, III.** Prerequisite: course 12 or the equivalent. A survey of French literature from the Medieval period through the 20th century.

114A. Medieval and Renaissance Literature.

114B. Literature of the Classical Era (17th and 18th centuries.)

114C. Modern Literature (19th and 20th centuries.)

The Staff

#### 115A-115D. Medieval French Literature.

115A. The Medieval Epic.

115B. The Medieval Romance.

115C. The Medieval Theater.

115D. Medieval Lyric Poetry.

Ms. Burke

#### 116A-116D. The Renaissance.

116A. Rabelais and His Time.

116B. Ronsard and His Time.

116C. Montaigne and His Time.

116D. Renaissance Theater.

Mr. Bensimon

#### 117A-117D. The Seventeenth Century.

117A. Corneille and the Baroque.

117B. The Classical Theatre: Racine and His Contemporaries.

117C. Moliere and the Comedy of the XVIIth Century.

117D. Philosophers, moralists and novelists of the XVIIth Century.

Ms. Melzer

#### 118A-118D. The Eighteenth Century.

118A. Comedy and Drama.

118B. Voltaire and the Encyclopedists.

118C. Diderot and Rousseau.

118D. The Novel.

Mr. Coleman, Mr. Werner

#### 119A-119D. The Nineteenth Century.

119A. Romanticism.

119B. The Generation of 1848.

119C. Naturalism and Symbolism.

119D. The Turn of the Century.

Mr. el Nouty, Mr. Gans

#### 120A-120D. The Twentieth Century.

120A. Gide, Proust and Their Time.

120B. Post World War I French Writers.

120C. Sartre, Camus and Their Time.

120D. Contemporary French Writers.

Ms. Kao, Mr. Pucciani

#### 121A-121D. Contemporary Literature of French Expression.

121A. Franco-African Literature.

121B. Franco-Canadian Literature.

121C. Franco-Helvetian and Franco-Belgian Literature.

121D. Franco-Caribbean Literature.

Mr. el Nouty

#### 122. French Folklore and Young People's Literature.

Ms. Korol-Ward

**123. French Popular Literature.** "Romans policiers," "Theatre des boulevards," "chansons-poemes," etc. The Staff

**124. Dramatic Interpretation.** Study of the techniques of stage direction and interpretation of French Drama. A survey of some of the different theories and approaches used on the French stage. Each student will act or direct a scene from a play to be performed under rehearsal conditions. Ms. Korol—Ward

**132. Contemporary France.** Classes meet three hours weekly. A fourth hour may be required for the viewing of films and other laboratory activities. Ms. Brichant

**133. French Institutions from the Revolution to the Present.** Classes meet three hours weekly. A fourth hour may be required for the viewing of films and other laboratory activities. Ms. Brichant

**134. The "Ancien Regime."** Classes meet three hours weekly. A fourth hour may be required for the viewing of films and other laboratory activities. Ms. Brichant

**135. From Prehistoric Times to the Renaissance.** Classes meet three hours weekly. A fourth hour may be required for the viewing of films and other laboratory activities. Ms. Brichant

**138. Cinema and Literature in Contemporary France.** Classes meet three hours weekly. Additional hours may be required for the viewing of films and other laboratory activities. Course may be taken as an elective in partial fulfillment of French Majors Plans A, B and C. The Staff

**140A-140B. Honors Program in French.** Prerequisites: junior or senior standing in French with 3.6 grade-point average in the major, a 3.3 overall average and consent of the Department.

140A. Honors Seminar in French. Seminar on a specific topic in French literature. Readings, oral reports, discussion.

140B. Honors Tutorial in French. Prerequisite: course 140A. Individual study on a topic related to that of 140A, leading to an essay to be written under the guidance of a faculty member. Mr. Gans in charge

#### Undergraduate Seminars

Courses 150-157 may be repeated once for credit with the consent of the major adviser.

**150. Studies in Medieval Literature.** The Staff

**151. Studies in Sixteenth Century Literature.** The Staff

**152. Studies in Seventeenth Century Literature.** The Staff

**153. Studies in Eighteenth Century Literature.** The Staff

**154. Studies in Nineteenth Century Literature.** The Staff

**155. Studies in Twentieth Century Literature.** The Staff

**156. Studies in Contemporary Literature of French Expression.** The Staff

**157. Studies in the French Language.** The Staff

**158. The Woman in French Literature.** This course will explore a selected aspect of the situation of woman in French literature as author, character, symbol, etc. The Staff

**160. Studies in the History of Ideas.** Specific themes will be chosen and developed which will address a particular problem of French literature, civilization or ideas. The course may be repeated for credit with the approval of the major adviser. The Staff

**199. Special Studies in French. (½ to 2 courses)** Prerequisite: junior or senior standing, consent of the instructor and consultation with Chairman of major advisers. Course may be taken twice. Department Chairman in charge

#### Courses in English

The following courses may not be taken for graduate credit; they may be taken as out-of-department electives for the Undergraduate Majors.

**142. Contemporary French Theater in Translation.** Classes meet two hours weekly. This course may be considered as an out-of-department elective for the purpose of satisfying major requirements. Ms. Korol—Ward

**143. Modern French Thought.** Classes meet two hours weekly. Contemporary works will be read and discussed in translation. Course may be taken as an elective in partial fulfillment of French Major Plan C. Course may be considered as an out-of-department elective for the purpose of satisfying major requirements. The Staff

**144A-144C. The French Novel in Translation.** Classes meet two hours weekly. Authors to be studied will be announced quarterly. Course may be considered as an out-of-department elective for the purpose of satisfying major requirements. The Staff

**145. Topics in French Literature.** To be announced each quarter. This course may not be taken for major or graduate credit but may be considered as an out-of-department elective for the purpose of satisfying major requirements. The Staff

#### Graduate Courses

**201A. Theme.** Course meets three times weekly. Advanced translation into French. The Staff

**201B. Version.** Course meets three times weekly. Advanced translation into English. The Staff

**201C. La Dissertation Francaise.** Course meets three times weekly. Advanced composition. The Staff

**201D. Problems of French Literary Composition.** Course meets three times weekly. Practical work of an advanced nature in the expression and presentation of literary research. The Staff

**202. Explication de Textes.** Mr. Bensimon

**203A-203B-203C. French Literary Criticism.**

203A. Topics in *Literary Criticism from Aristotle to Sainte-Beuve.*

203B. *Modern Theories of Criticism.*

203C. *The Techniques of Literary Criticism.* Mr. Coleman, Mr. Gans

**204A. Phonology and Morphology from Vulgar Latin to French Classicism.** The evolution of the French language. Required of candidates for the Ph.D. in Romance Languages and Literatures who emphasize philology. Ms. Perret

**204B. Syntax and Semantics from Vulgar Latin to French Classicism.** The evolution of the French language. Required of candidates for the Ph.D. in Romance Languages and Literatures who emphasize philology. Ms. Perret

**205A-205B-205C. The Intellectual Background of French Literature.**

205A. *Scholasticism (with ancient sources); Humanism.*

205B. *Rationalism, Empiricism, Positivism.*

205C. *Idealism, Phenomenology, Existentialism.* Mr. Pucciani

**206. French Linguistics.** Prerequisites: Linguistics 100 or French 105, or the equivalent. Discussion of modern linguistic theory in the area of French grammar, syntax and semantics. Ms. Perret

**207. Introduction to Stylistics.** Discussion of the basic stylistic devices of the French language. Ms. Perret

**215A-215E. The Medieval Language and Literature.** Ms. Burke

215A. *Old and Middle French.* This course is prerequisite to courses 215B-215E. Phonology and morphology of the language. Introduction to Old French texts.

215B. *The Chanson de geste.*

215C. *The Romance.*

215D. *Medieval Theater.*

215E. *Provençal Poetry.*

**216A-216H. The Renaissance.** Mr. Bensimon

216A. *Topics in early sixteenth century French literature.*

216B. *Topics in the Pleiade.*

216C. *Topics in late sixteenth century French literature.*

216D. *Ronsard.*

216E. *Rabelais and Prose Writers.*

216F. *Baroque Poetry.*

216G. *Montaigne.*

216H. *Theater.*

**217A-217I. The Seventeenth Century.** Ms. Melzer

217A. *Topics in Classical Theater.*

217B. *Topics in Non-Dramatic Literary Genres.*

217C. *Topics in Classical Prose and Thought.*

217D. *Moliere.*

217E. *Corneille.*

217F. *Racine.*

217G. *The Novel.*

217H. *Moralists.*

217I. *Religious Thought.*

**218A-218D. The Eighteenth Century.** Mr. Coleman, Mr. Werner

218A. *Topics in the Early Enlightenment. (1680-1747).*

218B. *Topics in the Enlightenment. (1748-1765).*

218C. *Topics in the Late Enlightenment. (1766-1791).*

218D. *The Theater.*

**219A-219K. The Nineteenth Century.** Mr. el Nouty, Mr. Gans

219A. *Topics in Romanticism.*

219B. *Topics in Realism and Naturalism.*

219C. *Topics in Symbolism.*

219D. *Poetry.*

219E. *The Novel.*

219F. *The Theater.*

219G. *Historians and Critics.*

219H. *Victor Hugo.*

219I. *Balzac.*

219J. *Independent Novelists.*

219K. *Intellectual Trends.*

**220A-220P. The Twentieth Century.** Ms. Kao, Mr. Pucciani

220A. *From Symbolism to Surrealism. Selected topics.*

220B. *From Surrealism to Existentialism. Selected topics.*

220C. *From Existentialism to the Present. Selected topics.*

220D. *Paul Valery.*

220E. *Marcel Proust.*

220F. *Andre Gide.*

220G. *Andre Malraux.*

220H. *The Theater.*

220I. *The Anti-Theater.*

220J. *The Novel.*

220K. *The Anti-Novel.*

220L. *Surrealism.*

220M. *Existentialism.*

220O. *Poetry.*

220P. *Cinema and Literature.*

**221A-221D. French-African Literature.** Mr. el Nouty

221A. *Introduction to the Study of the French-African Literatures.*

221B. *French-African Literature of Madagascar and Bantu Africa.*

221C. *French-African Literature of Berbero-Sudanese and Arabo-Islamic Africa.*

221D. *Franco-Caribbean Literature.*

#### Seminars

The following courses, 250A through 260B, may be repeated for credit.

**250A-250B. Studies in Medieval Literature.** Ms. Burke

**251A-251B. Studies in the Renaissance.** Mr. Bensimon and the Staff

**252A-252B. Studies in the Baroque.** Mr. Bensimon and the Staff

**253A-253B. Studies in the Seventeenth Century.** The Staff

**254A-254B. Studies in the Eighteenth Century.** Mr. Werner and the Staff

**255A-255B. Studies in the Nineteenth Century.** Mr. el Nouty, Mr. Gans

**256A-256B. Studies in Contemporary Literature.** Mr. Pucciani and the Staff

**257A-257B. Studies in the French African Literature.** Mr. el Nouty and the Staff

**258A-258B. Studies in Literary Criticism.** Mr. Gans and the Staff

**259A-259B. Studies in Philosophy and Literature.** The Staff

**260A-260B. Studies in the History of Ideas.** A particular problem of French literature and ideas. The Staff

**261. Studies in French Linguistics.** Ms. Perret and the Staff

**262. Studies in Stylistics.** The Staff

**270. Introduction to Methods of Literary Research.** Prerequisite: graduate status. The course will be made up of lectures on aspects of literary research. It will range from bibliography to new critical approaches, and will call on specialists in each field. The Staff

#### Professional Courses

**310A-310B. The Teaching of French in the Elementary School and at the Junior High Level.**

310A. Prerequisite: consent of the instructor. Theory of French teaching in the elementary school and at the junior high level. Classes meet three hours weekly. Required for the Standard Elementary Credential.

310B. Observation of language teaching in the elementary school and at the junior high level. Classes will meet as announced. Required for the Standard Elementary Credential. The Staff

**370. The Teaching of French in the Secondary School and at the College Level: Observation.** Prerequisites: course 103. Observation of language teaching in the secondary school and at the college level. Ms. Hamel

**372. The Language Laboratory. (½ course)** Prerequisite: consent of the instructor. New electronic techniques for language instruction. Pedagogical and practical problems of making tapes, installing and organizing a laboratory; control procedures. Mr. de Martini

**495. The Teaching of French in the Secondary Schools and at the College Level.** Prerequisite: course 370. Theory of language teaching. Letter grade. Mr. Pucciani

**Individual Study and Research**

- 596. Directed Individual Studies or Research.** (½ to 1 course)  
The Staff
- 597. Preparation for the Comprehensive Examination for the Master's Degree or the Qualifying Examination for the Ph.D.** (½ to 2 courses)  
The Staff
- 598. Research for and Preparation of the Master's Thesis.** (½ to 1 course) Prerequisite: consent of the instructor. A maximum of 4 units may be applied toward the M.A. degree requirements. Graded S/U. The Staff
- 599. Research for and Preparation of the Doctoral Dissertation.** (½ to 2 courses)  
The Staff

**GENETICS**

For courses in genetics, see under departments of Bacteriology and Biology.

**GEOCHEMISTRY  
(INTERDEPARTMENTAL)**

(See Earth and Space Sciences.)

**GEOGRAPHY**

(Department Office, 1255 Bunche Hall)

Charles F. Bennett, Ph.D., *Professor of Biogeography.*  
C. Rainer Berger, Ph.D., *Professor of Geography and Geophysics.*  
Henry J. Bruman, Ph.D., *Professor of Geography.*  
William A. V. Clark, Ph.D., *Professor of Geography.*  
Gary S. Dunbar, Ph.D., *Professor of Geography.*  
Huey L. Kostanick, Ph.D., *Professor of Geography.*  
Richard F. Logan, Ph.D., *Professor of Geography.*  
Tom L. McKnight, Ph.D., *Professor of Geography (Chairman of the Department).*  
Howard J. Nelson, Ph.D., *Professor of Geography.*  
Antony R. Orme, Ph.D., *Professor of Geography.*  
Jonathan D. Sauer, Ph.D., *Professor of Geography.*  
Werner H. Terjung, Ph.D., *Professor of Geography.*  
Benjamin E. Thomas, Ph.D., *Professor of Geography.*  
Norman J. W. Thrower, Ph.D., *Professor of Geography.*  
Robert M. Glendinning, Ph.D., *Emeritus Professor of Geography.*  
Clifford H. MacFadden, Ph.D., *Emeritus Professor of Geography.*  
Joseph E. Spencer, Ph.D., *Emeritus Professor of Geography.*  
Gerry A. Hale, Ph.D., *Associate Professor of Geography.*  
Christopher L. Salter, Ph.D., *Associate Professor of Geography.*  
Hartmut Walter, Ph.D., *Associate Professor of Biogeography.*  
John R. Clark, Ph.D., *Assistant Professor of Geography.*  
J. Nicholas Entrikin, Ph.D., *Assistant Professor of Geography.*  
James O. Huff, Jr., Ph.D., *Assistant Professor of Geography.*  
Stanley W. Trimble, Ph.D., *Assistant Professor of Geography.*  
Walter E. Westman, Ph.D., *Assistant Professor of Geography.*

**Geography as a Major**

The Department of Geography offers a choice between two undergraduate majors: (1) the Major in Geography; and (2) the Major in Analysis and Conservation of Ecosystems. Prospective majors are urged to discuss the nature and opportunities of each program with the appropriate Undergraduate Advisor. In both programs, the Department is committed to effective quality education concerning the manifold interactions of environment and society. As such, all students are encouraged to work in close and frequent association with faculty members appropriate to their interests. Students are assured of a warm response from faculty members in whose fields of instruction and research they show enthusiasm.

**The Major in Geography**

Geography is a vital discipline that explores the interface between environment and society. But Geography is more than a discipline. It is also a method of study, a correlative science that seeks to establish relationships both within and between the many complex expressions of environment and society. In this guise, Geography embraces many other disciplines of the physical, biological, and social sciences, but in its use of data, its search for cause and effect, and its understanding of process and response. Geography offers a unique approach to the study of the character and problems of the world we live in.

In essence, Geography is concerned with three aggregate aspects of the world around us: 1) the physical and biological characteristics, processes and responses observable at or near the Earth's surface; 2) the activities by which men and women have modified this natural environment, both past and present; and 3) the order and disorder that these human activities have created in sculpturing the natural and artificial landscapes. Tools and concepts of the physical, biological, and social sciences are used to analyze and explain these varied phenomena.

A geographer is concerned with the origins, development, morphology and processes of the landscapes inherited from nature, and with the institutions and patterns associated with the human use of these landscapes. This information helps the geographer to

predict the nature and direction of future landscape change. A geographer is a person who has eyes for the world around him or her, concern for the processes and dynamics of the changes that shape that world, and interest in helping to chart future growth along lines of rational development and careful management of both human and non-human resources.

One or more of four general objectives may be recognized by those persons who select the Major in Geography, namely: (1) a broad understanding of the Earth's many environments and peoples as part of a liberal education; (2) preparation for employment in areas concerned with environment and society, for example in environmental impact studies and urban planning; (3) preparation for graduate study in the discipline leading to advanced degrees and professional occupation in both academic and non-academic areas; and (4) preparation for the student who desires a teaching credential with a specialty in Geography and the physical, biological, or social sciences.

Students majoring in Geography are encouraged to consult the Undergraduate Advisor (Geography) for the planning of a program suitable to the student's particular and individual objective. All faculty and other appropriate resources of the Department of Geography are available to Geography majors, though it is realized that students will work more closely with some faculty members than with others. The Undergraduate Advisor (Geography) advises majors concerning the faculty and other resources most pertinent to student needs.

*Preparation required.* Geography 1, 2, 3, 4; and Mathematics 50A or equivalent are required of all majors. A Mathematics background, such as Mathematics 3A-3B-3C or 4A-4B or 31A-31B-31C, is recommended. All prospective majors, including transfer students; should consult the Undergraduate Advisor (Geography) before arranging a program in Geography and its allied fields.

*Foreign language or mathematics requirement.* Every Geography major is required to pass five quarter courses in foreign language (in no more than two languages), or mathematics, in any combination. Each year of high school language (but not mathematics) will be accepted as equivalent to one quarter course. A score of 500 on an Educational Testing Service (ETS) language examination will also satisfy this requirement. In mathematics, only courses 2, 4A, 4B, 3A, 3B, 3C, 31A, 31B, 31C or 50B, or equivalent are acceptable. This requirement may be satisfied on a Pass-No Pass basis or by a letter grade, but Pass or at least a C grade is required in all courses intended to satisfy this departmental requirement. These courses may be used to meet the Breadth Requirements of the College of Letters and Science.

*Major requirements.* The major requires a minimum of 10 upper division courses in Geography chosen in consultation with a departmental advisor and taken for a letter grade. In meeting this minimum requirement, each major must take three courses from Group I — The Environment; three courses from Group II — Human Geography; one course from Group III — Procedures; and two courses from Group IV — Regions; and one elective upper division course in geography. Majors are encouraged to take more than ten upper division courses.

*Allied Fields.* Every Geography major shall develop some competence in one or two allied fields. This program consists of a group of at least four upper division courses chosen from at least one but not more than two of the following disciplines: Anthropology; Atmospheric Sciences; Biology; Chemistry; Earth and Space Sciences; Economics; Folklore; History; Management; Mathematics; Philosophy; Physics; Political Science; Psychology; Public Health; Sociology. Other disciplines require departmental approval on an individual case basis in order to be classified as acceptable.

All courses that are required for the undergraduate major in Geography must be taken for a letter grade. This includes all lower and upper division courses in Geography, and all four upper division courses in the Allied Fields.

*Honors Program.* Honors in the Geography major may be obtained through procedures described under courses 199HA-199HB.

**The Major in Analysis and Conservation of Ecosystems**

The Major in Analysis and Conservation of Ecosystems offers a choice between two plans, each of which has its foundations within the Department of Geography but is essentially interdisciplinary in scope.

Plan 1 is designed primarily for students seeking a general education that focuses on understanding the problems and issues related to past, present and future human manipulation and utilization of the world's ecosystems. It is also suited to those students who wish to lay the foundation for educational contributions to non-academic society via the principal communicative media. This Plan is also suitable as preparation for graduate school.

Plan 2 is designed primarily for students who wish to follow careers in the environmental area or who wish to pursue future work at the graduate level and beyond in various aspects of the analysis and conservation of ecosystems. Like Plan 1, Plan 2 is deliberately broad in scope but is more rigorous in terms of the preparation and course work required.

Both Plan 1 and Plan 2 have certain features of which students should be apprised. First, a high degree of emphasis is placed on student input and student-faculty interaction — particularly with respect to seminars. It is therefore essential that close liaison be

developed and maintained between all persons involved. The faculty is particularly receptive to student enthusiasm. Second, students majoring in Analysis and Conservation of Ecosystems are encouraged to consult with the Undergraduate Advisor (Ecosystems) for the planning of a program suitable to the student's particular and individual objective. All faculty and other appropriate resources of the Department of Geography are available to Ecosystems majors, though it is realized that students will work more closely with some faculty members than with others. The Undergraduate Advisor (Ecosystems) advises majors concerning the faculty and other resources most pertinent to student needs. Third, all courses that are required for the Major in Analysis and Conservation of Ecosystems, both within and beyond the Geography Department, must be taken for a letter grade. This includes all lower and upper division courses including electives chosen to complete the Major.

**Plan 1**

*Preparation required.* Biology 2; Geography 1, 2, 5; and Mathematics 50A, or equivalent are required of all majors. Geography 3 and 4 are recommended. A Mathematics background, such as Mathematics 2, 3A-3B-3C or 4A-4B or 31A-31B-31C, is recommended. All prospective majors, including transfer students, should consult the Undergraduate Advisor (Ecosystems) before arranging a program in the Analysis and Conservation of Ecosystems.

*Major requirements.* Economics 100; Geography 129, 162 or 163; three courses chosen from Geography Group Ia; and two courses chosen from Geography Group Ib.

*Electives.* Six courses should be chosen from the following list with the assistance of a faculty advisor: Anthropology 144, 145, 153, 160; Art 168A, 168B; Architecture M190; Economics 110, 111, 170; Geography; not more than three courses from 100 to 199; History 106B, Journalism 182A, 182B, 192; Political Science 141, M142, Public Health 110, 117, 142; Sociology 125, 126.

Although there is no foreign language requirement for Plan 1, students are encouraged to acquire some foreign language capability so as to gain access to pertinent literature written in languages other than English.

**Plan 2**

*Preparation required.* Biology 4A-4B; Chemistry 11A; Geography 1, 2, 5; Mathematics 3A-3B-3C, or 31A-31B-31C, and 50A, and Engineering 10 or equivalent are required of all majors. Geography 3 and 4, Mathematics 50B, and Engineering 11 are recommended. A reading knowledge of a modern foreign language is required; this may be met by three years of language at High School or three quarters of language at College level.

*Major requirements.* Biology 119; Economics 100, Geography 129, 162, 163; three courses from Geography Group Ia; and two courses from Geography Group Ib.

*Electives.* Six courses should be chosen from the following list with the assistance of a faculty advisor: Anthropology 153, 160; Biology 122, 125, 126, 188; Earth and Space Sciences 139; Economics 111, 140, 170; Engineering 107A, 180A, 181A, 184A, 184D; Geography; not more than three courses from 100 to 199; Political Science 141, M142; Public Health 161, 142; Sociology 126, 141.

*Honors Program.* Honors may be obtained by students majoring in the Analysis and Conservation of Ecosystems as follows: Attainment and maintenance of at least a 3.40 GPA overall from commencement of senior year to graduation, and completion of Geography 196 — Senior Thesis in Ecosystem Analysis. The Senior Thesis is a substantial though not necessarily lengthy contribution to ecosystem analysis that must be submitted to the principal faculty member concerned not later than early in the student's final quarter. The topic is selected by the student in consultation with one or more faculty members, and a plan of work filed with the Undergraduate Advisor (Ecosystems) from whom further guidelines may be obtained.

**Admission to Graduate Status**

Students are admitted to the Graduate Program of the Department of Geography for the fall, winter or spring quarter. The applicant must, in addition to the application to the Graduate Admissions Office, send a complete set of transcripts to the Graduate Adviser, Department of Geography.

For admission to graduate status in the Geography Department a student should normally have completed the undergraduate major or its equivalent; have received a bachelor's degree or its equivalent from an accredited college or university; and have maintained a high grade-point average in courses taken in the junior and senior years and in the major field. Prospective students are required to take the Graduate Record Examination Test and in addition, to provide the Department with three letters of evaluation from previous instructors. Students not meeting the grade-point average requirements may be admitted in exceptional cases if their letters of evaluation and their Graduate Record Examination scores or other evidence indicate that they have unusual promise. Students may be admitted with subject deficiencies, but such deficiencies will have to be made up.

Information and applications for the Graduate Record Examination may be obtained by writing to the Educational Testing Service, 1947 Center Street, Berkeley, California 94704 or Box 955, Princeton, New Jersey 08540.

Requirements for students entering the graduate program from beyond Departments of Geography: Non-Geography majors

entering the Geography program from another field will be required to show proficiency in 6 Upper Division Geography courses (additional to those required for the M.A.) including 3 courses from Group I (The Environment) and 3 courses from Group II (Human Geography), embracing at least 1 course each from Groups Ia, Ib, IIa, and IIb.

#### Requirements for the Master's Degree

For general admission requirements, see Graduate Admissions.

The M.A. degree may be obtained either by the Thesis Plan or the Comprehensive Examination Plan.

**Spring Quarter Review.** The Department holds a review of all graduate students every Spring Quarter. To this end, all graduate students should have designated a committee chairman or interim advisor, and have completed a simple form detailing program and accomplishments prior to Spring Quarter. The results of this review will determine whether or not the student shall be permitted to proceed toward the M.A. degree.

**Course requirements.** The work in residence must include at least ten courses, including a minimum of seven courses at the graduate level, of which Geography 200 and 201, and at least one seminar in Geography are required. The student's program must have the approval of the graduate student's committee. Geography 200 must be taken at the earliest opportunity.

**Research tool.** At least one research tool is required for graduate study. This is a minimum requirement and is subject to approval by the graduate student's committee at both the M.A. and Ph.D. levels, prior to advancement to candidacy.

**Interim Advisor, Informal Guidance Committee, and subsequent Thesis or Examination Committee.** Early in the first quarter of residence each candidate is required to seek an informal guidance committee headed by an interim advisor from among the faculty, in consultation with the Graduate Advisor. The interim advisor may be changed as the candidate's plans and objectives change, subject to the normal courtesies of informing the Graduate Advisor and others involved. At a time agreed upon by the student and his informal guidance committee, an official three-person Graduate Division committee, including a Chairman, will be appointed. This committee is responsible for the candidate's course of study henceforth, and supervises the preparation of the Master's thesis or the Comprehensive Examination.

**Thesis Plan.** Under the Thesis plan, each student must present a thesis, based in whole or in part on original investigation. Selection of a thesis topic, creation of a scientific design, and conduct of the investigation, proceed initially under the supervision of the informal guidance committee, and later, under the official Graduate Division committee. The candidate should submit a written statement to all members of the Thesis Committee, describing in some detail the thesis proposal. This proposal should include the exact nature of the problem to be studied, an outline of the subject matter, the proposed methods of research, the degree of originality involved, and the anticipated time of completion of the study.

**Comprehensive Examination Plan.** All formal course work, including the completion of the research tool requirement, must be completed before the examination is attempted. The comprehensive examination normally is given in the final two-week period of the quarter in which the candidate completes his work for the degree. It will normally consist of three half-day written examinations embracing a general paper and two further papers drawn from the broad divisions of geography. The examination is designed to test for broad grasp of subject, as well as the more specialized abilities of the candidate. A student who fails any part of the Comprehensive Examination may be re-examined once. Such re-examination must take place within one calendar year of the failure. A student who completes the M.A. degree by the Comprehensive Examination plan may not continue for a Ph.D. degree in this department.

**Advancement to Candidacy.** A student must file an application for advancement to Candidacy no later than the second week of the quarter in which the degree will be awarded.

**Individual Study Courses.** The following rules pertaining to individual study courses (Geography 199, 596, 597, 598, 599) are applicable to all graduate students in this department:

- (1) Only one 500-series course may be applied to the minimum graduate course requirements for advanced degrees.
- (2) All 500-series courses are to be taken on a S/U basis only.
- (3) A student may not take Geography 199 or 596 in a given term unless he/she is also taking at least one formal course during that term.
- (4) In any given term a student may not take more than 8 units of Geography 199/596.
- (5) A student may enroll in Geography 597, 598 or 599 as many times as he or she wishes.

An M.A. degree must be completed within five calendar years of admission to graduate status at UCLA.

#### Requirements for the Doctor's Degree

For general admission requirements, see Graduate Admissions.

An M.A. or M.S. degree, with a geography specialty and a high grade point average in graduate studies is recommended for all students undertaking work toward the Ph.D. degree. Any student entering the doctoral program who has not previously written a Master's thesis must, during his first quarter of residence, produce

clear evidence of substantive research and writing ability, to the satisfaction of the faculty. Any student accepted for the Ph.D. program without having officially completed a Master's degree must complete the Master's degree within two quarters or be terminated as a Ph.D. candidate. Under exceptional circumstances a student may proceed directly toward the Ph.D. degree without taking a Master's degree if the following conditions are met:

- (1) The student must be enrolled in the UCLA M.A. program in geography and have a superior (4.0) grade point average.
- (2) The student must be recommended for a direct Ph.D. by the M.A. guidance committee who will bring the matter before the entire faculty.
- (3) The student must have three letters of recommendation in addition to one from his interim advisor or chairman.
- (4) The student must receive the approval of at least 2/3 of the current Geography faculty in residence by secret ballot.

**Spring Quarter Review.** The Department holds a review of all graduate students every Spring Quarter. To this end, all graduate students should have designated a committee chairman or interim advisor, and have completed a simple form detailing program and accomplishments prior to Spring Quarter. The results of this review will determine whether or not the student shall be permitted to proceed toward the Ph.D. degree.

**Course requirements.** Ph.D. students must satisfactorily complete Geography 200 and 201 if these have not already been taken at the M.A. level. Students are also required to take at least three graduate geography courses additional to their M.A. course work (excluding 200, 201, and the 500 series) and three upper division or graduate courses in one or two fields allied to their main field, subject to approval by their committee. The allied field requirement may be met at anytime during graduate status. Geography 200 must be taken at the earliest opportunity. For regulations concerning Individual Study Courses (199 and 500 series), see Requirements for the Master of Arts degree.

**Research tool.** At least one research tool is required for graduate study. This is a minimum requirement and is subject to approval by the graduate student's committee at both the M.A. and Ph.D. levels, prior to advancement to candidacy.

**Interim Advisor and Informal Guidance Committee.** Early in the first quarter of residence each candidate is required to seek an informal guidance committee headed by an interim advisor from among the faculty, in consultation with the Graduate Advisor. The interim advisor may be changed as the candidate's plans and objectives change, subject to the normal courtesies of informing the Graduate Advisor and others involved.

**Written Qualifying Examinations.** The written qualifying examinations are administered by a student's informal guidance committee and consist of five written papers arranged as follows: three substantive fields of geography, one general paper covering the entire range of geography, and one small field research problem. The field problem will require one full day in the field, followed by one full day in which field results are prepared for presentation. All other papers will be of four hours duration. The examination may be spread over a period of not more than two weeks. This examination should be taken no later than the end of the sixth quarter of the Ph.D. program. If the examination, or any portion thereof, is failed, the student may make one further attempt. This attempt may not be sooner than three months nor longer than one year from the first examination.

**Oral Qualifying Examination.** The oral qualifying examination is conducted by the candidate's official Ph.D. dissertation committee, appointed by the Dean of the Graduate Division upon satisfactory completion of the Written Qualifying Examinations. This committee will consist of at least five faculty members, three of whom will be from the Geography Department, of whom one will be chairman. The oral examination focuses on the dissertation research proposal prepared by the candidate and distributed to all committee members at least one month prior to the oral. This proposal should specify the objectives, methodology, and scientific background of the research envisaged. Successful completion of the oral qualifying examination implies acceptance by the committee of the student's qualifications for doctoral research and approval in principle of the dissertation proposal, subject to such minor modifications in design and methodology as the committee may recommend. A student who has successfully completed the oral qualifying examination is eligible for advancement to candidacy. At the end of the candidate's successful oral qualifying examination, the Chairman and members of the committee, in consultation with the student, shall determine which of its members will guide, read, approve and certify the dissertation. At least two members from the student's department and at least one outside member must be certifying members of the doctoral committee.

**The Dissertation.** The dissertation is the ultimate focus of each student's Ph.D. program and demonstrates an ability for independent investigation in a selected field of study. The dissertation should be designed and executed in such a way as to make a significant original contribution to geographic research, a contribution that is worthy of publication, in part or as a whole, in a reputable scientific medium.

**Final Examination.** A final oral defense of the dissertation may be required by the Dissertation Committee. This examination may be held at any time mutually agreed upon by the candidate and his committee, provided that the dissertation is essentially complete.

A Ph.D. degree must be completed within seven calendar years from the initiation of work on the degree (for candidates from beyond UCLA), or within seven calendar years from admission to graduate status at UCLA (for candidates who obtained M.A. degrees from UCLA).

**Teaching Credentials.** Students may earn credentials for teaching geography and related subjects in California elementary and secondary schools. Completion of the Teacher Credential Program in the Teacher Education Laboratory is required. Consult with the Graduate School of Education (201 Moore Hall) for information.

#### Lower Division Courses

Check with departmental office to learn of additional offerings, seminar topics, and specific instructors for the quarter you wish to enroll in courses in geography.

**1. Physical Environment.** (Formerly numbered 1A.) Lecture, three hours; laboratory, one hour. A study of the Earth's physical environment with particular reference to the nature and distribution of landforms and climate. The Staff

**2. Biogeography.** Lecture, three hours; laboratory, one hour. Prerequisite: course 1 or equivalent. A presentation of the concepts and data needed to acquire an understanding of the nature and significance of the phenomena which influence the geography of soils, plants, and animals. The Staff

**3. Cultural Geography.** (Formerly numbered 1B.) Lecture, three hours; discussion, one hour. A broad examination of the basic cultural variables in the human occupation of the earth's surface. The approach is ecological, spatial, and historical. The Staff

**4. Human Location and Behavior.** (Formerly numbered 1C.) Lecture, three hours; laboratory, one hour. Introduction to the basic concepts used in modern urban and economic geography. Emphasis on giving a better understanding of the effects of location on human behavior. Discussion and practical exercises focus on the analysis of problems in the Los Angeles urban environment. The Staff

**5. Man and the Earth Ecosystem.** Lecture, three hours; laboratory, one hour. An examination of the historical and contemporary roles of man as a major agent of biological change in the earth ecosystem. The Staff

**10. Freshman Seminar in Geography.** Staff-student discussion, three hours; reading period, one hour. Prerequisites: course 1 or 2 or 3 or 4 or 5 as fits the theme. A seminar designed to explore various themes and issues pertinent to environment and people. Seminar topics will be advertised in the Department during previous quarter. The Staff

#### Upper Division Courses

##### GROUP I: THE ENVIRONMENT

##### Ia. Basic Environmental Studies

**M102. Geomorphology.** (Same as Architecture and Urban Planning M196.) Lecture, three hours; reading period, one hour. Prerequisites: course 1 or equivalent; or junior standing or consent of instructor. A study of the processes responsible for shaping the world's landforms with emphasis on the relationship between the energy and materials involved and the magnitude and organization of the surface forms produced. Mr. Orme

**104. Climate and Man.** Lecture, three hours; reading period, one hour. Prerequisites: courses 1 or Atmospheric Sciences 3, or equivalent, or consent of instructor. A study of climatic phenomena at the earth's surface in terms of the transfers of energy, mass and momentum, with special emphasis on biological and urban ecosystems. Mr. Terjung

**105. Hydrology.** Lecture, three hours; reading period, one hour. Prerequisite: course 1 or equivalent. The role of water in geographic systems: hydrologic phenomena in relation to climate, landforms, soils, vegetation, and cultural processes and impacts on the landscape. Field projects required. Mr. Trimble

**106. Soils.** Lecture, three hours; reading period, one hour. Prerequisites: course 1 or equivalent; Chemistry 1A or 2A, or consent of instructor. A study of the origins, evolution, properties and utilization of soils, with special emphasis on the world's major soil groups. The Staff

**108. World Vegetation.** (Formerly numbered 110.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1, 2 or equivalent, or consent of instructor. Characteristics, distribution, environmental and cultural relationships of the world's principal vegetation patterns. Mr. Sauer

**109. Ecology of Vegetation.** Lecture, three hours; field, twelve hours total. Prerequisites: course 2 and Biology 11, or consent of instructor. Principles of Plant ecology at the community and ecosystem level. Emphasis on structure, dynamics and measurement of the characteristics of terrestrial vegetation. Mr. Westman

**110. Plant Migration.** (Formerly numbered 112.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1, 2 and Biology 2, or equivalent, or consent of instructor. Mechanisms of geographic patterning of natural and artificially modified vegetation. Emphasis on range changes for which there is direct fossil or documentary evidence. Mr. Sauer

**112. Animal Geography: Biophysical Aspects.** (Formerly numbered 116A.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1 and 2; Biology 2. A study of the factors and principles of animal distribution and dispersal on continents and islands of the earth in time and space.

Mr. Bennett, Mr. Walter

#### lb. Applied Environmental Studies

**116. Origins and Histories of Crop Plants.** (Formerly numbered 114.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1, 2 and Biology 2, or equivalent, or consent of instructor. Geographic patterns of domestication and diffusion of useful plants from antiquity to the present, based on detailed case histories of selected species.

Mr. Sauer

**117. Animal Geography: Cultural Aspects.** (Formerly numbered 116B.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1, 2, 5; Biology 2 or the equivalent. A study of human cultural factors influencing animal distributions; the roles of animals in human societies; origins and diffusion of domesticated animals.

Mr. Bennett, Mr. Walter

**118. Medical Geography.** Lecture, three hours; reading period, one hour. Prerequisite: course 5, or consent of instructor. An examination of patterns of population-place-disease interactions and some effects of change and development on disease etiology and problems of health care.

The Staff

**119. Agricultural and Pastoral Ecosystems.** (Formerly numbered 107.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1, 2, 5, 116, and 112 or 117 or the equivalent. Geography 120 and 121 recommended. Students who do not meet the prerequisites should not attempt this course. A geographical, ecological and historical analysis of the world's agricultural and pastoral systems. Emphasis is on energy flows, nutrient cycles and ecological and social problems associated with the various systems.

Mr. Bennett

**120. Conservation of Resources: North America.** Lecture, four hours. Prerequisites: courses 1, 2, or equivalent, or upper division standing. An analysis of the basic principles and problems associated with the conservation of natural resources in the United States and Canada.

Mr. McKnight, Mr. Trimble

**121. Conservation of Resources: Underdeveloped World.** Lecture, three hours; reading period, one hour. Prerequisites: courses 1, 2, or equivalent, or upper division standing. An analysis of the principles and problems of the conservation of natural resources of the underdeveloped world.

Mr. Bennett

**122. Man and Environment in East Africa.** (Formerly numbered 119.) Lecture, three hours; discussion, one hour. Prerequisites: courses 1, 2, and 5. An analysis of the unique ecosystems of East Africa and traditional and modern man's impact on wildlife and other renewable natural resources followed by a discussion of environmental conservation in relation to socio-economic policies and Africa's environmental heritage.

Mr. Walter

**124. Environmental Impact Analysis.** (Formerly numbered 164.) Lecture, three hours; discussion, one hour. Prerequisites: at least two courses from among Geography 100-127; Math 50A, Geography 4, 5 and 128 recommended. Introduction to the interdisciplinary analysis of local and regional impacts on environmental systems. Includes evaluation of state and federal concepts for the analysis of environmental impact.

Mr. Westman

**125. Marine Ecosystems.** (Formerly numbered 108.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1, 2, 5; Biology 1A-1B or equivalent. Description and analysis of the principal marine ecosystems with particular emphasis upon those which are chiefly affected by human activity. Further, there will be a detailed evaluation of the ecological and conservation problems associated with human use of marine ecosystems.

Mr. Bennett

**M127. Soil, Plants, and Society.** (Same as Biology M127.) Prerequisite: Chemistry 1A, 1B, 1C or equivalent or consent of the instructor. A general treatment of: soil development and morphology and the physical and chemical properties of soils as they relate to plant growth and distribution; soil resources, management, conservation and cultural aspects. Soil profiles examined on the field trip are used to explain developmental phenomena.

The Staff

**128. The World's Ecosystems: Problems and Issues.** (Formerly numbered 123.) Lecture, three hours; discussion, one hour. Prerequisites: courses 120 or 121. Principal objectives are (1) to identify past, current, and projected problems associated with man-induced ecological disturbances and (2) to identify and evaluate the societal and biophysical factors which have contributed to the identified ecological disequilibria.

The Staff

**129. Problems of the Environment: Seminar.** Lecture, three hours; reading period, two hours. Prerequisites: senior standing; four courses from Group I; Math 152A highly recommended. Class enrollment limited. Qualitative-quantitative analysis of problems associated with rational protection and use of selected environmental systems (urban, rural, forest, desert, coastal, water, soil or others).

The Staff

#### GROUP II: HUMAN GEOGRAPHY

#### Ila. Cultural and Historical Geography

**130. Geographical Discovery and Exploration.** Lecture, three

hours; reading period, one hour. Prerequisites: courses 1, 3 or equivalent, or upper division standing. A survey of the history of exploration, from earliest times to modern, with emphasis on the period from Marco Polo to the present.

Mr. Dunbar, Mr. Thrower

**132. Cultural Geography of the Pre-Modern World.** Lecture, three hours; reading period, one hour. Prerequisite: course 3 or equivalent. An evolutionary and structural approach to the socio-cultural geography of the earth prior to the rise of the modern-world system.

Mr. Hale, Mr. Salter

**133. Cultural Geography of the Modern World.** Lecture, three hours; reading period, one hour. Prerequisite: course 3 or equivalent. An evolutionary and structural approach to the socio-cultural geography of the modern-world system, with particular emphasis upon the structure and functioning of its core, semi-periphery, and periphery.

Mr. Hale, Mr. Salter

**136. Historical Geography of the United States.** (Formerly numbered 144.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1, 3, or equivalent, or upper division standing. A study of the evolution of the cultural landscapes of the area that is now the United States. Examination of past geographies and of geographical change through time.

Mr. Dunbar

**140. Political Geography.** Lecture, three hours; reading period, one hour. Prerequisites: courses 1, 3, or equivalent, or upper division standing. The principles of political geography as developed through regional studies of political phenomena throughout the world. Current problems in domestic and international affairs will be considered.

Mr. Kostanick

**142. Population Geography.** Lecture, three hours; reading period, one hour. A study of the social and behavioral perspectives influencing people in their patterns of demographic change, migration and mobility with special emphasis on spatial relationships and selected case studies.

Mr. J. Clark

#### Ilb. Economic and Urban Geography

**145. Spatial Organization of Society: Structure.** Lecture, three hours; reading period, one hour. Prerequisites: course 4, Elementary Statistics, or consent of instructor. A study of the spatial structure of society as an expression of human decisions. Emphasis is on the processes affecting city size and distribution, the internal structure of cities, rural land use, and industrial location.

Mr. Entrikin, Mr. Huff

**146. Spatial Organization of Society: Behavior.** Lecture, three hours; reading period, one hour. Prerequisites: course 4, Elementary Statistics, or consent of instructor. A study of human behavior within the spatial context. Discusses regularities in patterns of trade, consumer behavior, migration, mobility, communication and diffusion.

Mr. Entrikin, Mr. Huff

**148. Economic Geography.** (Formerly numbered 160.) Lecture, three hours; reading period, one hour. Prerequisite: course 4 or consent of instructor. An analysis of those principal economic production systems especially involved with agriculture, foodstuffs, resources and industrialization in the underdeveloped world.

Mr. Huff

**149. Transportation Geography.** Prerequisite: course 3 or 4 or upper division standing. A study of the geographical aspects of transportation, focusing on the characteristics and functions of the various modes and on the complexities of intra-urban transport.

Mr. McKnight

**150. Urban Geography.** Lecture, three hours; reading period, one hour. Prerequisites: courses 1, 3, or equivalent, or upper division standing. An analysis of the development, functions, spatial patterns and geographic problems of American Cities.

Mr. W. Clark, Mr. Entrikin, Mr. Nelson

**151. Historical Geography of Cities.** Prerequisites: course 3 and 4, or equivalent, or upper division standing. A survey of the diffusion and growth of cities in Western civilization. Two themes will be emphasized, the development of city systems and the evolution of urban internal spatial structure.

Mr. Entrikin

**152. World Cities.** Lecture, three hours; reading period, one hour. Prerequisite: upper division standing. A discussion of the growth and structure of selected cities as illustrations of the processes of urbanization in different countries and societies. Topics will include rural to urban migration, cities as centers of power, spatial organization, and the tendency to megalopolitanization.

Mr. W. Clark, Mr. Entrikin

**156. Metropolitan Los Angeles.** Lecture, three hours; reading period, one hour. Prerequisites: upper division standing. A study of the origins, growth processes, internal structure and pattern, interactions, environmental and spatial problems of the Los Angeles Metropolitan area.

Mr. Nelson

**159. Problems in Human Geography.** Staff-student discussion, three hours; reading period, one hour. Prerequisites: two courses from Group II, Senior standing. Class enrollment limited to fifteen students. A seminar type course in which students carry on intensive research projects. Designed as a "capstone" to courses in this group, the subjects of research will grow out of the previous work.

The Staff

#### GROUP III: PROCEDURES

**160. Field Analysis: Physical Geography.** (Formerly numbered

170.) Saturday field trips, 8-5. Prerequisites: courses 1, 2, or equivalent, and consent of the instructor. A student desiring to take this course must notify department chairman of his wish, in writing, at least two quarters in advance of enrolling in this course. The basic methods of geographic analysis of small areas, embracing a variety of physical environments in southern California and including consideration of related human activities. Chiefly field training.

Mr. Logan, Mr. Trimble

**161. Field Analysis: Cultural Geography.** (Formerly numbered 179.) Prerequisites: courses 1, 3, 4, 132, 133, at least two upper division courses in geography and consent of instructor. Enrollment priority is given to students majoring in geography. The class meets once a week from 8:00-5:00. The observation, analysis and mapping of landscape phenomena of human origin. Techniques of data collection will be examined for such topics as settlement form and pattern, environmental change, historical and demographic change, and land use.

Mr. Salter

**162. Field and Laboratory Analysis: Geomorphology, Climatology, Hydrology.** Laboratory and field, eight hours per week. Prerequisites: course 1 or equivalent; two courses from 102, 104, 105. Open to Geography and Ecosystems majors only with enrollment priority accorded Ecosystems majors. Examination of field and laboratory procedures and intellectual concepts used in the observation, measurement, analysis and interpretation of phenomena pertinent to the physical environment and interrelated human influences.

The Staff

**163. Field and Laboratory Analysis: Biogeography.** Laboratory and field, eight hours per week. Prerequisites: courses 2, 5 or equivalent; two courses from 106, 108, 109, 112. Open to Geography and Ecosystems majors only with enrollment priority accorded Ecosystems majors. Examination of field and laboratory procedures and intellectual concepts used in the observation, measurement, analysis, and interpretation of phenomena pertinent to biogeography and interrelated human influences.

The Staff

**166. Map Analysis.** (Formerly numbered 171.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1, 3 or equivalent, or upper division standing. The analysis of maps, with the aim of deducing the physical, cultural and economic aspects of the region portrayed, including such elements as geomorphic history, hydrography, settlement history, forms of economic livelihood, transportation problems and toponomy.

Mr. Logan

**167. Cartography.** (Formerly numbered 172.) Lecture, three hours; laboratory, five hours; independent work, two hours. Prerequisites: courses 1, 3, or equivalent, or consent of instructor. Survey of the field of cartography. Includes theory and construction of map projections, compilation procedures, principles of generalization, symbolization, terrain representation, lettering, drafting and scribing, and map reproduction methods. The Staff

**168. Computer Cartography.** (Formerly numbered 175.) Lecture, one hour; laboratory, three hours; independent study, two hours. Prerequisites: course 167 or consent of instructor. Theory and methods of mapping quantitative information with a computer. Includes problems of surface representation, advanced topics of symbolism and pattern recognition, and special problems of photo-reduction for publication.

Mr. J. Clark

**169. The Earth from Above.** Lecture, three hours; reading period, one hour. Prerequisites: courses 1, 3, 4 or consent of instructor. This course examines the interface between cartography and remote sensing. By means of a wide variety of imagery from maps and satellite photos, different landscapes are analyzed and explained.

Mr. Thrower

**170. Presentation and Analysis of Geographic Data.** Lecture, two hours; laboratory, one hour. An introduction to the basic techniques that are used in organizing, measuring, and displaying data from field, map, interview and government sources.

Mr. W. Clark

**171. Quantitative Analysis.** (Formerly numbered 176.) Lecture, three hours; laboratory, one hour. Prerequisites: Mathematics 50B or consent of instructor. An introduction to the methods of measurement and interpretation of geographic distributions and associations.

Mr. W. Clark

**M178. Dating Techniques in Environmental Sciences and Archaeology.** (Same as Anthropology M175C.) Lecture, three hours; reading period, one hour. Prerequisites: consent of instructor. Introduction to scientific dating methods such as radiocarbon dating, radiation damage methods, biological dating techniques, and magnetic dating, and applications in environmental sciences, archaeology and physical anthropology.

Mr. Berger

#### GROUP IV: REGIONS

**180. North America.** Lecture, four hours. Prerequisites: courses 1, 3, or equivalent, or upper division standing. Delimitation and analysis of the principal geographic regions of the United States and Canada.

Mr. McKnight, Mr. Nelson

**181. Middle America.** Lecture, three hours; reading period, one hour. Prerequisites: courses 1, 3, or equivalent, or upper division standing. A study of the geographic factors, physical and cultural, that are basic to an understanding of the historical development of Middle America and of the contemporary economic and cultural geography of Mexico and the countries of Central America and the West Indies.

Mr. Bennett, Mr. Bruman

**182A. Spanish South America.** Lecture, three hours; reading period, one hour. Prerequisites: courses 1, 3, or equivalent, or

upper division standing. A study of the geographic factors, physical and cultural, that are basic to an understanding of the historical development of Spanish South America and of the contemporary economic and cultural geography of the individual Spanish-speaking countries. Mr. Bruman

**182B. Brazil.** Lecture, three hours; reading period, one hour. Prerequisites: courses 1, 3, or equivalent, or upper division standing. A study of the geographic factors, physical and cultural, that are basic to an understanding of the historical development of Portuguese South America and of the contemporary economic and cultural geography of Brazil. Mr. Bruman

**183. Europe.** Lecture, three hours; reading period, one hour. Prerequisites: courses 1, 3, or equivalent, or upper division standing. A study of geographic conditions and their relation to economic, social and political problems in Europe. Mr. Kostanick, Mr. Thrower

**184. Soviet Union.** Lecture, three hours; reading period, one hour. Prerequisites: courses 1, 3, or equivalent, or upper division standing. A study of geographic conditions and their relation to economic, social, and political problems in the Soviet Union. Mr. Kostanick

**185. South and South East Asia.** Lecture, three hours; reading period, one hour. Prerequisites: courses 1, 3, or equivalent, or upper division standing. A regional synthesis with varying emphases upon the people of South or Southeast Asia in their physical, biotic, and cultural environment and its dynamic transformation. Consult department about term emphasis. The Staff

**186. Eastern Asia.** Lecture, three hours; reading period, one hour. Prerequisites: courses 1, 3, or equivalent, or upper division standing. A regional survey of the physical and cultural features which characterize the economic, social, and political geography of eastern Asia (China, Korea, and Japan). Mr. Salter

**187. Middle East.** Lecture, three hours; reading period, one hour. Prerequisites: courses 1, 3, or equivalent, or upper division standing. An analysis of the economic, social, and political geography of the area extending from Iran to Morocco and from Turkey to Sudan. Emphasis on geographical themes and problems during historical and modern times. Mr. Hale

**188. Northern Africa.** Lecture, three hours; reading period, one hour. Prerequisites: courses 1, 3, or equivalent, or upper division standing. An analysis of the economic, social, and political geography of the area including Mediterranean Africa, the Sahara, the Sudanic belt, and the eastern Horn. Emphasis on geographical themes and problems during historical and modern times. Mr. Hale, Mr. Thomas

**189. Middle and Southern Africa.** Lecture, four hours. Prerequisites: courses 1, 3, or equivalent, or upper division standing. The regions of Africa south of the Sahara (middle and south Africa) in terms of physical features, human settlement, economic production, and political patterns. Mr. Thomas

**190. Australasia.** Lecture, four hours. Prerequisites: courses 1, 3, or equivalent, or upper division standing. A regional synthesis of the physical and cultural features which characterize Australia, New Zealand, and the islands of the South Pacific. Mr. McKnight

**191. California.** Lecture, four hours. Prerequisites: courses 1, 3, or equivalent, or upper division standing. A systematic and regional treatment of the geography of California including the physical, cultural, and economic aspects and detailed studies of the various regions. Mr. Logan, Mr. McKnight

#### UNGRUDED

**196. Senior Thesis in Ecosystems Analysis.** Study schedule to be arranged individually. Prerequisites: courses 129, 162 or 163, and senior standing. Preparation and data collection and analysis for a senior thesis under the guidance and assistance of a faculty sponsor. The Staff

**199. Special Study. (½ to 2 courses)** Study schedule to be arranged individually with the instructor. Prerequisites: senior standing and consent of instructor. The Staff

**199HA-199HB. Honors in Geography: I & II.** Study schedule to be arranged individually with instructors. Prerequisites: to be eligible a student must have completed at least five (5) upper division courses in geography, have attained a 3.5 GPA for such work, and have a 3.25 overall GPA. 199HA will be an independent study course taught by a team of two faculty members who will assist an enrolled student with bibliographic research and/or field research into a topic of mutual interest to the student and the faculty members. Successful completion of 199HA will entail the preparation of a detailed bibliography and outline for the writing of a substantial paper during the course of 199HB. The two faculty members will evaluate the bibliographic and/or field preparation of the student in 199HA. If that work is determined to be of A quality, the student will be allowed to continue in the Honor's program. If that work is B or below, credit will be awarded to the student, but he or she will not be permitted to continue in the Honor's program. 199HB will be devoted to the writing of the substantial paper researched and outlined in 199HA. The two faculty members will evaluate the paper. If the paper is determined to be an A, the student will graduate with Honors in Geography. If the paper is determined to be a B or lower, credit will be given the student, but there will be no Honors.

#### Graduate Courses

##### COURSES REQUIRED OF ALL ENTERING GRADUATE STUDENTS

**200. Trends in Contemporary Geography.** Lecture, three hours. Prerequisite: graduate status. An analysis and interpretation of contemporary geography with emphasis on research trends in major subfields of the discipline, each subfield being examined by a faculty expert. The Staff

**201. Growth of Geographic Thought.** (Formerly numbered 200.) Lecture, two hours; discussion, one hour; reading period, one hour. Prerequisite: consent of instructor. Lectures and discussions on the comparative development of the philosophy and operative thought of geographers in different countries, stressing the origins and foundations of American Geographic thought. Mr. Dunbar, Mr. Thomas

##### GROUP I: THE ENVIRONMENT

**202. Advanced Geomorphology.** (Formerly numbered 212.) Lecture, two hours; discussion, one hour; reading period, one hour. Prerequisites: course M102 or equivalent, or consent of instructor. An extended study of selected geomorphic processes and landforms. Mr. Orme

**203. Seminar: Geomorphology.** (Formerly numbered 213.) Discussion, three hours; reading period, one hour. Prerequisites: course 202 or equivalent and consent of instructor. Selected geomorphic topics with emphasis on current research frontiers and techniques. May be repeated for credit. Mr. Orme

**204. Advanced Climatology.** (Formerly numbered 214.) Lecture, two hours; discussion, one hour; reading period, one hour. Prerequisites: course 104 or equivalent, or consent of instructor. A survey of the major literature of climatology: dynamic, energy balance, bio-climatic, urban. Mr. Terjung

**205. Seminar: Climatology.** (Formerly numbered 215.) Discussion, three hours; reading period, one hour. Prerequisites: course 204 or equivalent and consent of instructor. Selected topics. May be repeated for credit. Mr. Terjung

**208. Advanced Biogeography: Plants.** (Formerly numbered 262.) Lecture, two hours; discussion, one hour; reading period, one hour. Prerequisites: courses 108, 110 or 116, or equivalent, or consent of instructor. An intensive review and analysis of physical and cultural factors influencing plant distributions. Mr. Sauer

**212. Advanced Biogeography: Animals.** (Formerly numbered 260.) Lecture, two hours; discussion, one hour; reading period, one hour. Prerequisites: courses 112, 117, or equivalent, or consent of instructor. An intensive review and analysis of biophysical and cultural factors influencing animal distributions. Mr. Bennett, Mr. Walter

**213. Seminar: Biogeography.** (Formerly numbered 265.) Discussion, three hours; reading period, two hours. Prerequisites: courses 208, 212 or equivalent and consent of instructor. Research projects related to or growing out of course 208 or 212. May be repeated for credit. The Staff

**215. Seminar: Quaternary Studies.** (Formerly numbered 216.) Discussion, three hours; reading period, two hours. Prerequisites: courses 202 or 204 or 208 or 212; or appropriate graduate course in anthropology, botany, earth and space sciences, or zoology; or consent of instructor. An analysis of the changing environment of the Quaternary Period. May be repeated for credit. Mr. Orme

**218. Advanced Medical Geography.** Lecture, two hours; discussion, one hour; reading period, one hour. Prerequisites: course 118 or consent of instructor. An in-depth study of selected topics in medical geography and an intense review of recent research. The Staff

**223. Seminar: Humid Tropics.** (Formerly numbered 292.) Discussion, three hours; reading period, two hours. Prerequisites: consent of instructor. Selected topics. Biophysical and cultural complexes of the humid tropics with emphasis on problems related to human settlement and livelihood. May be repeated for credit. Mr. Bennett

**227. Water Quality Management.** Discussion, three hours; reading period, one hour. Prerequisite: graduate status and consent of instructor. Discussion of the basic technical, regional planning and public policy issues in water quality management. Mr. Westman

**229. Seminar: Man and Environment.** (Formerly numbered 266.) Discussion, three hours; reading period, two hours. Prerequisites: course 128 or equivalent. An analysis of man's perception of the environment throughout history and in different parts of the world and its impact on past, present and future ecosystems. Mr. Walter

##### GROUP II: HUMAN GEOGRAPHY

**232. Advanced Cultural Geography.** (Formerly numbered 220.) Lecture, two hours; discussion, one hour; reading period, one hour. Prerequisites: course 132, or 133 or equivalent, or consent of instructor. Lectures and discussions around specific aspects of the development of cultural landscape in different geographic environments. Mr. Hale, Mr. Salter

**233. Seminar: Cultural Geography.** (Formerly numbered 225.) Discussion, three hours; reading period, two hours. Prerequisites: course 232, 236, or equivalent and consent of instructor. Discussions centered around particular topics in cultural geography; topics may vary from year to year. May be repeated for credit. The Staff

**236. Advanced Historical Geography of the United States.** (Formerly numbered 222.) Lecture, two hours; discussion, one hour; reading period, one hour. Prerequisites: course 136 and consent of instructor. Some major themes in American historical geography. Mr. Dunbar

**237. Seminar: Historical Geography.** (Formerly numbered 223.) Discussion, three hours; reading period, two hours. Prerequisites: course 236 and consent of instructor. Theory and practice of historical geography in North America and Europe. May be repeated for credit. Mr. Dunbar

**240. Advanced Political Geography.** Lecture, two hours; discussion, one hour; reading period, one hour. Prerequisites: course 140 or equivalent or consent of instructor. Intensive study of the theories and principles of political geography and German geopolitics. Selected regions will be used as specific examples of differing techniques of study in geopolitics. Mr. Kostanick

**241. Seminar: Political Geography.** (Formerly numbered 245.) Discussion, three hours; reading period, two hours. Prerequisites: course 240 or equivalent and consent of instructor. Related research projects growing out of course 240. May be repeated for credit. Mr. Kostanick

**242. Advanced Population Geography.** Lecture, three hours; reading period, one hour. Prerequisites: course 142 or equivalent, or consent of instructor. A study of population dynamics and migration, spatial variation in population composition, and population resource problems, diffusion and epidemiology. The Staff

**248. Location and Space Economy.** Lecture, two hours; discussion, one hour; reading period, one hour. Prerequisite: course 145 and 146 or consent of instructor. Methods of locational analysis as applied to problems of regional growth and development. Mr. Huff

**249. Seminar: Economic Geography.** (Formerly numbered 235.) Discussion, three hours; reading period, two hours. Prerequisites: course 248 or equivalent, and consent of instructor. Related research projects growing out of course 248. May be repeated for credit. The Staff

**250. Urban Systems.** Lecture, two hours; discussion, one hour; reading period, one hour. Prerequisite: course 145 and 146 or consent of instructor. A general study of the hierarchy of urban places including diffusion within the urban hierarchy, and theories to account for the location and size distribution of cities. Mr. W. Clark, Mr. Huff

**251. Seminar: Urban Geography.** (Formerly numbered 255.) Discussion, three hours; reading period, two hours. Prerequisites: course 250 or equivalent, and consent of instructor. Related research projects growing out of course 250. May be repeated for credit. The Staff

**252. Location and Social Structure Within the City.** Lecture, two hours; discussion, one hour; reading period, one hour. Prerequisite: course 145 and 146 or consent of instructor. A study of the links between urban social and urban spatial structure emphasizing urban residential land use, social areas of the city, and accessibility and urban form. Mr. Entrikin

**254. Migration and Residential Mobility.** Lecture, two hours; discussion, one hour; reading period, one hour. Prerequisite: consent of instructor. The description and modeling of national, regional and intraurban migration. Mr. W. Clark, Mr. Huff

##### GROUP III: PROCEDURES

**260. Advanced Field Analysis: Physical Elements. (2 courses)** Class meets once a week from 8-5. Prerequisites: one or more courses from 202, 203, 204, 205, 215. Field methods and analysis applied to the physical environment, especially in southern California and with particular reference to various aspects of geomorphology, hydrology, climatology, and associated human activities. Mr. Trimble

**261. Advanced Field Analysis: Cultural Geography. (2 courses)** Class meets once weekly from 8-5, mainly in the field. Prerequisites: one or more courses from 232, 233, 250, 251. Field methods and analysis applied to the cultural landscape, especially in southern California and particular reference to settlement, agriculture, and environmental modification. Mr. Salter

**262. Advanced Field Analysis: Biogeography. (2 courses)** Field, ten hours per week. Prerequisite: consent of instructor. Observation, measurement, and analysis of biogeographic phenomena including identification and evaluation of biotic populations and communities and their modifications resulting from the impact of human activity. The Staff

**265. Geographical Bibliography.** (Formerly numbered 201.) Lecture, one hour; discussion, two hours; reading period, one hour. Prerequisite: consent of instructor. A survey of the literature of geography with special reference to periodicals. Intended for beginning graduate students. Mr. Dunbar

**267. Advanced Cartography.** (Formerly numbered 272.) Laboratory, three hours; independent work, two hours. Prerequisites: course 167 or equivalent, or consent of instructor. Advanced work in the theory and practical application of modern cartographic principles. Special emphasis is placed on terrain representation, quantitative and computer mapping, scribing, color separation, and reproduction of maps. Mr. Thrower

**269. Remote Sensing of Environment.** (Formerly numbered 274.) Laboratory, three hours; independent work, two hours.

Prerequisites: course 167 or equivalent or consent of instructor. The study of aerial photographs and other remote sensing images as tools for geographical research. Particular attention is placed on the analysis of landscapes and the interpretation of interrelationships of individual features in their physical and cultural complex. Mr. Thrower

**M270. Advanced Quantitative Analysis.** (Formerly numbered M276; same as Architecture and Urban Planning M215A.) Lecture, two hours; laboratory, two hours. Prerequisites: course 171 or equivalent or consent of instructor. Advanced topics in the utilization of mathematical and statistical techniques for geographic research. Emphasis on linear models, factor analysis and grouping procedures as applied to geographic data bases. Mr. W. Clark

**M272. Spatial Statistics.** (Formerly numbered M277; same as Architecture and Urban Planning M215B.) Lecture, two hours; discussion, one hour; laboratory, one hour. Prerequisites: Mathematics 50B or course 171 and consent of instructor. Specific techniques useful in the analysis of spatial distributions, including both point and areal patterns; and emphasizing spatial descriptive statistics, probability models of spatial distributions, and statistical surfaces. Mr. Huff

**273. Seminar: Model Building for Spatial Analysis.** (Formerly numbered 279.) Discussion, three hours. Prerequisites: course M270 or consent of instructor. Discussions of the philosophy and methodology of model building. The focus will be on the problems unique to models of spatial structure. Individual research topics will be emphasized. May be repeated for credit. Mr. W. Clark, Mr. Huff

**M278. Seminar: Dating Techniques in Environmental Sciences and Archaeology.** (Formerly numbered M271; same as Anthropology 214.) Discussion, three hours. Prerequisite: consent of instructor. A colloquium devoted to topics in dating techniques in environmental sciences, archaeology, and physical anthropology as well as laboratory instruction and experimental work. May be repeated for credit. Mr. Berger

#### GROUP IV: SEMINARS IN REGIONAL GEOGRAPHY

**280-291. Selected topics for each seminar. Each may be repeated for credit.** Lecture, two hours; discussion, two hours.

**280. North America.** (Formerly numbered 290A.) Prerequisite: course 180 or consent of instructor. Mr. McKnight, Mr. Nelson

**281. Middle America.** (Formerly numbered 290B.) Prerequisites: course 181 and consent of instructor. Mr. Bennett, Mr. Bruman

**282. South America.** (Formerly numbered 290C.) Prerequisites: course 182 and consent of instructor. Mr. Bennett, Mr. Bruman

**283. Europe.** (Formerly numbered 290D.) Prerequisites: course 183 and consent of instructor. Mr. Kostanick, Mr. Thrower

**284. Soviet Union.** (Formerly numbered 290E.) Prerequisites: course 184 and consent of instructor. Mr. Kostanick

**285. South and South East Asia.** (Formerly numbered 290F.) Prerequisites: course 185 and consent of instructor. The Staff

**286. Eastern Asia.** (Formerly numbered 290G.) Prerequisites: course 186 and consent of instructor. Mr. Salter

**287. Middle East.** (Formerly numbered 290H.) Prerequisites: course 187 and consent of instructor. Mr. Hale

**288. Northern Africa.** (Formerly numbered 290I.) Prerequisites: course 188 and consent of instructor. Mr. Hale, Mr. Thomas

**289. Middle and Southern Africa.** (Formerly numbered 290J.) Prerequisites: course 189 and consent of instructor. Mr. Thomas

**290. Australasia.** (Formerly numbered 290K.) Prerequisites: course 190 and consent of instructor. Mr. McKnight

**291. The Arid Lands.** Prerequisites: courses 102, 104, 106, 108, 116, 120, 148, or equivalent and consent of instructor. An investigation of the physical and cultural complexes of the world's arid regions. Salient factors emphasized include climate, landforms, water, soils, natural vegetation and the various aspects of human occupancy, including future possibilities for human utilization. The Staff

**292. Advanced Regional Geography: Selected Regions.** Lecture, three hours; discussion, one hour. Prerequisites: appropriate upper division regional course. A lecture series devoted to a specific region at the discretion of the instructor. May be repeated for credit. The Staff

**295. Seminar: Geographic Thought.** Discussion, three hours; reading period, two hours. Prerequisites: graduate standing, consent of instructor. Discussion and study of topics significant to the growth of modern philosophy of geography. Mr. Entrikin

**495. Teaching of College Geography. (½ course)** Discussion, one hour; laboratory, three hours. Prerequisite: consent of instructor. Classroom practice in teaching, with individual and group instruction on related educational methods, materials, and evaluation. May be repeated for credit. Mr. McKnight

#### Individual Study and Research

**596. Directed Individual Study or Research. (½ to 2 courses)** Prerequisite: consent of the instructor. The Staff

**597. Preparation for M.A. Comprehensive Examination or Ph.D. Qualifying Examination. (½ to 2 courses)** Special individual study. Prerequisite: consent of the instructor. The Staff

**598. Research for and Preparation of the Master's Thesis. (½ to 2 courses)** Independent study. Prerequisite: consent of the instructor. The Staff

**599. Research for and Preparation of the Doctoral Dissertation. (½ to 2 courses)** Independent study. Prerequisite: consent of the instructor. The Staff

## GEOLOGY

(Renamed to Earth and Space Sciences.)

(Department Office, 3806 Geology Building)

## GEOPHYSICS AND PLANETARY PHYSICS

(Institute Office, 3871 Slichter Hall)

Orson L. Anderson, Ph.D., *Professor of Geophysics.*  
C. Rainer Berger, Ph.D., *Professor of Geophysics, Geography and Anthropology.*

Arthur L. Boettcher, Ph.D., *Professor of Geology and Geophysics.*

Friedrich H. Busse, Ph.D., *Professor of Planetary Physics.*

Paul J. Coleman, Jr., Ph.D., *Professor of Planetary Physics.*

W. Gary Ernst, Ph.D., *Professor of Geology and Geophysics.*

Isaac R. Kaplan, Ph.D., *Professor of Geology and Geochemistry.*

William M. Kaula, D.Sc., *Professor of Geophysics.*

George C. Kennedy, Ph.D., *Professor of Geochemistry and Geology.*

Charles F. Kennel, Ph.D., *Professor of Physics and Geophysics.*

Leon Knopoff, Ph.D., *Professor of Geophysics and Physics and Associate Director of the Institute of Geophysics and Planetary Physics.*

Richard Lingenfelter, B.A., *Professor of Geophysics, Astrophysics and History in Residence.*

R.L. McPherron, Ph.D., *Professor of Planetary Physics and Geophysics.*

John P. McTague, Ph.D., *Professor of Chemistry.*

J. William Schopf, Ph.D., *Professor of Geology and Geophysics.*

Ronald L. Shreve, Ph.D., *Professor of Geology and Geophysics.*

John T. Wasson, Ph.D., *Professor of Geochemistry and Chemistry.*

Robert E. Holzer, Ph.D., *Emeritus Professor of Geophysics.*

Willard F. Libby, Ph.D., *Emeritus Professor of Chemistry.*

Jonathan I. Katz, Ph.D., *Associate Professor of Astronomy.*

The Institute of Geophysics and Planetary Physics was established to encourage fundamental research in geophysics, geochemistry and space physics and to provide graduate instruction for qualified students. Members of the staff and associated departments are prepared to supervise graduate work in a variety of fields: atmospheric physics, physics of the radiation belts, interplanetary physics and solar physics, geophysical fluid dynamics, high pressure physics, tectonophysics, geochemistry, nuclear geophysics, age determination, gravitation, physical oceanography and marine geophysics, seismology, physics of the deep interior, and exploration geophysics. The bachelor's degree may be in any field; however, a thorough undergraduate preparation in one or more of the basic sciences, physics, mathematics or chemistry is expected of students pursuing graduate research. The student who elects to pursue research in atmospheric sciences, geophysics, geochemistry or space physics may do so by enrolling in one of the following departments: earth and space sciences, physics, mathematics, astronomy, chemistry. An individual program of instruction will be worked out for each student, since the requirements for the M.S. or Ph.D. degree are not the same for all students. For further information, contact the Institute of Geophysics and Planetary Physics.

#### Undergraduate Study

Undergraduate students with an interest in graduate study in Geophysics are advised to complete a major in physics, mathematics or chemistry. Attention is also drawn to opportunities to complete an undergraduate course of studies in Geophysics and Space Physics and in Applied Geophysics. For information concerning these programs consult the catalog listings for the Department of Earth and Space Sciences.

#### Upper Division Courses

**M130. Isotope Geochemistry.** (Same as Earth and Space Sciences M130.) Lecture, three hours; discussion, one hour. Prerequisites: upper division standing in physical or biological sciences and consent of instructor. Theoretical aspects of geochronology, particularly Carbon-14 dating. Application of radioisotopes to the hydrologic cycle and to atmospheric circulation. Stable isotope distribution in nature. Exchange mechanisms and their applications to paleotemperatures, hydrology, mineral formation and origin of biological deposits. (Alternates yearly with course M131). Mr. Kaplan

**M131. Geochemistry.** (Same as Earth and Space Sciences M131.) Lecture, three hours; discussion, one hour. Prerequisites: junior or senior standing in chemistry, physics, or geology, or consent of instructor. Origin and abundance of the elements in

the earth, oceans, and atmosphere; chemistry of the earth's interior, phase transformations at high pressure and temperature. (Alternates yearly with Geology and Geophysics course M130). Mr. Wasson

**M136A. Geophysical Exploration.** (Same as Earth and Space Sciences M136A.) Lecture, three hours. Prerequisite: Physics 6A, 6B, 6C or 8A, 8B, 8C, Math 31C completed or consent of the instructor. Principles and techniques of gravimetric, seismic, magnetic, and other geophysical methods of exploration for ores, petroleum, and other economic minerals.

**M136B. Geophysical Exploration.** (Same as Earth and Space Sciences M136A.) Prerequisite: Physics 6ABC, or 8ABC, Math 31C completed or consent of instructor. Principles and techniques of exploration for mineral deposits using natural and artificial electric and magnetic fields. Methods covered include self potential, induced polarization, electric, telluric, electromagnetic, magnetotellurics.

#### Graduate Courses

**M235A-235B-235C. Current Research in Geochemistry. (¼ course each)** (Same as Earth and Space Sciences M235A-235B-235C.) Prerequisite: graduate standing in the Department of Earth and Space Sciences. Seminars presented by staff, outside speakers and graduate students stressing current research in earth and planetary chemistry. Grading on satisfactory/unsatisfactory basis. May be repeated for credit. The Staff

**249. Experimental Petrology.** Prerequisite: consent of the instructor. Mr. Kennedy

**260. Experimental Geology. (¾ to 1½ courses)** Seminar, two hours; laboratory, optional. Prerequisite: consent of the instructor. The mechanics of rock deformation. Dimensional analysis and model theory applied to geological problems.

**M282. Seminar in Geophysics.** (Same as Earth and Space Sciences M282.) Prerequisite: consent of the instructor. Seismology, geophysical prospecting, electromagnetic prospecting. Selected topics in earth physics. The content will vary from year to year. May be repeated for credit.

#### Individual Study and Research

**596. Directed Individual Study or Research in Geophysics. (¼ to 1½ courses)** Prerequisite: consent of the instructor. Directed individual study or research in: theoretical and experimental studies relative to seismology and geophysics of the earth's interior (Mr. Knopoff); gravity, spaceplasma physics (Mr. Holzer); space and astrophysical plasmas (Mr. Kennel); cosmic ray physics and lunar and martian surface studies (Mr. Lingenfelter); mineral physics, elastic properties and shear, instabilities of rocks and rock-forming materials (Mr. Anderson); volcanology, physics of high pressure, phase equilibria in geologically important chemical systems (Mr. Kennedy); radioactive dating and nuclear geophysics (Mr. Libby); orbital dynamics and planetary interiors (Mr. Kaula); geophysical fluid dynamics (Mr. Busse). The Staff

**596A. Directed Individual Study or Research in Geochemistry. (¼ to 1½ courses)** Prerequisite: consent of the instructor. Cosmochemistry, trace element abundances in meteorites, natural radioactivity (Mr. Wasson); radiocarbon dating, tritium hydrology and water and moisture circulation, radioactive fallout circulation and precipitation and assimilation into the biosphere, high pressure chemistry particularly as applied to planetary interiors, chemistry of ionizing radiation, particularly as applied to planetary atmospheres (Mr. Libby); experimental investigation of phase equilibrium at high temperatures and pressures with emphasis on geochemically important systems (Mr. Kennedy); experimental and theoretical investigation of phase equilibrium relations involving crustal conditions (Mr. Ernst); sedimentary geochemistry, geochemistry of stable isotopes, geological microbiology, origin and diagenesis of marine and nonmarine sediments, chemical history of the oceans, organic compounds in meteorites and biochemistry of early evolutionary processes (Mr. Kaplan).

**597A. Preparation for the Comprehensive Examination for the Master's Degree or the Qualifying Examination for the Ph.D. (¼ to 1½ courses)** For course content and staff see course 596.

**597B. Preparation for the Comprehensive Examination for the Master's Degree or the Qualifying Examination for the Ph.D. in Geochemistry. (¼ to 1½ courses)** For course content and staff see course 596A.

**598. Research for and Preparation of the Master's Thesis in Geophysics. (¼ to 1½ courses)** For course content and staff see course 596A.

**599A. Research for and Preparation of the Doctoral Dissertation. (¼ to 1½ courses)** For course content and staff see course 596.

**599B. Research for and Preparation of the Doctoral Dissertation in Geochemistry. (¼ to 1½ courses)** For course content and staff see course 596A.

## GEOPHYSICS AND SPACE PHYSICS

(Renamed to Earth and Space Sciences.)

## GERMANIC LANGUAGES

(Department Office, 310 Royce Hall)

Ehrhard Bahr, Ph.D., *Professor of German*

Franz H. Bäuml, Ph.D., *Professor of German*

Eli Sobel, Ph.D., *Professor of German*

Hans Wagener, Ph.D., *Professor of German (Chairman of the Department)*

<sup>14</sup>Donald J. Ward, Ph.D., *Professor of German and Folklore*

Terence Wilbur, Ph.D., *Professor of Germanic Linguistics and Philology*

Gustave Otto Arit, Ph.D., LL.D., *Emeritus Professor of German*

Carl William Hagge, Ph.D., *Emeritus Professor of German*

Wayland D. Hand, Ph.D., *Emeritus Professor of German and Folklore*

William J. Mulloy, Ph.D., *Emeritus Professor of German*

Victor A. Oswald, Jr., Ph.D., *Emeritus Professor of German*

Vern W. Robinson, Ph.D., *Emeritus Professor of German*

Erik Wahlgren, Ph.D., *Emeritus Professor of Scandinavian and Germanic Languages*

<sup>8</sup>Wolfgang Nehring, Ph.D., *Associate Professor of German*

Alexander Stephan, Ph.D., *Associate Professor of German*

Janet R. Hadda, Ph.D., *Assistant Professor of Yiddish*

Dieter Jedan, Ph.D., *Assistant Professor of German*

Robert S. Kirsner, Ph.D., *Assistant Professor of Dutch and Afrikaans*

Kathleen Komar, Ph.D., *Assistant Professor of German and Comparative Literature*

Laurence G. Lyon, Ph.D., *Assistant Professor of German*

MacDonald Stearns, Jr., Ph.D., *Assistant Professor of German*

Marianna D. Birnbaum, Ph.D., *Adjunct Associate Professor of Hungarian*  
Stephanie Lombardi, Ph.D., *Lecturer in German*

### Preparation for the Major in German

Required: courses 1, 2, 3, 4, 5, 6, or their equivalents.

### The Major in German

Fifteen upper division courses offered by the department are required for the major in German: 100A or 100B, 108A, 108B, 129; four courses chosen from among 100A or 100B (whichever was not taken to satisfy the first listed requirement), 101A, 101B, 101C, 121H, 128, 134; three courses chosen from among 103, 105, 106, 107, 117; four courses chosen from among 121I, 122, 123, 124, 126, 127, 130, 132.

German undergraduate majors with secondary interests in other fields such as Folklore, History, Linguistics, Music, Philosophy, and Theater Arts, may arrange to pursue studies in those areas. Such students should consult with the departmental undergraduate advisors.

### Admission to Graduate Status

The completion of the undergraduate major, or its equivalent, with a minimum grade point average of 3.0 is required. If the candidate is deficient in the undergraduate major he must complete it by taking the appropriate courses, as recommended by the departmental graduate adviser. A placement examination in German language and literature may be required of entering graduate students.

### Teaching Credential Requirements

Students desiring a single-subject teaching credential in German must have the approval of the German Department in order to gain admission to student teaching. For the Single-Subject Instruction Credential, this approval is contingent upon a major (or the equivalent) in German and the successful completion of German 370, which should be taken prior to student teaching. Under exceptional circumstances, the Department may allow the student to enroll in this course concurrently with a student teaching assignment.

For additional information, consult the Graduate School of Education (Moore Hall 201) and the Department of Germanic Languages (310 Royce Hall).

### Requirements for the Master's Degree

1. For the general requirements, see Requirements for Graduate Degrees.
2. Application for advancement to candidacy may be made when the student has passed the Graduate Division reading examination in French.
3. A minimum of nine upper division and graduate level courses of which at least five courses must be graduate level (200 or 500 series), plus a comprehensive examination and additional course requirements described under items 5 and 6 below. When appropriate, the comprehensive examination will be conducted orally.
4. A student who is accepted on the thesis plan for the M.A. must, after completing the thesis, pass a two-hour examination which will be (a) a comprehensive examination and (b) an examination in the field of the thesis.
5. For the candidate who expects to terminate his studies with an M.A. degree and teaching credential (Plan A): in addition to the

minimum of nine upper division and graduate courses mentioned above in item 3, courses 128 and 129 (or their equivalent) and 370 are specifically required. No seminar is required. A comprehensive examination is required on (a) the origin and development of the standard German language, (b) contemporary standards of the German language, and (c) major works and authors from earliest times to the present.

6. For the candidate whose interests are literary and linguistic rather than pedagogical or who intends to proceed toward the Ph.D. (Plan B): at least 9 upper division and graduate courses, of which 6 must be of graduate level; one seminar must be included. A comprehensive examination is required on (a) a basic knowledge of bibliography, (b) a reading knowledge of Middle High German, (c) the origin and development of the German language, and (d) major works and authors from the earliest times to the present.

### Requirements for the Candidate in Philosophy Degree.

The Candidate in Philosophy Degree will be awarded upon request after formal advancement to candidacy, i.e., when the candidate has passed the graduate foreign language reading requirement and the written and oral examinations as prescribed in Requirements for the Doctor's Degree paragraphs 3 and 4.

### Requirements for the Doctor's Degree

1. For the general requirements, see Candidate in Philosophy Degree.

2. A student entering this department with an M.A. from an accredited university in the United States or with a *Staatsexamen* in German, will be admitted to our Ph.D. program without further examination. The graduate advisor will assure that the student makes up any major deficiencies either by completing certain courses or making up the content of these courses by examination. Students with an M.A. in a field other than German, including Linguistics, will have to take the written parts of our M.A. Examination.

3. Advancement to candidacy will take place when the student has (a) passed the graduate reading examination in French; (b) passed a departmental reading examination either in a modern Scandinavian language or in Dutch-Flemish-Afrikaans or in Latin or in Yiddish; (c) successfully completed three seminars; (d) passed the qualifying examinations for the doctorate (see item 4 below).

4. At the beginning of his work toward the doctorate or as soon as possible thereafter, the student shall make known his intended major field as well as his minor field, selected from the four fields in which the degree is offered: (a) German literature, (b) Germanic Philology and Linguistics, (c) Scandinavian Literature and Philology, (d) Germanic Folklore, (e) Yiddish (as a minor field only), (f) Dutch and Afrikaans Studies (as a minor field only). The field in which the candidate intends to present a dissertation will be designated as his major field. A departmental doctoral guidance committee will direct his work toward the qualifying examinations. The candidate who chooses German Literature as his major field will be required to choose two fields of specialization (which will comprise the subject-matter of his major field examination) from the following: (a) German Literature before 1600; (b) German Literature from 1600 through Romanticism; (c) German Literature from Romanticism to the present. The candidate who chooses German Literature as his minor field will be required to select from the above three fields of specialization one field which will be covered by his minor field examination. The candidate shall pass one written qualifying examination in his major field and one written qualifying examination in a minor field. He is then subject to an oral qualifying examination administered by his doctoral committee, (see Final Oral Examination). Upon passing his qualifying examinations the candidate shall write a dissertation. The final oral examination (if required) will deal primarily with the relation of his dissertation to the field of knowledge to which it contributes.

### Lower Division Courses

No credit will be allowed for completing a less advanced course after satisfactory completion of a more advanced course in grammar and/or composition. Prerequisites for lower division courses are listed under the course descriptions. Students with demonstrated preparation may be permitted a more advanced program by the Department, or such students may be transferred to a more advanced course on recommendation of the instructor.

**1. Elementary German.** Lecture, five hours per week; laboratory, one hour. Not available for academic credit for those students who have completed more than one year of high school German or the equivalent. The student will, however, be credited with four units toward their minimum progress requirement. Mr. Jedan

**1G. Elementary German for Graduate Students. (No credit)** Lecture, five hours per week. To provide preparation for Graduate Division foreign language reading requirement. Ms. Lombardi

**2. Elementary German.** Lecture, five hours per week; laboratory, one hour. Prerequisite: course 1. Not available for academic credit for those students who have completed two years of high school German or the equivalent. The student will, however, be credited with four units toward their minimum progress requirement. Mr. Jedan

**2G. Elementary German for Graduate Students. (No credit)** Continuation of course 1G. Ms. Lombardi

**2R. Elementary German for Reading Knowledge.** Prerequisite: course 1. This course will continue the study of the German language and guide the student to an acquisition of basic reading skills. Mr. Jedan

**3. Elementary German.** Lecture, five hours per week; laboratory, one hour. Prerequisite: course 2 or two years of high school German. Mr. Jedan

**3R. Elementary German for Reading Knowledge.** Prerequisite: course 2, 2R, or 2 years of high school German. This course will complete the study of the German language and introduce the student to readings in the various humanistic and scientific disciplines. Conducted in groups according to field of study. Mr. Jedan

**4. Intermediate German.** Lecture, five hours per week. Prerequisite: course 3 or three years of high school German. Mr. Jedan

**5. Intermediate German.** Lecture, four hours per week. Prerequisite: course 4, or four years of high school German. Mr. Jedan

**6. Intermediate German.** Lecture, four hours per week. Prerequisite: course 5 or the equivalent. Mr. Jedan

**12. German Conversation. (½ course)** Lecture, two hours per week. Prerequisite: course 1 or one year of high school German. This course will utilize German language teaching films; students will have the opportunity to practice spoken German in small groups. Mr. Jedan

**14. Intermediate Conversation. (½ course)** Lecture, two hours per week. Prerequisite: course 3 or three years of high school German. Students will have the opportunity to practice spoken German in small groups. Mr. Jedan

**95. Freshman Seminar.** Course of variable content limited to topics of current interest; to be offered whenever a member of the staff is available. The Staff

### Upper Division Courses

The prerequisite for all upper division courses except 100A or 100B, 121A, 121B, 121C, 121D, 121E, 121F, 121G, 121H, 121I, 121J, is course 6 or the equivalent.

### Courses Open to Majors and Non-majors, But Not to Graduate Students in German

**100A. German Civilization and Culture before 1800.** A study of the development of German civilization and institutions from the earliest times to 1800. Study of German culture as represented in its literature, art, music, and architecture before 1800. Students who have taken previous course 100 may receive credit for 100A or 100B but not both. Mr. Bäuml, Mr. Sobel, Mr. Wagener

**100B. Modern German Civilization and Culture.** A study of the development of German civilization and institutions from 1800 to the present. Study of German culture as represented in its literature, art, music, and architecture since 1800. Students who have taken previous course 100 may receive credit for 100A or 100B but not both. Mr. Sobel, Mr. Wagener

**101A. Introduction to German Poetry.** Close analysis of representative examples of German lyric poetry from early as well as modern literary periods, including a systematic consideration of poetic conventions and forms, diction, tone, imagery, symbolism and metrics. Recommended to be taken at the beginning of literary studies. The Staff

**101B. Introduction to German Drama.** Analysis of selected examples of drama (e.g. tragedy, comedy, one-act-play, lyric drama, lyric theater, etc.), including a systematic introduction to dramatic forms, techniques, and theories. Texts will be selected from modern literature as well as from other periods. Recommended to be taken at the beginning of literary studies. Mr. Bahr, Mr. Nehring

**101C. Introduction to German Narrative Prose.** Analysis of significant examples of narrative prose (e.g. short story, novella, novel, fairy tale, etc.), including a systematic introduction to narrative forms, techniques, styles. Texts will be selected from modern literature as well as from other periods. Recommended to be taken at the beginning of literary studies. Ms. Komar, Mr. Nehring, Mr. Stephan

**103. Introduction to German Enlightenment, Sturm und Drang, and Classicism.** Reading and discussion of representative works by Lessing, Goethe, and Schiller: their historical and social background, their relationship to music (Bach, Mozart) and philosophy (Leibniz, Kant) as well as their place in the history of ideas. Mr. Bahr, Mr. Lyon

**105. Introduction to 19th Century German Literature.** Reading and analysis of selected works from Romanticism to Realism. Ms. Komar, Mr. Nehring

**106. Introduction to Modern Literature.** Analysis of selected works of the period from 1890 to 1945. Mr. Wagener

**107. Introduction to Contemporary Literature.** Analysis of selected works of the period 1945 to the present time. Mr. Stephan

**108A. Composition and Conversation.** Composition and conversation. Ms. Lombardi, Mr. Stearns



**108B. Composition and Conversation.** Composition and conversation. Prerequisite: course 108A or consent of instructor.  
Ms. Lombardi, Mr. Stearns

**117. Language and Linguistics.** Prerequisites: courses 100A or 100B and 108A. Introduction to the historical development of the German language; theories and methods of linguistics.  
Mr. Stearns, Mr. Wilbur

**121A. Older German Literature in Translation.** Analyses in English of works of German literature from the Medieval period to Baroque. No credit toward completion of the major in German.  
Mr. Bäuml, Mr. Sobel, Mr. Ward

**121B. Classical German Literature in Translation.** Analyses in English of works of the period of Classicism. No credit toward completion of the major in German.  
Mr. Bahr, Mr. Lyon

**121C. 19th Century German Literature in Translation.** Readings and lectures in English on selected 19th century authors. No credit toward completion of the major in German.  
Ms. Komar, Mr. Nehring

**121D. Modern German Literature in Translation—Narrative Prose I.** Readings, lectures and discussions in English on selected modern authors, including Mann, Kafka, Hesse and Rilke. No credit toward completion of the major in German.  
Mr. Nehring, Mr. Stephan, Mr. Wagener

**121E. Modern German Literature in Translation—Narrative Prose II.** Readings, lectures and discussions in English on post-1945 narrative prose. No credit toward completion of the major in German.  
Mr. Stephan, Mr. Wagener

**121F. Modern German Literature in Translation—Drama and Lyrics.** Readings, lectures and discussions in English on modern German drama and lyric poetry. No credit toward completion of the major in German.  
Mr. Stephan, Mr. Wagener

**121G. Modern German Jewish Literature in Translation.** Readings, lectures in English on selected authors, including Mendelssohn, Heine, Schnitzler, Kraus, Kafka, Feuchtwanger, Anne Frank, Nelly Sachs. No credit toward completion of the major in German.  
Ms. Hadda

**121J. The Faust Tradition from the Renaissance to the Modern Age.** Readings and discussions in English of the Faust theme and Faust tradition in European literature and intellectual history, including the chapbook of *Doctor Faustus*, Christopher Marlowe's and Goethe's Faust dramas as well as Thomas Mann's novel *Doctor Faustus: The Life of the German Composer Adrian Leverkühn*. No credit toward completion of the major in German.  
Mr. Bahr, Mr. Lyon

#### Courses open to Graduate Students in German

**121H. Special Problems in Literature.** Prerequisite: upper division standing in any department. Varying topics of current importance and immediate relevance to literary study. The course is designed to introduce the student to contemporary trends in literary study and is predominantly concerned with topics related to German literature and criticism. Lectures in English.  
The Staff

**121I. The German Film in Cultural Context.** A survey of various aspects of the German film in relationship to literary, artistic, and political directions of the times, with emphasis on the film as a separate mode of artistic expression.  
Mr. Stephan

**122. Studies in German Literature Before 1750.** Prerequisites: three upper division courses, including courses 100 or 100A, or consent of the instructor. Readings and analysis of major works from the Middle Ages to the Baroque.  
The Staff

**123. Goethe.** Prerequisites: courses 100A or 100B, and 103 or consent of instructor. Reading and discussion of representative works (except *faust*) from Goethe's early period to his maturity and old age.  
Mr. Bahr, Mr. Lyon

**124. Romanticism.** Prerequisites: courses 100A or 100B, 105, or consent of the instructor. Reading and analysis of major works of the Romantic period. Authors included are Tieck, Novalis, E.T.A. Hoffmann, and Eichendorff.  
Ms. Komar, Mr. Nehring

**126. Advanced Study in Modern Literature.** Prerequisites: courses 100A or 100B, 106, or consent of the instructor. Reading and analysis of a wide range of the literature from 1890-1945.  
Mr. Wagener

**127. Advanced Study in Contemporary Literature.** Prerequisites: courses 100A or 100B, 107, or consent of the instructor. Analysis of a wide range of German literature from 1945 to the present.  
Mr. Stephan

**128. Advanced Composition, Grammar and Conversation.** Prerequisites: course 108A-108B or consent of the instructor. Grammar, composition, conversation.  
Ms. Lombardi

**129. German Phonetics.** Study of the articulatory basis of the sounds of German and practice in standard pronunciation.  
Mr. Stearns

**130. Methodology of Literary Criticism.** Prerequisites: senior standing or consent of the instructor. Introduction to the methodology of literary criticism, including a systematic study of motif, topos, plot, space and time, semantics, stylistics, rhetoric, metrics imagery (emblem, metaphor, allegory, symbol), structural elements (act, stanza, book, flash-back, anticipation, interior monologue), narrator and reader's response, humor and irony, hermeneutics.  
Mr. Bahr, Mr. Bäuml, Mr. Lyon

**132. Goethe's Faust.** Prerequisites: courses 100A or 100B, 123, or consent of the instructor. Detailed interpretation of Goethe's *Faust*, Parts I and II, together with more general consideration of other treatments of the Faust theme in European literature.  
Mr. Bahr, Mr. Lyon

**134. German Folklore.** A survey of the various genres of German folklore.  
Mr. Ward

**199A-199Z. Special Studies. (½ or 1 course)** Prerequisite: consent of the instructor. To be arranged with the member of the faculty who will direct the study. The member of the faculty directing the study will be identified by the same two-letter code used to identify his 599 research course. A course of independent study for students who desire more intensive or specialized investigation of material covered in a regular course, and who present such a course as a prerequisite.  
The Staff

#### Graduate Courses

**201A. Bibliography of German Literary History.** Study of the various kinds of bibliographies, handbooks, lexica, series publications, journals, literary histories, and other reference works.  
Mr. Sobel

**201C. Theories of Literary Criticism.** Foundations of literary criticism and current theories.  
Mr. Bahr, Mr. Bäuml

**202A. Middle High German.** Introduction to the Middle High German language.  
Mr. Bäuml

**202B. Readings in Middle High German Literature.** Readings from Middle High German courtly literature.  
Mr. Bäuml, Mr. Ward

**203A. The Courtly Epic.** Analysis of Hartmann's *Erec* and *Iwein*, Wolfram's *Parzival*, and Gottfried's *Tristan*. Lectures on methods of interpretation.  
Mr. Bäuml

**203B. The Courtly Lyric.** Analysis of lyric poetry from Der von Kurenberg to Johannes Hadlaub.  
Mr. Bäuml, Mr. Ward

**203C. The Heroic Epic.** Analysis and methods of interpretation of heroic poetry from the *Hildebrandslied* to *Kudrun*.  
Mr. Bäuml, Mr. Ward

**204. Renaissance and Reformation Literature.** German literature of the 15th and 16th centuries, including introduction to the Early New High German language.  
Mr. Sobel

**205. Baroque Literature.** Development of modern Baroque scholarship, prosodies, lyrics, drama, and types of the Baroque novel and prose satire.  
Mr. Sobel, Mr. Wagener

**206A. Enlightenment and Sentimentalism.** Representative authors of the earlier part of the eighteenth century from Gottsched through Lessing.  
Mr. Bahr, Mr. Lyon

**206B. Sturm und Drang.** Representative authors of the *Sturm und Drang* including the young Goethe and Schiller.  
Mr. Bahr, Mr. Lyon

**207A. Classicism: Goethe.** Selected topics in the works of Goethe in the period 1776-1832.  
Mr. Bahr

**207B. Classicism: Schiller.** Selected topics in the dramatic and critical works of Schiller in the period 1793-1805.  
Mr. Bahr

**208. Romanticism.** Analysis of representative works of the Romantic Period.  
Ms. Komar, Mr. Nehring

**209A. 19th Century Lyrics.** Analysis of postromantic lyric poetry.  
Ms. Komar, Mr. Nehring

**209B. 19th Century Drama.** Analysis of postromantic, pre-naturalistic dramas.  
Ms. Komar, Mr. Nehring

**209C. 19th Century Narrative Prose.** Analysis of works of postromantic, pre-naturalistic narrative prose.  
Ms. Komar, Mr. Nehring

**210A. Naturalism and Symbolism.** Poetry, drama, and shorter narratives of the period 1890-1945.  
Mr. Wagener

**210B. Expressionism and Neorealism.** Poetry, drama, and shorter narratives of the period 1910-1933.  
Mr. Stephan, Mr. Wagener

**210C. 20th Century Novel to 1945.** Analysis of selected novels written prior to 1945.  
Ms. Komar, Mr. Wagener

**211A. Contemporary Novel.** Analysis of selected novels of the period from 1945 to the present.  
Mr. Stephan

**211B. Contemporary Lyrics and Drama.** Lyrics and drama of the period from 1945 to the present.  
Mr. Stephan

**217. History of the German Language.**  
Mr. Stearns, Mr. Wilbur

**230. Survey of Germanic Philology.**  
Mr. Wilbur

**231. Gothic.**  
Mr. Stearns, Mr. Wilbur

**232. Old High German.**  
Mr. Stearns, Mr. Wilbur

**233. Old Saxon.**  
Mr. Stearns, Mr. Wilbur

**240A. Theories, Methods, and History of Germanic Folklore.** Historical survey of folklore theory in the Germanic countries, and a study of modern folklore methodology, bibliography, and status of studies.  
Mr. Ward

**240B. Folk Song and Ballad.** Survey of German folk song and ballad, as to historical development, relation to other literary

genres, ethnic background, and poetic and musical values.  
Mr. Ward

**240C. Oral Prose Genres.** Legends, folk tales, jests, proverbs, riddles; their history, function, and poetic value.  
Mr. Ward

**M245A. Germanic Religions and Mythology.** (Same as Scandinavian M245.)  
The Staff

**245B. Germanic Antiquities.** Prehistory and early history of Germanic culture; a philological investigation of Germanic ethnography, customs, behavior and law.  
Mr. Ward

**251. Seminar in Syntax and Phonology of German.** The syntactical and phonological structure of the German language according to the principles of generative grammar and other techniques.  
Mr. Wilbur

**252. Seminar in Historical and Comparative German Linguistics.** The historical development of the Germanic languages according to the principles and techniques of comparative linguistics.  
Mr. Wilbur

**253. Seminar in Medieval Literature.**  
Mr. Bäuml, Mr. Ward

**254. Seminar in Renaissance and Reformation.**  
Mr. Sobel

**255. Seminar in Baroque Literature.**  
Mr. Sobel, Mr. Wagener

**256. Seminar in Enlightenment and Sturm und Drang.**  
Mr. Bahr, Mr. Lyon

**257. Seminar in the Age of Goethe.**  
Mr. Bahr

**258. Seminar in Romanticism.**  
Ms. Komar, Mr. Nehring

**259. Seminar in 19th Century Literature.**  
Ms. Komar, Mr. Nehring

**260. Seminar in the Modern Period.**  
Mr. Bahr, Mr. Nehring, Mr. Wagener

**261. Seminar in Contemporary Literature.**  
Mr. Stephan

**262. Seminar in Germanic Folklore.**  
Mr. Ward

#### Professional Course in Method

**370. The Teaching of German in Secondary Schools.** Lecture, three hours per week and discussion periods. Prerequisite: graduate standing or consent of the instructor. Required of all candidates for the general secondary credential in German.  
Ms. Lombardi

**495A-495B. Preparation for College Teaching of German. (½ course each)** Two-quarter sequence. Study of problems and methods in teaching German on the college level. Theory and classroom practice, observation and critical evaluation. Credit only on completion of 495B. May not be used to fulfill any of the course requirements for the Master's Degree. This course is offered on an In-Progress basis, which requires students to complete the full 2-quarter sequence at the end of which time a grade is given for all quarters of work. Satisfactory-Unsatisfactory grading.  
Mr. Jedan

#### Individual Study and Research

**596A-596ZZ. Directed Individual Study or Research.** To be arranged with the member of the faculty who will direct the study or research. The member of the faculty directing the study will be identified by a two-letter code using the initials of the sponsoring instructor (see department for code). To be graded on Satisfactory-Unsatisfactory basis. May be taken twice. Only one course in the 500 series may count toward the M.A. requirement.  
The Staff

**597A-597ZZ. Preparation for Comprehensive Examination for the Masters Degree or the Qualifying Examination for the Ph.D.** To be arranged with the member of the faculty who will direct the study. The member of the faculty directing the study will be identified by a two-letter code using the initials of the sponsoring instructor (see department for code). To be graded on Satisfactory-Unsatisfactory basis. May be taken only once before and only once after the M.A. degree. Only one course in the 500 series may count toward the M.A. graduate course requirement.  
The Staff

**598A-598ZZ. Research for Preparation of Master's Thesis.** To be arranged with the member of the faculty who will direct the study. The member of the faculty directing the study will be identified by a two-letter code using the initials of the sponsoring instructor (see department for code). To be graded on Satisfactory-Unsatisfactory basis. May be taken three times. Only one course in the 500 series may count toward the M.A. graduate course requirement.  
The Staff

**599A-599ZZ. Research for Preparation of the Doctoral Dissertation. (1 to 2 courses)** To be graded on Satisfactory-Unsatisfactory basis. May be taken unlimited number of times. To be arranged with the member of the faculty who will direct the study. Each faculty member has his own doctoral research course identified by a two-letter code using his initials.  
The Staff

## Dutch-Flemish and Afrikaans

- 101A. Elementary Dutch-Flemish.** Mr. Kirsner
- 101B. Elementary Afrikaans.** Mr. Kirsner
- 101C. Intermediate Dutch-Flemish.** Prerequisite: course 101A or equivalent. Mr. Kirsner
- 101D. Intermediate Readings in Dutch-Flemish.** Prerequisite: course 101C or equivalent. Mr. Kirsner
- 101E. Intermediate Readings in Afrikaans.** Prerequisite: course 101B. Mr. Kirsner
- 112. Dutch, Flemish, Afrikaans Literature in Translation.** Readings and analysis of selected works in translation from Dutch, Flemish, and Afrikaans literature. Mr. Kirsner
- 120. Introduction to Dutch Studies.** Prerequisite: consent of instructor. Brief review of Dutch grammar. Reading and discussion of selections from contemporary Dutch literature, contemporary Dutch literary criticism, and modern Dutch linguistics. Emphasis is on developing reading skill and on acquiring familiarity with and an appreciation of the scope of twentieth century *Nederlandstiek*. Mr. Kirsner
- 131. Introduction to Modern Dutch Literature.** Prerequisite: Either Dutch 101D or 120. Analysis of selected works of the literature of the Netherlands and Flemish Belgium, from the symbolist *Beweging van Tachtig* of the 1880's to the present. Mr. Kirsner
- 135. Introduction to Afrikaans Literature.** Prerequisite: Dutch 101E or equivalent. Analysis of selected works, from the founding of the *Genootskap van Regte Afrikaners* in 1875 to the present time. Mr. Kirsner
- 199. Special Studies in Dutch-Flemish and Afrikaans.** (½ to 1 course) Mr. Kirsner
- 234. The Structure of Modern Standard Dutch.** A detailed examination, from contrasting theoretical viewpoints, of central problems in Dutch phonology, grammar, and semantics, with attention to related phenomena in German, English, and Afrikaans. This course is equivalent to Linguistics 225. Mr. Kirsner

## Hungarian

- 101A. Elementary Hungarian.** Introduction to grammar and reading exercises, emphasis on the spoken language. Ms. Birnbaum
- 101B. Elementary Hungarian.** Prerequisite: course 101A or the equivalent. Grammatical exercises, conversation, and reading of texts. Ms. Birnbaum
- 101C. Elementary Hungarian.** Prerequisite: course 101B or the equivalent. Conversation and readings in literary texts. Ms. Birnbaum
- 101D. Advanced Hungarian.** Prerequisites: courses 101A, 101B and 101C completed or equivalent. Grammar, conversation, vocabulary building. Ms. Birnbaum
- 101E. Advanced Hungarian.** Prerequisites: courses 101A-101D completed or equivalent. Conversation, reading and discussion of literary text. Ms. Birnbaum
- 101F. Advanced Hungarian.** Prerequisites: courses 101A-101E completed, or equivalent. Conversation, and reviewing Hungarian grammar from a typological point of view. Ms. Birnbaum
- 120A-120B. Readings in Hungarian.** (Formerly numbered Finno-Ugric 153A-153B.) Prerequisite: course 101C or the equivalent. Large selections of Hungarian prose and poetry read in the original. Ms. Birnbaum
- 120C. Readings in Hungarian Literature.** Prerequisite: reading knowledge in Hungarian. Course 101C or equivalent completed. Large selections of Hungarian prose and poetry read in the original. Discussion will be conducted in Hungarian. Ms. Birnbaum
- 121A-121B. Survey of Hungarian Literature in Translation.** (Formerly numbered 158A-158B.) Intended for students in general and comparative literature as well as students interested in Finno-Ugric studies. Main trends and contacts with other literatures are surveyed. Ms. Birnbaum
- M135. Hungarian Folklore and Mythology.** (Same as Folklore M128.) A general course for the student in folklore and mythology, with emphasis on types of folklore and varieties of folklore research. Ms. Birnbaum
- 130. Hungarian Civilization and Culture.** A study of Hungarian civilization and institutions from the earliest times to the present. Study of Hungarian culture as represented in its arts (literature, fine arts, music). Ms. Birnbaum
- M136. Folklore and Mythology of the Ugric Peoples.** (Same as Folklore M129.) Survey of the traditions of the smaller Ugric nationalities (Voguls, Ostyaks, etc.). Ms. Birnbaum
- 199. Special Studies in Hungarian.** (½ to 1 course) Prerequisite: consent of the instructor is required. A course of independent study for students who desire more intensive or specialized investigation of material covered in a regular course, and who present such a course as a prerequisite. Ms. Birnbaum

## Yiddish

- 1. Elementary Yiddish.** Lecture, five hours per week. Introduction to grammar; instruction in listening, speaking, reading and writing skills. Ms. Hadda
- 2. Elementary Yiddish.** Lecture, five hours per week. Prerequisite: course 1 or equivalent. Ms. Hadda
- 3. Elementary Yiddish.** Lecture, five hours per week. Prerequisite: course 2 or equivalent. Ms. Hadda
- 104. Intermediate Yiddish.** Lecture, five hours per week. Prerequisite: course 3 or equivalent. Grammatical exercises, reading and linguistic analysis of texts, conversation. Ms. Hadda
- 121A. 20th Century Yiddish Poetry in English Translation.** Prerequisite: upper division standing or consent of the instructor. Readings in 20th Century Yiddish Poetry and drama. Lectures, discussions. Ms. Hadda
- 121B. 20th Century Yiddish Prose and Drama in English Translation.** Prerequisite: upper division standing or consent of the instructor. Readings in 20th Century Yiddish Prose. Lectures, discussions. Ms. Hadda
- 131A. Modern Yiddish Poetry.** Prerequisite: course 104 or consent of instructor. Readings in modern Yiddish poetry. Lectures, discussions. Ms. Hadda
- 131B. Modern Yiddish Prose and Drama.** Prerequisite: course 104 or consent of instructor. Readings in modern Yiddish prose and drama. Lectures, discussion. Ms. Hadda
- 199. Special Studies in Yiddish.** (½ to 1 course) Prerequisite: consent of the instructor. A course of independent study for students who desire more intensive or specialized investigation of material covered in a regular course, and who present such a course as a prerequisite. Ms. Hadda
- 596A-ZZ. Directed Individual Study or Research in Yiddish.** To be arranged with the member of the faculty who will direct the study or research. The member of the faculty directing the study will be identified by a two-letter code using the initials of the sponsoring instructor (see department for code). To be graded on Satisfactory-Unsatisfactory basis. May be taken twice. Ms. Hadda

## SCANDINAVIAN LANGUAGES

- Kenneth G. Chapman, Ph.D., *Professor of Scandinavian Languages.*  
Erik Wahlgren, Ph.D., *Emeritus Professor of Scandinavian and Germanic Languages.*  
12. Ross P. Shideler, Ph.D., *Associate Professor of Scandinavian Languages and Comparative Literature.*  
James R. Massengale, Ph.D., *Associate Professor of Scandinavian Languages (Vice Chairman of the Department).*  
Mary Kay Norseng, Ph.D., *Assistant Professor of Scandinavian Languages.*  
\_\_\_\_\_, *Assistant Professor of Scandinavian Languages.*

- Inkeri A. Rank, M.A., M.Ed., *Lecturer in Finnish Studies.*  
Jules L. Zentner, Ph.D., *Lecturer in Scandinavian Languages.*

### Preparation for the Major

Required: courses 1, 2, 3, 4, 5, or 11, 12, 13, 14, 15, or 21, 22, 23, 24, 25 and 30, or their equivalents.

### The Undergraduate Major in Scandinavian

Nine upper division courses in Scandinavian, including courses 105 and 106, or 110 for two quarters, and 141, 142, and 143. As an additional requirement, three upper division courses in Scandinavian or a related field must be taken. These three courses must be approved in advance by the undergraduate adviser. It is recommended that students who plan to do graduate work in Scandinavian take German 1 through 6.

### Admission to Graduate Status

The completion of the undergraduate major, or its equivalent, with a minimum grade point average of 3.0 is required. If the candidate is deficient in the undergraduate major he must complete it by taking the appropriate courses, as recommended by the adviser of the Scandinavian Section. A placement examination in the Scandinavian languages, as well as in German, may be required of entering graduate students.

### Requirements for the Master's Degree

- For the general requirements, see Requirements for Graduate Degrees.
- Students entering the M.A. program in Scandinavian will be required to have completed an undergraduate major in Scandinavian, or its equivalent.
- A reading knowledge of either German or French, at the discretion of the department, will be required for the M.A. degree in Scandinavian.
- A total of twelve courses is required for the M.A. degree. These include a minimum of nine upper division and graduate courses in Scandinavian, of which at least five must be graduate courses. In addition, three courses on the upper division or graduate level must be taken in a related field of linguistic or literary study to be

determined by consultation with the Graduate Adviser in Scandinavian. At least one of these three courses in a related field must be on the graduate level. Comparative Literature 200 or an equivalent course in literary or linguistic methodology is required as one of these three outside courses. A knowledge of Old Icelandic equivalent to courses 151 and 152 will be required of all candidates for the M.A. in Scandinavian.

5. A comprehensive examination will be required of all candidates for the M.A. degree in Scandinavian.

### Requirements for the Doctor's Degree in Germanic Languages

A candidate for the Ph.D. in Germanic Languages may choose Scandinavian Literature and Philology as his major or his minor field. For details, see Candidate in Philosophy Degree.

### Lower Division Courses

No credit will be allowed for completing a less advanced course after satisfactory completion of a more advanced course in grammar and/or composition. Prerequisites for lower division courses are listed under the course descriptions. Students with demonstrated preparation may be permitted a more advanced program by the Department, or such students may be transferred to a more advanced course on recommendation of the instructor.

### Admission to Language Courses in the Scandinavian Section

Native speakers of Norwegian, Swedish, or Danish may not enroll in any language course (including courses 105, 106, and 110) in the Scandinavian Section, except by petition in writing to the Section. Non-Scandinavian students with a knowledge of one of these Scandinavian languages may not take courses in the others except by petition in writing. These petitions must include a description of the student's linguistic background and his reason for wanting to take the language course in question.

- Elementary Swedish.** Mr. Shideler in charge
- Elementary Swedish.** Prerequisite: course 1 or equivalent. Mr. Shideler in charge
- Elementary Swedish.** Prerequisite: course 2 or equivalent. Mr. Shideler in charge
- Intermediate Swedish.** Prerequisite: course 3 or equivalent. Mr. Shideler in charge
- Intermediate Swedish.** Prerequisite: course 4 or equivalent. Mr. Shideler in charge

- Elementary Norwegian.** The Staff
- Elementary Norwegian.** Prerequisite: course 11 or equivalent. The Staff
- Elementary Norwegian.** Prerequisite: course 12 or equivalent. The Staff

- Intermediate Norwegian.** Prerequisite: course 13 or equivalent. The Staff
- Intermediate Norwegian.** Prerequisite: course 14 or equivalent. The Staff

- Elementary Danish.** A first-quarter course in the Danish language. Mr. Massengale
- Elementary Danish.** Prerequisite: course 21, or equivalent. A second-quarter course in the Danish language. Mr. Massengale
- Elementary Danish.** Prerequisite: course 22, or equivalent. A third-quarter course in the Danish language. Mr. Massengale
- Intermediate Danish.** Prerequisite: course 23 or equivalent. Mr. Massengale
- Intermediate Danish.** Prerequisite: course 24 or equivalent. Mr. Massengale

- Intermediate Danish, Norwegian and Swedish.** (Formerly numbered 20.) Prerequisite: either course 5, 15, or 25, or the equivalent. Readings in Danish, Norwegian and Swedish. Written and oral exercises. To be taken on P/NP or S/U basis only. The Staff

### Upper Division Courses

- 105. Advanced Swedish.** Prerequisite: course 30 or equivalent. Readings, composition, and conversation. Conducted in Swedish. The Staff
- 106. Advanced Swedish.** Prerequisite: course 105 or equivalent. Readings, composition, and conversation. Conducted in Swedish. The Staff
- 110. Advanced Danish and Norwegian.** Prerequisite: course 30 or equivalent. Advanced reading, composition, and conversation in Danish and Norwegian. May be taken twice for credit. The Staff
- M123A. Finnish Folklore and Mythology.** (Same as Folklore M123A.) The methods and results of Finnish folklore studies and the mythic traditions of the Finns. Special attention is paid to the oral epic, beliefs and legends. Mrs. Rank
- M123B. Finnish Folksong and Ballad.** (Same as Folklore M123B.) Course M123A is not prerequisite to M123B. A survey of Finnish balladry and folksong, with attention to historical development, ethnic background, and poetic and musical values. Mrs. Rank
- M125. Folklore and Mythology of the Lapps.** (Same as Folklore M125.) Survey of Lappish beliefs, customs, and various genres of

oral tradition including tales, legends, songs and music. Attention is also paid to the material manifestations of Lappish culture: arts and crafts, textiles, costume, folk technology. Mrs. Rank

**130. Elementary Finnish.** Introduction to pronunciation and grammar. Mrs. Rank

**131. Intermediate Finnish.** Prerequisite: course 130 or equivalent. Grammatical exercises and readings. Mrs. Rank

**132. Advanced Finnish.** Prerequisite: course 131 or equivalent. Readings, composition and conversation. Mrs. Rank

**138. Survey of Finnish Literature.** Intended for students in general and comparative literature as well as students interested in Finnish studies. Readings and discussions of selected works from the literature of Finland in the 19th and 20th centuries. Conducted in English; no knowledge of Finnish required. Mrs. Rank

**141. Viking Civilization and Literature.** Readings and discussions of selected works from the Old Icelandic sagas, the Eddas, and early ballad literature. Conducted in English, and no knowledge of a Scandinavian language is required. The Staff

**142. Scandinavian Literature of the 18th and 19th Centuries.** Prerequisite for Scandinavian majors: course 30 or equivalent. For nonmajors: no knowledge of a Scandinavian language is required. Readings and discussions of selected works from the literature of Scandinavia in the 18th and 19th centuries. The Staff

**143. Modern Scandinavian Literature.** Prerequisite for Scandinavian majors: course 30 or equivalent. For nonmajors: no knowledge of a Scandinavian language is required. Readings and discussions of selected works of modern Scandinavian literature. The Staff

**144. Ibsen.** Prerequisite for Scandinavian majors: course 30 or equivalent. For nonmajors: no knowledge of a Scandinavian language is required. Readings and discussions of selected plays by Henrik Ibsen. Ms. Norseng

**145. Strindberg.** Prerequisite for Scandinavian majors: course 30 or equivalent. For nonmajors: no knowledge of a Scandinavian language is required. Readings and discussions of selected plays by August Strindberg. Mr. Massengale

**146. Kierkegaard.** Prerequisite for Scandinavian majors: course 30 or equivalent. For nonmajors: no knowledge of a Scandinavian language is required. Readings and discussions of selected works by Søren Kierkegaard. Mr. Massengale

**147. Hamsun.** Prerequisite for Scandinavian majors: course 30 or equivalent. For nonmajors: no knowledge of a Scandinavian language is required. Readings and discussions of selected works by Knut Hamsun. Ms. Norseng

**151. Elementary Old Icelandic.** Prerequisite: at least one year of a modern Scandinavian language or consent of the instructor. Grammar and readings of prose literature. Mr. Chapman

**152. Intermediate Old Icelandic.** Prerequisite: course 151. Readings of Old Icelandic prose and poetry. Mr. Chapman

**153. Modern Icelandic.** Prerequisite: course 152. Grammar, readings, composition, and conversation. Mr. Chapman

**180. Literature and Scandinavian Society.** Discussion of selected aspects of Scandinavian society based on readings of the contemporary literature as well as other documentary material. No knowledge of a Scandinavian language is required. May be repeated for credit when Undergraduate Adviser determines that course content is completely different. The Staff

**190. Honors Course in Scandinavian.** Prerequisites: senior standing with a minimum of 3.0 grade-point average in the major and consent of the honors committee of the Scandinavian section. Intensive study of a selected special topic in Scandinavian. Discussions, oral and written reports. The Staff

**199A-199Z. Special Studies in Scandinavian. (½ or 1 course)** Prerequisites: senior or graduate standing, and consent of the instructor. To be arranged with the member of the faculty who will direct the study. The member of the faculty directing the study will be identified by the same two-letter code used to identify his 599 research course. A course of independent study designed for graduates or senior undergraduates who desire more intensive or specialized investigation of material covered in a regular course, and who present such a course as a prerequisite.

### Graduate Courses

**210. History and Description of the Scandinavian Languages.** Prerequisite: graduate status, and a thorough knowledge of one or more Scandinavian languages. Description of the Scandinavian languages and their development from the oldest period to the present. Emphasis will be placed on the relationship of the several Scandinavian languages to each other and to the other Germanic languages. The Staff

**221. Advanced Old Icelandic Prose.** Prerequisite: course 152 or equivalent. Readings in advanced literary texts in Old Icelandic. Mr. Chapman

**222. Advanced Old Icelandic (Poetry).** Prerequisite: course 152 or equivalent. Readings in advanced poetic texts; Eddic and Skaldic. Mr. Chapman

**M245. Scandinavian Mythology.** (Same as German M245A.) Prerequisite: knowledge of German, a Scandinavian language, or consent of the instructor. The Staff

**251. Henrik Ibsen.** Prerequisite: course 144 and an advanced knowledge of Norwegian. Intensive study of the works of Ibsen. Ms. Norseng

**252. August Strindberg.** Prerequisite: an advanced knowledge of Swedish and consent of instructor. Intensive study of the work of August Strindberg. Mr. Massengale

**263. Seminar in Scandinavian Studies.** Prerequisite: Graduate standing or permission of instructor. Knowledge of a Scandinavian language is required. Intensive study of selected aspects of Scandinavian society based on readings in the literature as well as other documentary material. Course may be taken more than once if the graduate adviser determines that the course content is significantly different. The Staff

### Individual Study and Research

**596A-596Z. Directed Individual Study or Research.** To be arranged with the member of the faculty who will direct the study or research. The member of the faculty directing the study will be identified by the same two-letter code used to identify his 599 research course. To be graded on Satisfactory-Unsatisfactory basis. May be taken twice. Only one course in the 500 series may count toward the M.A. graduate course requirement.

**597A-597Z. Preparation for the Qualifying Examination for the Ph.D. (1 to 2 courses)** To be arranged with the member of the faculty who will direct the study or research. The member of the faculty directing the study will be identified by the same two-letter code used to identify his 599 research course. To be graded on Satisfactory-Unsatisfactory basis. May be taken three times.

**599A-599Z. Research for Preparation of the Doctoral Dissertation.** To be graded on Satisfactory-Unsatisfactory basis. May be taken unlimited number of times. To be arranged with the member of the faculty who will direct the study. Each faculty member has his own doctoral research course identified by a two-letter code as follows: K.G. Chapman, 599KC; J.R. Massengale, 599JM; M.K. Norseng, 599MN; R.P. Shideler, 599RS.

## HISTORY

(Department Office, 6265 Bunche Hall)

Robert L. Benson, Ph.D., *Professor of History.*  
Kees W. Bolle, Ph.D., *Professor of History.*  
John G. Burke, Ph.D., *Professor of History.*  
E. Bradford Burns, Ph.D., *Professor of History.*  
Robert I. Burns, S.J., Ph.D., *Professor of History.*  
Robert N. Burr, Ph.D., *Professor of History.*  
Mortimer H. Chambers, Jr., Ph.D., *Professor of History.*  
Claus-Peter Clasen, Ph.D., *Professor of History.*  
Stanley Cohen, Ph.D., *Professor of History.*  
Robert Dallek, Ph.D., *Professor of History.*  
Amos Funkenstein, Ph.D., *Professor of History.*  
John S. Galbraith, Ph.D., *Professor of History.*  
Frank O. Gatell, Ph.D., *Professor of History.*  
James A. Henretta, Ph.D., *Professor of History.*  
Richard Hovannissian, Ph.D., *Professor of History.*  
Daniel W. Howe, Ph.D., *Professor of History.*  
Norris C. Hundley, Ph.D., *Professor of History.*  
Nikki Keddie, Ph.D., *Professor of History.*  
Barisa Krekic, Ph.D., *Professor of History.*  
John H.M. Laslett, D.Phil., *Professor of History.*  
James Lockhart, Ph.D., *Professor of History.*  
Andrew Lossky, Ph.D., *Professor of History.*  
Peter Loewenberg, Ph.D., *Professor of History.*  
Afa Marsot, D.Phil., *Professor of History.*  
Lauro R. Martinez, Ph.D., *Professor of History.*  
D. C. Moore, Ph.D., *Professor of History.*  
Gary B. Nash, Ph.D., *Professor of History.*  
Boniface I. Obichere, D.Phil., *Professor of History.*  
Merrick Posnansky, Ph.D., *Professor of History.*  
Hans J. Rogger, Ph.D., *Professor of History (Chairperson of the Department).*

Richard H. Rouse, Ph.D., *Professor of History.*  
Theodore Saloutos, Ph.D., *Professor of History.*  
Damodar R. SarDesai, Ph.D., *Professor of History.*  
Alexander P. Saxton, Ph.D., *Professor of History.*  
Eleanor M. Searle, Doc. Medieval Studies, *Professor of History.*  
Stanford J. Shaw, Ph.D., *Professor of History.*  
Speros Vryonis, Jr., Ph.D., *Professor of History.*  
Eugen Weber, M.Litt., *Professor of History.*  
James W. Wilkie, Ph.D., *Professor of History.*  
Robert A. Wilson, Ph.D., *Professor of History.*  
Robert Wohl, Ph.D., *Professor of History.*  
Stanley A. Wolpert, Ph.D., *Professor of History.*  
Milton Anastos, Ph.D., *Emeritus Professor of Byzantine Greek and History.*

Eugene N. Anderson, Ph.D., *Emeritus Professor of History.*  
Fawn M. Brodie, M.A., *Emeritus Professor of History.*  
Truesdell S. Brown, Ph.D., *Emeritus Professor of History.*  
John W. Caughey, Ph.D., *Emeritus Professor of History.*  
Brainerd Dyer, Ph.D., *Emeritus Professor of History.*  
Raymond H. Fisher, Ph.D., *Emeritus Professor of History.*  
Yu-Shan Han, Ph.D., *Emeritus Professor of History.*  
Jere C. King, Ph.D., *Emeritus Professor of History.*  
Gerhart B. Ladner, Ph.D., *Emeritus Professor of History.*

Lynn White, Jr., Ph.D., *Emeritus Professor of History (University Professor).*

Edward A. Alpers, Ph.D., *Associate Professor of History.*  
Robert P. Brenner, Ph.D., *Associate Professor of History.*  
Christopher Ehret, Ph.D., *Associate Professor of History.*  
David M. Farquhar, Ph.D., *Associate Professor of History.*  
Juan Gómez-Quiñones, Ph.D., *Associate Professor of History.*  
Thomas S. Hines, Ph.D., *Associate Professor of History.*  
Philip C. Huang, Ph.D., *Associate Professor of History.*  
Michael O. Jones, Ph.D., *Associate Professor of History.*  
Temma E. Kaplan, Ph.D., *Associate Professor of History.*  
Ronald J. Mellor, Ph.D., *Associate Professor of History.*  
Fred G. Noteheller, Ph.D., *Associate Professor of History.*  
Peter H. Reill, Ph.D., *Associate Professor of History.*  
Kathryn Kish Sklar, Ph.D., *Associate Professor of History.*  
Geoffrey W. Symcox, Ph.D., *Associate Professor of History.*  
Richard Weiss, Ph.D., *Associate Professor of History.*  
Robert S. Westman, Ph.D., *Associate Professor of History.*  
Agnes A. Aidoo, Ph.D., *Assistant Professor of History.*  
Lutz K. Berkner, Ph.D., *Assistant Professor of History.*  
Robert A. Hill, M.Sc., *Assistant Professor of History.*  
Eric H. Monkonen, Ph.D., *Assistant Professor of History.*  
Michael G. Morony, Ph.D., *Assistant Professor of History.*  
Kenneth M. Morrison, Ph.D., *Assistant Professor of History.*  
Armstead L. Rolinson, Ph.D., *Assistant Professor of History.*  
M. Norton Wise, Ph.D., *Assistant Professor of History.*

Amin Banani, Ph.D., *Professor of Persian and History.*  
Giorgio Buccellati, Ph.D., *Professor of History and Near Eastern Languages.*

Robert G. Frank, Ph.D., *Assistant Professor of History and Medical History/Anatomy.*  
Albert Hoxie, M.A., *Senior Lecturer in History.*  
Ludwig Lauerhass, Ph.D., *Lecturer in History and Librarian.*

### The Undergraduate Program

The undergraduate program in history is designed to give students an insight into the world in which they live and the forces and events that have served to shape and mold that world. In its broadest sense the discipline of history provides a background for all other subjects and disciplines. Along more specific lines the goal of history is the classical goal of self-knowledge. History is therefore concerned with "why we are what we are" and "how we came to be where we are today." In this sense history is the study of the past of our own society and how it emerged out of the traditions that produced it. At the same time, self-knowledge for the student of history comes not only from self-discovery, but from a comparison of his/her own tradition and experience with those of others. It is only by studying the history of other civilizations and cultures that we can hope to gain perspective on our own. The purpose of historical study is therefore not only an understanding of our own past and our present self, but an understanding of, and empathy for, the cultures and civilizations of other peoples and other nations.

It is in keeping with these broad goals that the History Department's undergraduate major has been established. As listed below, the department's undergraduate program begins with a three quarter survey of Western Civilization and a two quarter study of United States history. For comparative purposes the students are asked to spend two quarters studying non-Western history. In addition they are required to devote one quarter to the study of historical methodology and philosophy. At the upper division level students are encouraged to develop their own problem consciousness and to follow their personal interests into whichever area they choose. The only further requirement at this level is a one-quarter colloquium and writing course which is designed to give the student some experience in formal historical discourse.

Students interested in careers in the field of law, teaching, public service, journalism, and a variety of other areas involving the social sciences will find the history major beneficial and rewarding.

### Preparation for the Major, and Major

The History Department's undergraduate program consists of 16 courses in history (6 lower division: the Preparation for the Major; 10 upper division: the Major), and 4 courses in the social sciences outside the department. The following courses are required in the program:

1. History 1A-1B-1C. Western Civilization.
2. Two courses in U.S. History.
3. Two courses in Non-Western History from the same area: Latin America; Asia; Near and Middle East; Africa; Science and Technology.
4. History 99 (for Freshmen and Sophomores), History 101 (for Juniors and Seniors), or History 100 (no restriction by class).
5. History 197 (Undergraduate Seminar) or History 199 (Special Studies in History).
6. Four courses in the Social Sciences outside of History. (Must be taken for a letter grade.)

The requirements for U.S. and Non-Western History may be met with either upper or lower division courses. Students are, however, reminded that normally only six lower division courses in history need to be included in their program. This will generally mean that if they meet the U.S. History requirement at the lower division level they will have to meet the Non-Western requirement at the upper division

level (or vice versa). If they choose to do both requirements at the lower division level they will still be required to do 10 upper division courses to fulfill the upper division requirements of the Major. The Department recommends the following lower division courses to meet the U.S. History and Non-Western Requirements: History 6A-6B-6C (U.S. History); History 7A-7B (Political U.S.); History 8A-8B (Latin America); History 9A-9B-9C (Asia); History 9D plus one suitable upper division course (Near and Middle East); History 10A-10B (Africa); History 2A-2B (Technology); History 3A-3B-3C (Science). If only one Non-Western course is taken in lower division, an appropriate upper division Non-Western course must be included in the major.

All history majors are required to take at least four courses in other departments in the division of social sciences, whether lower or upper division (anthropology, geography, economics, political science, sociology, psychology). *These courses may not be taken for "Pass/Not Pass" grades.* One quarter course from the History 6A-6B-6C (U.S. History) sequence may be applied to this requirement, provided the same quarter course is not used to satisfy any other requirement of the major.

*Advanced Placement Credit in History.* The College of Letters and Science allows ten quarter units towards the B.A. for each Advanced Placement Test in History. The History Department applies this credit to the Preparation of the History Major as follows: AP European History fulfills History 1C; AP American History fulfills the U.S. History requirement at the lower division level.

Only one course offered outside of the History Department will count as a Major course without petition: Medical History 107B, Historical Development of Medical Sciences.

Transfer students with deficiencies in lower division may by petition substitute appropriate upper division courses in history for the lower division requirements. See the departmental adviser.

There is no language requirement for the major; however, students wishing to take the honors program or planning to do graduate work in history are urged to pursue language study early in their undergraduate careers.

#### The Honors Major

The honors program in history is designed for history majors who are interested in carrying out a year-long independent research project that will culminate in an honors thesis. The program gives qualified students the opportunity of working closely with an individual professor in a supervised research and writing project. Students contemplating graduate work in history should find this program particularly beneficial and rewarding.

*Qualifications:* All history majors with a departmental grade point average of 3.5 or better are eligible for the honors program. Candidates for honors will be required to meet all normal requirements of the history major described in the preceding section. Instead of History 197 or 199 honors majors are required to take a three quarter honors sequence, History 199H-A-B-C, under the guidance of a sponsoring professor. These courses will be taken in the candidate's senior year and will count as three courses in the regular ten upper division course requirement that applies to all history majors.

*Admission to the Program:* Students desiring to enroll in the honors program should consult the History Department Undergraduate Adviser normally at the end of their junior year in order to fill out the required application form.

#### Admission to Graduate Status

For admission to graduate status in the History Department students should normally have completed the undergraduate major or its equivalent; have received a bachelor's degree or its equivalent from an acceptable college or university; and have maintained at least a B-plus average in that major and a B average in all courses taken in the junior and senior years. The Department requires applicants to provide two letters of recommendation. The Department also requires the Graduate Record Examination scores on the aptitude tests. Applicants for the field of U.S. History are required to submit GRE scores for the advanced test as well as for aptitude tests. Students not meeting the grade-point average may be admitted if their letters of recommendation and their Graduate Record Examination scores or other evidence indicate unusual promise. Students may be admitted with subject deficiencies, but such deficiencies will have to be made up by taking courses in addition to requirements for an advanced degree program. Applications for the academic year should be submitted by December 30. Students are expected to begin their graduate work in the fall quarter. Only in exceptional cases will students be allowed to begin their work in the winter or spring quarter.

Information and applications for the Graduate Record Examination may be obtained by writing to the Educational Testing Service, 1947 Center Street, Berkeley, California 94704 or, for applicants east of the Rocky Mountain states, the Educational Testing Service, Box 955, Princeton, New Jersey 08540.

#### Teaching Credentials

Students may earn credentials for teaching history, government, social sciences and other subjects in California elementary and secondary schools. Completion of the Teacher Credential Program in the Teacher Education Laboratory is required. Consult with the Graduate School of Education (201 Moore Hall) for this information.

#### The Master's Degree

Completion of the Master's Degree at UCLA is designed to meet requirements for admission to the Department's doctoral program. Students are advised to pace their Master's degree over a two-year period, completing requirements within six quarters of full-time study. For general University requirements, see "Master's Degrees" in the "Colleges, Schools, and Graduate Division" section of this Catalog.

#### Departmental M.A. Requirements

*Foreign Language.* A reading knowledge of a foreign language approved by the Department. It is recommended that this requirement be met by the second quarter of graduate work.

*Units of Work.* Department: A minimum of nine upper division and graduate courses in history, at least five of which must be graduate courses. No course in the 300 series may be counted toward this requirement, and only one of the 500 series. Course work must be completed under at least three different professors.

Students concentrating in the following fields must meet the special requirements of the field: Near East — students should give evidence of their ability to carry out research, either in a multi-semester course or directed research course; United States — students are required to take seven of the nine courses in the 200 series, one of which must be a research seminar in U.S. History for the M.A.

The Department will recommend to the Dean of the Graduate Division that students who do not complete the Master's degree in six quarters be dropped from departmental rolls automatically unless upon petition the Graduate Guidance Committee grants an extension of time.

*Master's Examination.* The Department follows the Comprehensive Examination Plan (see "Thesis or Comprehensive Examination" in the "Colleges, Schools, Graduate Division" section of this Catalog). The examination will consist of either (1) a three-hour written examination designed to assess the candidate's ability to synthesize a broad field of knowledge, or (2) the submission of three essays written under three different professors as part of the candidate's program of study. At least two of these papers must have been submitted for graduate courses in the 200 series. Students in the U.S. field must submit the paper from the two-quarter research seminar in U.S. History.

In Spring Quarter of each academic year each field meets to determine which of the Comprehensive Examination options it wishes to adopt for the following academic year. In consultation with the faculty in each field the Chairperson of the Department then appoints a field M.A. committee which consists of at least three faculty members to administer the Comprehensive Examination for that year.

The Comprehensive Examination covers one of the following fields:

1. Ancient (also includes Ancient Near East).
2. Medieval, 300-1500 (also includes Byzantine and Medieval Jewish History).
3. Europe, 1500-1789 (also includes British History to 1763).
4. Europe since 1789 (also includes British History since 1763 and the British Empire).
5. Africa.
6. Near East (includes candidates with emphasis on Armenia).
7. India and Southeast Asia.
8. East Asia.
9. Latin America.
10. United States to 1800.
11. United States since 1763.
12. History of Science.
13. Special Fields: students in the History of Religion, Russian History, and Modern Jewish History will normally be examined in one of the above fields, but with the approval of the faculty in these fields may petition the Graduate Guidance Committee for M.A. examination in their field of specialization.

Field examiners administer the M.A. comprehensive exams in November, March, and May of each academic year, considering the candidate's examination in relation to course evaluations filed by professors for all graduate courses taken by the candidate. To complete the examination file, an evaluation of the candidate's potential must be forwarded to the Field Examining Committee by the professor whom the candidate would like to become chairperson of the doctoral committee. The committee will recommend the following examination results: Pass to Continue; Pass Subject to Reevaluation; Terminal Pass; Fail. In cases where the M.A. is awarded with "Pass Subject to Reevaluation", the field M.A. Committee will conduct a special reevaluation of the candidate's progress after not more than an additional three quarters of study.

#### Special Requirements for Admission to the Doctoral Program

All students must be evaluated formally before proceeding to the Ph.D. degree. For the student who enters the graduate program with only a B.A. degree, this evaluation (see M.A. requirements above) must occur within the period of six quarters.

For students who enter with a Master's Degree from another department, evaluation must be completed by the end of three quarters of study in our department in order to determine whether

or not they will be permitted to continue toward the Ph.D. This evaluation will be conducted in the same manner as described above under "The Master's Degree", except that for some candidates the written examination may be waived at the discretion of the field examination committee.

All candidates must present to the Graduate Guidance Committee a field approval form from the faculty member who has agreed to sponsor his/her work for the Ph.D. according to the following schedule: by the end of the sixth quarter or earlier for students entering with only a B.A., and by the end of the third quarter or earlier for students entering with an M.A. from another department.

Students who do not meet time limits on evaluation will be dropped from the departmental rolls automatically, unless upon petition they are exempted by the Graduate Guidance Committee.

#### Requirements for the Doctor's Degree

A candidate for the degree of Doctor of Philosophy in history must meet (a) the "Special Requirements for Admission to the Doctoral Program" listed above; and (b) the general requirements set forth under the Graduate Division. Attention is directed to the requirement that a program, extending over the full time of study, must be approved by the Department. A command of good English, spoken and written, the ability to read at least two foreign languages (except for the field of United States History where only one foreign language is now required), and an acquaintance with general history are expected of all candidates. The candidate is required to complete at least one continuing two or three-quarter seminar. Students of United States History should complete History 200H and should write a dissertation prospectus (which could be written for credit as a History 596 or 597) expected to contain: a) a full statement of the dissertation topic; b) an historiographical discussion of the literature bearing on the topic; c) a statement of the methodology to be employed; and d) a survey of the sources sufficient to demonstrate the viability of the topic. The prospectus must be submitted in writing and approved by the dissertation adviser prior to the oral part of the qualifying examinations. After approval, copies will be given to each member of the examining committee. Students of European History should complete the History 216A-216B series.

#### Examination

*Foreign Language Requirements.* A reading knowledge of the languages prescribed below for the major fields is required. If only two languages are prescribed the student will display his competence in them by passing examinations administered by the Graduate Division. For a third or fourth language evidence of competence satisfactory to the chairperson of the doctoral committee will be considered acceptable.

Every student is urged, when possible and practical, to take a Graduate School Foreign Language Test before entering the department's graduate program as an effort toward fulfilling the foreign language requirements as quickly as possible. No oral qualifying examination for the Ph.D. may be scheduled until the student has passed an examination in at least two foreign languages, except for students of United States History, who must pass only one foreign language.

1. Ancient History. French, German, Latin and Greek.
2. Modern European History and the History of Science. Either French or German and a language needed by the student in his research and approved by the Guidance Committee.
3. Near Eastern History. Three languages — two Western and one Near Eastern — are required. They are to be selected on the basis of the candidate's specialization. The two Western languages will generally be French and German, but Russian may be substituted for one of those in certain cases. Competence in all three foreign languages must be proven by passing examinations administered by the Graduate Division.
4. British History. French and German, with the possibility of substitution.
5. Medieval History. French and German for all candidates plus Greek for those specializing in Byzantine history and Latin for those specializing in western medieval history. Students are expected to have French or German at the beginning of their graduate studies.
6. African History. French and at least one other European or African language needed for the student's research and approved by the Chairperson of the Ph.D. Committee.
7. Asian History. (a) India: for those specializing in Indian History, three languages chosen from the following: French and/or German, Dutch or Portuguese, plus Hindi and/or one classical or modern regional language of India; (b) East Asia: 1) for the M.A. degree: two years of Chinese or Japanese, or one European language certified by an ETS score of 500 or better; 2) for the Ph.D. degree in Chinese history: French or German or Russian plus Chinese and Japanese; for the Ph.D. degree in Japanese history: French and either German or Dutch plus Japanese. Admission to candidacy for the Ph.D. in the Chinese and Japanese fields requires the completion of a research seminar in the major field. Students are advised that successful completion of this seminar usually requires the equivalent of at least four years of superior college level language work in Chinese or Japanese.
8. United States History. Any one foreign language plus a second language, or a substitute requirement which must be arranged with the consent of the doctoral candidate's chief adviser. The second

language requirement is to be met through the ETS examination with a score of 500 or above. Alternatively the student may satisfy his/her second language requirement with two courses in a second language with a grade of B or better. As a substitute for the second language, students may develop sufficient competence in an ancillary analytic skill as evidenced by grades of B or above in two quarters of course work.

9. Latin American History. Two of the following options: Spanish, Portuguese, or special methodological studies.

10. Russian History. Russian and German as well as French or another language deemed necessary by the instructor for the candidate's research.

11. History of Religion. French and German plus (in most cases) a classical or ancient language in the religious tradition of the specialization.

12. Jewish History. Hebrew plus another European language or Arabic.

13. Armenian History. Armenian, French, and an additional language or languages deemed necessary for the research to be undertaken. Students specializing in the Ancient and Medieval periods will be encouraged to prepare in Greek and/or Latin, while students specializing in the Modern period will be encouraged to prepare in Turkish and/or Russian.

14. Ancient Near East. French, German and two ancient languages, one of which should be either Akkadian, Egyptian or Hebrew. The other ancient language may be chosen out of Sumerian, Hittite, Ugaritic, Phoenician, Aramaic, Greek or Latin, depending on individual programs. It is expected that the ancient languages, with all attendant problems of philological and textual criticism, will normally constitute the fourth field of the doctoral examination.

15. Southeast Asia. Two languages; one chosen from the following: French, Dutch, Spanish. One of the languages of the area. At present, facilities exist for the teaching of Thai, Vietnamese and Tagalog.

Except in the fields of African, Asian, British and United States history, reading knowledge of an appropriate language is required for admission to all graduate seminars.

#### Qualifying Examinations

Before admission to candidate students must pass oral and written examinations. In these examinations the student is expected to show an adequate grasp of the wider field of historical knowledge and an ability to correlate historical data pertaining to them and to explain their significance. These examinations are designed to test not merely factual knowledge but also powers of historical analysis and synthesis, critical ability, and capacity for reflective thinking. A knowledge of the history of any area includes a reasonable knowledge of its historiography and bibliography; of its geography; and of its political, cultural, economic, and other historical aspects. The candidate is to be examined in four fields, one of which may be an approved field in anthropology, economics, geography, language and literature, philosophy, political science, or other allied subjects. This allied field must be comparable in size and scope to the history fields listed below. The candidate should select the fields in consultation with his/her faculty sponsor and must receive the Department's approval of all four fields not less than six months before the qualifying examination is taken. To obtain this approval the student should supply the Graduate Guidance Committee with the name of the faculty member who has agreed to serve as the sponsor of the doctoral work and with the details of the proposed program. A full-time graduate student must begin the qualifying examinations not later than the end of the ninth quarter of graduate work. (See "Time Limits for Completion of Stages Leading to the Doctor's Degree" listed below.)

#### Method of Examination

Except for students of United States History, the written qualifying examination is normally prepared and administered by the chairperson of the student's doctoral committee and read by the entire committee before the oral qualifying examination. The written qualifying examination includes the major field only. The oral examination will cover all four fields and will normally be held shortly after the written examination, but at the discretion of the doctoral committee it may be held as late as six months after the written examination. Both the written and oral examinations are the responsibility of the committee as a whole. The successful completion of the written qualifying examination is required for eligibility to take the oral qualifying examination. The writings and orals each may be repeated once.

For students of United States History, the written Ph.D. examination will be administered twice a year, in May and November, and will be composed of questions solicited from faculty in the entire field of United States History. A committee of three faculty members in United States History will make up and read the examinations for all students taking the examination during the academic year. The examination is intended to test a comprehensive, broad understanding of American history both before and after the independence of the United States. All facets of history (political, social, diplomatic, etc.) are included. An ability to synthesize factual information, sometimes across long chronological periods, is consequently essential. Knowledge of the scholarly literature and of the principal historiographical controversies arising out of it are tested along with the examinee's own interpretive capabilities.

Successful passing of the examination implies that the examinee is now qualified, in the judgment of the U.S. Field, to teach courses in United States history at the college level. Questions relating to the planning of such courses may appear on the examination.

If a student fails the written exam, it must be retaken no later than the tenth quarter of enrollment; if a student fails the oral exam it must be retaken no later than the eleventh quarter of enrollment. Any variance from these time limits must be approved by the American field before going to the graduate guidance committee for final approval.

#### Fields of Examination

Ancient Greece; Ancient Rome: The Early Middle Ages, 300-1100; The Later Middle Ages, 1050-1500; Byzantine; Russia Since 862; Southeast Europe (Balkans); Medieval England; England, 1485-1763; England Since 1763; the British Empire; The Near East, 500-1500; The Near East Since 1500; Ancient Near East; Armenian; Survey of African History; Topics in African History (preferably on a regional basis); History of Science to 1600; History of Science since 1600; Europe, Renaissance-Reformation; Renaissance to the French Revolution; Europe Since 1740; European Socio-Economic History; European Intellectual and Cultural History; Psycho-history; China, 900-1800; China Since 1800; Modern Japan; South Asia; Southeast Asia; Latin America, 1492-1830; Latin America Since 1759; History of Religions; Jewish History; Comparative History; United States: (1) Mastery of a general field sufficient to teach a college level survey course in United States History, and (2) A specialized field chosen from the following: Afro-American, American Diplomatic, American West, American Indian, California, Ante-Bellum and History of the South, Civil War and Reconstruction, Colonial, Cultural, Economic, Immigration, Intellectual, Jeffersonian and Jacksonian America (1800-1850), Labor, Mexican-American, Political Biography, Social, The New Nation (1763-1800). Twentieth Century, Urban, Women's History. Both fields must be submitted for specialists in U.S. history and only two fields in U.S. History are permitted. Either (1) or (2) or both may be chosen as minor fields for the Ph.D.

In addition to the European fields listed above, there is now a program in European Intellectual and Cultural History. Candidates working toward a doctorate in this field would offer fields in (1) the socio-political history of Modern Europe, (2) intellectual history, (3) one other area of study (such as medieval, ancient, or a given national history, etc.) and normally, (4) one field in some discipline outside the Department (in philosophy, literary criticism, psychology, linguistics, sociology of knowledge, art history, or the like). Students working in the earlier period (16th-18th centuries) must demonstrate minimal competency in Latin as well as in two modern European languages.

Candidates offering a field in Comparative History as a fourth field for the Ph.D. degree should choose a topic for comparison which would usually, but not necessarily, coincide with time-area spans of the other three fields defined for Ph.D. qualifying examinations. Each candidate offering a field in Comparative History will be required to submit a special written statement defining his or her particular field of study which must be approved by the candidate's proposed doctoral committee before petitioning the Graduate Guidance Committee for approval of the doctoral committee and four fields of examination.

Candidates in the history of science program must select three of the above fields and either the history of medicine or an allied field referred to above. The candidates must also demonstrate a detailed knowledge of the substance and historical development of a particular science, or of a type of engineering or technology, as a subfield common to the historical fields.

#### Final Examination

If required by the qualifying examination committee, a final oral examination will be conducted upon completion of the dissertation to cover the field within which the dissertation falls. The candidates will be expected to show such a mastery of their special fields, and such an acquaintance with the literature, general and special, bearing on them as would qualify them to give instruction to mature students. After approving a dissertation, the Chairperson of the doctoral committee may, with the unanimous consent of the entire committee, recommend a waiver of the final oral examination.

#### Dissertation

Candidates are required to present a dissertation on a subject of their choice of such character as to show a thorough mastery of the sources of information, the ability to carry on independent research, and to communicate its results in good literary form. In lieu of the customary type of dissertation, a student may in certain cases edit, or translate and edit, some historical source. Such a project involves careful textual criticism, explanatory annotations, and an historical introduction clearly showing the contribution of the source to historical knowledge. For the time limit on completion of the dissertation, see immediately below.

#### Time Limits for Completion of Stages Leading to the Doctor's Degree

After completion of the Bachelor's degree (and including all postgraduate work in this or other departments), the following schedule is mandatory:

(1) Oral examinations must be completed by the end of the ninth quarter.

(2) Dissertations must be completed within twenty quarters (including leaves of absence following completion of the oral examination).

Candidates will be dropped from departmental rolls automatically if they exceed these time limits for completion of the oral examination and dissertation, unless they petition to the Graduate Guidance Committee for an extension. This petition must be endorsed by the candidate's sponsoring professor before it can be evaluated by the Committee.

#### Annual Evaluation of All Graduate Students

In addition to the evaluation processes involved in (1) the Master's examination; (2) the admission of students to the Doctoral program; (3) the Doctoral qualifying examinations; and (4) the preparation of the Doctoral dissertation, the Department's Graduate Guidance Committee conducts an annual evaluation of all graduate students each spring quarter. This evaluation is made in consultation with the entire departmental faculty in order that appropriate action may be taken in cases of unsatisfactory student progress. Students who do not maintain a 3.0 grade-point average are subject to dismissal.

#### Lower Division Courses

**1A-1B-1C. Introduction to Western Civilization.** Lecture and discussion. A broad, historical study of major elements in the Western heritage from the world of the Greeks to that of the twentieth century, designed to further the beginning student's general education, introduce him to ideas, attitudes, and institutions basic to Western civilization, and to acquaint him, through reading and critical discussion, with representative contemporary documents and writings of enduring interest.

Mr. Hoxie, Mr. Martinez, Mr. Wohl

**2A-2B-2C. History of Technology from Antiquity to the Twentieth Century.** Designed for students in the natural sciences, social sciences, and fine arts. It is a survey of the development of man's ability to understand more fully and to utilize more efficiently his natural environment, stressing technology's changing social, economic, scientific and cultural relationships.

Mr. Burke

**3A-3B-3C. Introduction to the History of Science.**

**3A. The Scientific Revolution.** A survey of the beginnings of the physical sciences involving the transformation from Aristotelian to Newtonian cosmology, the mechanization of the natural world, the rise of experimental science, and the origin of scientific societies.

Mr. Burke, Mr. Westman, Mr. Wise

**3B. The Physical Sciences since the Enlightenment.** A broad survey of the development of ideas in classical and modern physical science since Newton. The unifying theme will be theories of matter, but more specifically: Chemistry, Thermodynamics, Electromagnetic Theory of Light, Energy Conservation, Relativity, and Quantum Mechanics, will be discussed.

Mr. Burke, Mr. Wise

**3C. The Biological Sciences, 1800-1955.** A survey of the development of the biological sciences from the period of Bichat and Müller to the discovery of the double helix.

Mr. Frank

**6A-6B-6C. History of the American Peoples.** A survey of the American Peoples from the advent of aboriginal society to the present, emphasizing racial and ethnic interaction, industrialization, urbanization, and cultural change.

Mr. Henretta, Mr. Nash, Mr. Saxton

**7A-7B. Survey of the Political History of the U.S.** Lecture and discussion. A survey of the history of the U.S. from the Revolutionary Era to the present. Emphasis will be given to political developments, and to the social, cultural and economic bases of American politics. The courses are designed for students in the social sciences, and other departments, who desire a thorough grounding in American political culture. This sequence for two quarters of History 6) is strongly recommended for history majors planning to take more advanced courses in U.S. history.

Mr. Gatell, Mr. Howe, Mr. Saxton

**8A. Latin America: Reform and Revolution.** A general introduction to Latin America emphasizing those institutions from the past which have shaped the present and the struggle for change in the twentieth century. Movies and discussions complement the topical lectures.

Mr. Burns and Staff

**8B. Latin American Social History.** The historical and contemporary perspective of the role of ordinary people in Latin American society. Each lecture-film session centers on a major Latin American movie illustrative of a theme in social history. May be taken independently of 8A.

Mr. Burns and Staff

**9A-9D. Introduction to Asian Civilizations. (1 course each)**

**9A. History of India.** An introductory survey for beginning students of the major cultural, social, and political ideas, traditions, and institutions of Indic civilization.

Mr. Wolpert

**9B. History of China.** Survey of the history of China: the evolution of characteristic Chinese institutions and modes of thought from antiquity to 1950; the problems of political change; China's response to the western impact in modern times.

Mr. Farquhar

**9C. History of Japan.** A survey of Japanese history from earliest recorded times to the present with emphasis on the development of Japan as a cultural daughter of China. Attention will be given to the manner in which Chinese culture was Japanized and the aspects of Japanese civilization which became unique. The

creation of the modern state in the last century and the impact of western civilization on Japanese culture will be treated.

Mr. Notehelfer

9D. History of the Near and Middle East. A survey of the major social, cultural and political institutions and ideas of the Near East. The Staff

**10A-10B. Introduction to the Civilizations of Africa.** Explores African cultures on a thematic basis within a wider framework of political change over time. Intended for students with a general interest in Africa, but also strongly recommended for those intending to take upper division courses in African History.

**M70. Survey of Mediaeval Greek Culture.** (Same as Classics M70.) Classical roots and mediaeval manifestations of Byzantine civilization: political theory, Roman law, pagan critique of Christianity, literature, theology, and contribution to the Renaissance (including the discovery of America). Mr. Anastos

**99. Introduction to Historical Practice.** Prerequisite: Restricted to Freshmen and Sophomores. This course will take the form of seminars of not more than 15 students meeting with a faculty member. Seminars will explore how works of history are written by focusing on problems of historiography and method.

The Staff

### Upper Division Courses

The prerequisite for all upper division courses is upper division standing or consent of the instructor, unless otherwise stated. For certain graduate courses which are open to students with Upper Division standing and with the permission of the instructor, see prerequisite under "Graduate Courses" heading.

**100. History and Historians.** A study of historiography, including the intellectual processes by which history is written, the results of these processes, and the sources and development of history. Attention also to representative historians. Mr. Reill

**101. Introduction to Historical Practice.** Prerequisite: Restricted to Juniors and Seniors. This course will take the form of seminars of not more than 15 students meeting with a faculty member. Seminars will explore how works of history are written by focusing on problems of historiography and method. The Staff

**104. Explorations in Psychoanalysis and History.** Prerequisite: consent of instructor. The course will study the art of psychological and historical interpretation, and will assess recent writings in the field of psychohistory. Limited to 35 students.

Mr. Loewenberg, Mr. Wohl

**106A-106D. History of Science.** Science and scientific thought in relationship to society.

**106A. Medieval and Renaissance Science.** (Formerly numbered 108.) Prerequisite: course 3 or consent of instructor. Continuity and discontinuity in scientific traditions from the 12th to the 17th century; interrelationships between theology, scientific thought, and social conditions. Theories of force, motion and space stressed; some attention to the occult sciences.

Mr. Funkenstein, Mr. Westman

**106B. Perspectives on the Early Modern Physical Sciences.** Prerequisite: course 3A or consent of instructor. A detailed view of selected topics in the development of the physical sciences 1600-1750, with a focus on explanations of historical change in science. Normally, four topics will be studied in order to cover a broad range of scientific, philosophical, and social issues. The Staff

**106C. The Classical Physical Sciences: 18th and 19th Centuries.** Prerequisite: course 3B or consent of instructor. Studies intensively several topics in the development of classical physical science from Newton's Mechanics to Maxwell's Electromagnetic Theory, with special attention to demands of the Enlightenment, the Industrial Revolution, and 19th century professionalized science.

Mr. Burke, Mr. Wise

**106D. Physical Sciences in the 20th Century.** Prerequisite: course 3B or consent of instructor. Provides a non-mathematical but nevertheless detailed look at selected physical sciences and scientific issues: for example, the birth of quantum mechanics and relativity; stellar evolution and cosmological theories; nuclear physics, nuclear weapons, and nuclear policy; and the changing character of industrialized science.

Mr. Burke, Mr. Wise

**M106E-106F. History of Biological Sciences.** (Same as Medical History M108A-108B.) Prerequisite: upper division standing.

**106E. Biological sciences from ancient times to the early nineteenth century.** Mr. Frank

**M106F. Biological sciences from the early nineteenth to the mid-twentieth century.** Mr. Frank

**M106G. The Biomedical Sciences in the 19th Century.** (Same as Medical History M197.) Three hours per week in the spring quarter. Prerequisite: consent of instructor. Topics in the growth of the biomedical sciences and their institutions in Europe and America, from the French Revolution to approximately 1900.

Mr. Frank

**106H. History of Physics Laboratory.** Prerequisite: course 3 or consent of instructor. A new approach seeking to integrate the roles in science of theory, experiment controversy, and philosophy as seen through selected critical experiments. Four experiments — e.g., of Galileo, Newton, Franklin, Oersted — will be prepared in historical context, performed, analyzed, and disputed. Mr. Wise

### 106I-106J. History of the Social Sciences.

**106I. Europe, 17th-19th centuries.** Theories of capitalism and the growth of empirical research on social problems; beginnings of social statistics and geography; rise of classical political economy; political and economic controversies; social science and social reform movements.

**106J. Europe and America, 1880-1914.** The development of sociology and social psychology; impact of socialist movements and Marxist theory upon the social sciences; dilemma of subjectivist and objectivist sociologies; divorce of theoretical sociology from social research; rise of pragmatism in the social sciences. The Staff

**111A-111B-111C. History of the Ancient Mediterranean World.**

**111A. A survey of the history of the ancient East from earliest times to the foundation of the Persian Empire.**

**111B. The history and institutions of the Greeks from their arrival to the death of Alexander.**

**111C. The history and institutions of Rome from the founding of the city to the death of Constantine.** Mr. Mellor

**112A-112B. History of Ancient Greece.**

**112A. The Greek city-state.** The emphasis will be on the period between the Persian Wars and the rise of Macedon.

**112B. The Hellenistic Period.** A consideration of the new patterns in government, social life, science, and the arts that appeared between the Macedonian conquest and the decisive intervention of Rome. Mr. Chambers

**113A-113B. History of Rome.**

**113A. To the death of Caesar.** Emphasis will be placed on the development of imperialism and on the constitutional and social struggles of the late republic.

**113B. From the death of Caesar to the time of Constantine.** The early empire will be treated in more detail supplemented by a survey of the social and economic changes in the third century. Mr. Mellor

**115. Introduction to Roman Law.** This course will provide a survey of the public (constitutional), criminal and private law of the Romans. Some subjects treated will be the social context of Roman law, the historical evolution of Roman law, mechanisms and procedures by which the law was administered, and the content of private law. Mr. Mellor

**117. History of Ancient Egypt.** A cultural history of ancient Egypt from predynastic times to the end of the new kingdom.

**118A. The Christian Church to 1056.** From the Church's origins to the mid-11th century, this survey treats the history of Christian thought and action, doctrine and institutions, authority and dissent, during the conversion of the Mediterranean and Germanic peoples. Mr. Benson

**118B. The Christian Church, 1056-1517.** The Church during the high tide of papalism, from the 11th-century revolt against lay domination to the crises and decline on the eve of the Reformation. Mr. Benson

**121A. The Early Middle Ages.** A survey of religious, intellectual, artistic, social, and economic changes in Europe from the decay of the Roman Empire until about 1050. Mr. Rouse

**121B. The Later Middle Ages.** A continuation of course 121A, from 1050 to about 1450, with the added consideration of the new scientific movements. Mr. Rouse

**121C. The Mediterranean Middle Ages.** A survey of Western Mediterranean Europe during the Middle Ages, with attention to Greek, Arabic, Jewish, and other interrelations with Latin Christian society. Mr. R. I. Burns, S.J.

**121D. Medieval Mediterranean II: Explorations and Cases.** Prerequisite: course 121C. Lecture-reading-discussion, probing medieval Western Mediterranean themes: regions (Catalonia, Italy, Languedoc, Provence, Maghrib); people (Alfonso X, Assisi, Ben Adreth, Cid, Dante, Ibn Khaldun, Polo, etc.); movements (finance, codes, hospital); wars (Albigensian, Reconquest, Vespers); and daily life. Mr. R. I. Burns, S.J.

**M122A-M122B. Byzantine Civilization.**

**M122A. (Same as Classics M170A.)** Emphasis is laid on Byzantine theology.

**M122B. (Same as Classics M170B.)** Literature, relations with Rome, and the Renaissance. Mr. Anastos

**123A-123B-123C. Byzantine History.** The course stresses the political, socio-economic, religious, and cultural continuity in the millennial history of Byzantium. It begins with the reforms of Diocletian and includes such topics as Byzantium's relations with Latin Europe, Slavs, Sassanids, Arabs, and Turks. Mr. Vryonis

**124A. Introduction to the History of Religions.** This course is a discussion of the various systems, ideas and fashions of thought that have dominated Western scholarship in this field. Mr. Bolle

**124B. History of Religions: Buddhism in India.** Prerequisite: course 124A or 124D. Mr. Bolle

**124C. Religions of the Ancient Near East.** The main polytheistic systems of the ancient Near East, with emphasis on Mesopotamia

and Syria, and with reference to the religion of ancient Israel: varying concepts of divinity, hierarchies of gods, prayer and cult, magics, wisdom and moral conduct. Mr. Buccellati

**124D. History of Religions: Myth.** Course of an introductory character (like courses 124A and 124B), but focusing on the function of myth in religion and culture. Mr. Bolle

**124E-124G. History of Religions.** Prerequisite: course 124A or 124D.

**124E. Hinduism.**

**124F. The religion of the Veda and Brahmanism.**

**124G. Religions of Southeast Asia.** Mr. Bolle

**125A-Z. Topics in African History.** (Formerly numbered 125A-B-C.) Prerequisite: one previous course in African History at UCLA or consent of instructor. Examines specific topics which have a continental application rather than on a strictly chronological or regional basis.

**125A. Early African Cultural and Technological Traditions.** A survey of the non-documentary sources of early African history with particular reference to technological, economic, and cultural developments from the origins of Man until the colonial period. Mr. Posnansky

**125B. Africa and the Slave Trade.** Focuses on the social, economic, political, and cultural impact of the slave trade on African society. Emphasizes the Atlantic trade, without neglecting those of the Ancient Mediterranean, Islamic, and Indian Ocean worlds. Abolition and the African diaspora are also explored. Ms. Aidoo, Mr. Alpers, Mr. Obichere

**125C. Africa in the Age of Imperialism.** Topics on investigation include the penetration of pre-capitalist social formations by capital, the emergence of classes, the nature of the colonial and post-colonial state, and the struggle for national liberation in a global context. Mr. Alpers

**126A-126B. History of West Africa.**

**126A. West Africa from earliest times to 1800.**

**126B. West Africa since 1800.** Ms. Aidoo, Mr. Obichere

**127A-127B. History of East and Central Africa.**

**127A. Examines the cultural diversity of East and Central African societies, the growth of more complex political systems, and the impact of international trade to the later nineteenth century.** Mr. Alpers, Mr. Ehret, Mr. Posnansky

**127B. Concentrates on the economic, social, and political history of Uganda, Kenya, Tanzania, Zambia, Malawi, Zimbabwe, and Mozambique since the imposition of colonial rule. The themes of underdevelopment and protest will provide a focus for the course.** Mr. Alpers

**128A-128B. History of Southern Africa.**

**128A. History of Southern Africa from origins to 1870.** The origins of the South African peoples and their interactions to 1870. Attention will be given to social and economic, as well as political aspects. Mr. Ehret

**128B. History of Southern Africa since 1870.** The interactions between the inhabitants of Southern Africa since 1870. Attention will be given to social and economic, as well as, political aspects. Mr. Galbraith

**129. History of Northeast Africa.** This survey of the Horn of Africa includes the rise of the Nubian and Ethiopian states, the challenge of Islam, the expansion and survival of the Ethiopian state, and modern problems of national identity. Mr. Alpers, Mr. Ehret

**130A-130B-130C. Islamic Iran.** Political, social and cultural history of Persia.

**130A. 600 to 1400.** Mr. Banani

**130B. 1400 to 1800.** Mr. Banani

**130C. 1800 to Present.** Ms. Keddie

**131A-131B-131C. Armenian History.** A survey of the political, economic, and cultural history of Armenia from ancient to modern times.

**131A. The question of origins to the fall of the Bagratid kingdom, 11th century A.D.**

**131B. The Cilician kingdom, the Turkic conquests, and the Armenian cultural and political renaissance.**

**131C. The Armenian emancipatory struggle, the World War, the Independent Republic, and Soviet Armenia.** Mr. Hovannisian

**131D. Introduction to Armenian Oral History.** The uses and techniques of Armenian oral history; the pre-interview, interview, and post-interview procedures; methods of transcription, compilation, and assessment. The course includes field assignments, oral evaluations, and a term project. May be concurrently scheduled with course 228. Mr. Hovannisian

**132. The Caucasus Since 1801.** A survey of the political, economic, social, and cultural developments in the Caucasus since the Russian conquests. The interrelationship of Georgians, Azerbaijanis, and Armenians, and their individual and collective response to Tsarist Russia and the Soviet Union. Mr. Hovannisian

**133A-133B. History of North Africa from The Moslem Conquest.**

133A. To 1578.

133B. From 1578 to the present.

**134A-134B. Near and Middle East from 600 to 1500 A.D.**

134A. The rise of Islam, the Umayyad and early Abbasid empires.

134B. The Seljuq Turks, Crusaders, Mongols and Mamlukes.

Mr. Morony

**135A. Introduction to Islamic Cultures.** Origins of the Islamic way of life and thought, survey of Islamic history, Islamic literature in English translation, interaction of the Islamic world and Europe in medieval and modern times. Mr. Morony

**135B. Islamic Institutions and Political Ideas.** Institutions and ideas of government, administration, justice, education, economic and social life in the Islamic Near East as they were before the impact of the West, and as they were affected by that impact. Mr. Morony

**136A-136B. The Middle East: 1500 to the Present.** Social, intellectual and political change in Turkey, Iran and the Arab countries from 1500 to the present. Ms. Keddie, Ms. Marsot

**137A-137B. Jewish Intellectual History.** 137A will cover the medieval period; 137B the modern period. This course studies the development of the Jewish self-understanding in relation to the intellectual climate of the environment, as expressed in the halacha, in philosophy, and in cabbalism. Mr. Funkenstein

**138A-138B. Jewish History.** Jewish history from Biblical times to our period. Mr. Funkenstein

**138C-138D. Focal Themes in Jewish History.** The course will treat in depth one major theme in Jewish history (such as: the history of Messianic Movements, the Structure of the Jewish Communities) through the ages. Mr. Funkenstein

**139A-139B-139C. History of the Turks.** A survey of the society, government, and political history of the Turks from earliest times to the present.

139A. Origins to the sixteenth century. Mr. Shaw, Mr. Vryonis

139B. Sixteenth to the nineteenth centuries. Mr. Shaw

139C. Nineteenth and twentieth centuries. Mr. Shaw

**140A-140B. History of Ancient Mesopotamia and Syria.** The political and cultural development of the "Fertile Crescent," including Palestine, from the Neolithic to the Achaemenid period. Mr. Buccellati

**141A-141G. History of Modern Europe.**

141A. The Renaissance: Power and culture in the Italian City-States. Mr. Martines

141B. The Reformation: Church and religion in early 16th century. Revolutionary tendencies in German society. The Peasant Uprising. Theology and political thought of Erasmus, Luther, Zwingli, Calvin, and the Anabaptists. The new churches. The effects of the Reformation on society. Mr. Clasen

141C. Europe, 1560-1660. Mr. Hoxie, Mr. Lossky

141D. Europe under the old Regime: A comparative social history of England, France, and Germany, concentrating on peasant social and family structure, village and manorial organization, pre-industrial cities, protoindustry, population patterns, subsistence and mortality crises, food riots and machine-breaking, bureaucracy, aristocracy and the state. Mr. Berkner

141E. Europe, 1789-1848: The French Revolution and the Industrial Revolution. Political revolution in France, and its failure in England and Germany. Industrialization in England, economic retardation in France and Germany. Changes in social structure, the family, living conditions, population growth, and popular protest. Mr. Berkner

141F. Europe, 1848-1900. Mr. Reill

141G. Europe in the 20th Century. Mr. Wohl

**142A-142E. Cultural and Intellectual History of Modern Europe.** Climates of taste and climates of opinion. Educational, moral and religious attitudes; the art, thought and manners of the time in an historical context. Quarter courses are oriented approximately as follows:

142A. 16th Century. Mr. Hoxie, Mr. Westman

142B. 17th Century. Mr. Hoxie, Mr. Funkenstein

142C. 18th Century. Mr. Hoxie, Mr. Reill

142D. 19th Century. Mr. Loewenberg, Mr. Weber

142E. 20th Century. Mr. Loewenberg, Mr. Weber, Mr. Wohl

**143A-143E. History of Modern France.**

143A. "France, 1450-1620." Institutions of the French monarchy and territorial formation of France in the fifteenth century. French humanism. Catholic and Protestant Reformations in sixteenth-century France. French Wars of Religion. Mr. Lossky

143B. "France, 1620-1789." Political and intellectual history of France, principally in the seventeenth century, with special emphasis on the role of Richelieu and of Louis XIV. Mr. Lossky

143C. The Revolution and Napoleon. Mr. Berkner

143D. 1815-1870.

143E. Contemporary France.

**144A-144D. History of Modern Germany and Austria.**

144A. 1555-1700: The political structure of empire and territories. The social classes. The economy. Book publishing and universities. Daily life. The Counter Reformation. Political evolution and Thirty Years' War. Military entrepreneurship. Population losses. The Peace of Westphalia. Mr. Clasen

144B. 18th Century: A study of the political, social, and intellectual structures of Germany and Austria. Topics to be covered are: Enlightened absolutism, bureaucracy and reform, conflicts between the Empire and the principalities, the Seven Years War, Pietism, cultural life and the universities. Mr. Reill

144C. 19th Century: Age of Reform, Wars of Liberation, Peace of Vienna, Restoration and Metternichian Reaction, Zollverein, Revolutions of 1848, Prussian Constitutional Struggle, German Unification, Austrian Liberalism, the Bismarkian and Wilhelmine Eras in Germany—industrialism, anti-clericalism, anti-Semitism, the rise of Social Democracy. Mr. Loewenberg

144D. 20th Century: The political, social, economic, and cultural history of German speaking Central Europe, the Hohenzollern and Habsburg Empires, the World Wars, postwar revolutions, republics, the rise of fascism and Nazism, Occupation and the Austrian, German Federal, and German Democratic Republics. Mr. Loewenberg

**145A-145B. The Netherlands in European Affairs, 1450-1795.**

145A. 1450-1609. Unification of the Low Countries under the House of Burgundy; culture of the Burgundian court and of the Netherlands. Civil wars in the Netherlands and war with Spain within the framework of European politics to the Truce of 1609. Mr. Lossky

145B. 1609-1795. Development of the Dutch Republic, principally in the seventeenth century: a study in decentralized government. The Dutch Republic as a commercial center and as an observation post for European international relations. A brief consideration of the Southern Netherlands. Mr. Lossky

**146A-146D. Topics in Russian History.**

146A. The Origins of Russia: Kievan Russia and its Culture; Appanage Principalities and Towns; the Mongol Invasion; the Unification of the Russian State by Muscovy; Autocracy and its Servitors; Serfdom. Mr. Krekic, Mr. Lossky

146B. Imperial Russia: Westernization of State and Society; Centralization at Home and Expansion Abroad; the Peasant Problem; Beginnings of Industrialization; Political Reforms; Movements of Political and Social Protest. The Revolution of 1905. Mr. Rogger

146C. 20th Century Russia: Relations between State and Society; Peasantry and Working Class; Russia in World War I; The Revolutions of 1917: Consolidation of the Bolshevik Regime; Succession Crisis and Ascendancy of Stalin; Collectivization and Industrialization; Foreign Policy and World War II; Death of Stalin and De-Stalinization. Mr. Rogger

146D. Prerequisites: a background in Russian history, literature or European social thought. Social Thought and Movements in Modern Russia, late 18th to early 20th centuries.

**147A-147B-147C. European International Relations.**

147A-147B. Early modern period (ca. 1450-1650; ca. 1650-1815). Survey of European diplomatic and military history, seen in relation to social and economic developments, and the growth of the state. Mr. Symcox

147C. Late modern period (1815-1970). Survey of European diplomatic and military history. The Staff

**148A-148B. History of Italy.**

148A. ca. 1530-1815. Survey of social, economic, political and cultural history covering the eclipse of the Italian economy and the city-state, the rise of absolutist governments. Enlightenment reforms and the origins of the Risorgimento. Mr. Symcox

148B. 1861 to the Present. Political, economic, social, diplomatic and ideological developments. Mr. Wohl

**148C. The Social History of Spain to 1650.** This course will deal with the development of popular history in the Iberian Peninsula. Emphasis will be given to peasant and urban history, gold routes, slave trade, history of women, and the development of different types of collective violence. Ms. Kaplan

**148D. The Social History of Spain, 1650 to the Present.** Spain's position in Europe and its potentialities for social change will be discussed through investigations of urban history, agrarian social structure, history of women, problems of slow industrial development, imperialism, anarchism, and labor history. Ms. Kaplan

**149A-149B-149C. Southeastern Europe in Medieval and Modern Times.**

149A. Southeastern Europe from 500 to 1200.

149B. Southeastern Europe from 1200 to 1700.

149C. Southeastern Europe from the XVIIIth to the XXth century. Mr. Krekic

**150A-150B. Themes and Problems in English History Since 1500.** Prerequisite: upper division standing or consent of the instructor. A general survey of English history since c. 1500 with

analyses of particular social, political, religious and economic questions. The division between courses A and B occurs at c. 1714.

Mr. Moore

**150C-150D. Renaissance England.**

**151A-151B. Medieval England.** (Formerly numbered 150A-150B.)

151A. Anglo-Saxon England and the Norman Conquest, 900-1215; the nature of the society that emerged from the Viking invasions; the conquest and colonization by the Normans; the principles of lordship by which they ruled, to Magna Carta, 1215.

151B. England in the High Middle Ages: Magna Carta to 1400. The emphasis will be on the social and economic developments that underlay constitutional change, peasant revolt, the Black Death and the Hundred Years' War.

**153A-153B. Early Modern England.** (Formerly numbered 150E-150F.)

153A. The development of capitalism in England, especially the countryside, 1400-1640; the transformation of class relations; the emergence of political conflicts: state centralization and military aristocracy, Crown versus Parliament, the English Revolution. Mr. Brenner

153B. Analysis of the transformation of religious and political ideology in relationship to socio-economic and political conflicts. The English Reformation and the development of the state; Protestantism and political opposition; religious radicalism and the English Revolution. (Covers same period as History 153A from different angle, so it is preferable to take History 153A-B in sequence.) Mr. Brenner

**154A-154B. Studies in 19th and 20th Century English History** (Formerly numbered 150G-150H.) Prerequisite: Upper division standing or consent of the instructor. Analyses of the structure of power and considerations of the changing loci and apologetics of power in the English economy, society and state. Course A deals with themes and problems between c. 1780 and 1870. Course B deals with themes and problems since c. 1870. Mr. Moore

**158A-158B. The British Empire Since 1783.** The political and economic development of the British Empire, including the evolution of colonial nationalism, the development of the commonwealth idea, and changes in British colonial policy. Mr. Galbraith, Mr. SarDesai

**159. History of Canada.** A survey of the growth of Canada into a modern state from its beginnings under the French and British colonial empires. Mr. Galbraith

**160A-160Z. Topics in European History.** The individual courses in this series aim to provide students with an integrated introduction to important aspects of European history by focusing on a specific topic within a broad framework.

160A. Social Movements. Ms. Kaplan

160B. Peasants and Agrarian Society. Mr. Brenner

160C. Urban Society. Mr. Symcox

160D. Aristocracy and Nobility. Mr. Berkner

160E. Population: The population of Europe since the middle ages. Plague, diseases and famine; marriage and fertility control; industrialization and population growth; mortality decline and the adoption of birth control in the 19th century; the baby boom and its consequences. Mr. Berkner

160F. The Family: The social history of the family in western Europe since the middle ages. Household and family organization of peasants, artisans and aristocrats; kinship, child-rearing, parental authority; marriage and inheritance systems; attitudes toward love, sex, and children. Mr. Berkner

160G. Psycho-history. Mr. Loewenberg, Mr. Wohl

160I. Special Topics. The Staff

160J. Women. Ms. Kaplan

**161A-161B. Marxist Theory and History.** (Formerly numbered 160K-L.) Prerequisite: 161A is generally a prerequisite for 161B, or permission of instructor. Introduction to Marxist philosophy, method; conception of historical stage; competing Marxist analyses of transition from feudalism to capitalism in relation to non-Marxist approaches; analysis of capitalist economy via reading *Capital*; theory of politics and state in relationship to historical interpretation of 19th century European revolutions; capitalist crisis.

**162A. Latin America in the 19th Century.** An intensive analysis of the economic, social, and political problems of the Latin American nations from their independence to around 1910. Mr. Burns, Mr. Burr

**162B. Latin America in the 20th Century.** An examination of society, economy, and politics. Mr. Burr, Mr. Wilkie

**162C. Topics in Latin American Cultural History Since 1900.** Historical meanings of recent Latin American novels of politics and society are examined, especially since the 1930's. Novels may be read in translation. Mr. Wilkie

**163B. History of Modern Brazil.** The lectures treat selected topics in the political, economic, social, and cultural development of Brazil. The topical emphasis falls on modernization and the struggle for change, 1850 to the present. Discussions, films, slides, and

guest speakers supplement and complement the lectures.

Mr. Burns

**163C. Brazilian Intellectual History.** The general intellectual development of Brazil with emphasis on those introspective movements in which the Brazilians attempted to interpret themselves, their nation, and their civilization. Mr. Burns

**164. Latin American Elite.** Study focuses on Elite (defined as oral or noninstitutionalized knowledge involving the leaders' conceptual and perceptual life history views) in contrast to Folklore (the followers' traditional or popular views). Elite genre include Cinelore and Literelore. Mr. Wilkie

**166. The Mexican Revolution Since 1910.** The concept of "Permanent Crisis" is examined to describe and explain the structure of "Permanent Revolution" under "one-party democracy." Mr. Wilkie

**168A-168B. Colonial Latin America.** Studies in the general development of Latin America prior to 1825 with emphasis on social history. Mr. Lockhart

**169. Latin American International Relations Since Independence.** Emphasis is given to the developing interests of the Latin American nations in their relationship with one another and with other areas of the world. Mr. Burr

**171A. The United States: Colonial Period to 1763.** Political and social history of the thirteen colonies and their neighbors; European background, settlement and westward expansion, intercolonial conflicts, beginnings of culture, colonial opposition to imperial authority. Mr. Henretta, Mr. Nash

**171B. The United States: the New Nation, 1763-1800.** Political and social history of the American nation, with emphasis upon the rise of the new west, revolution, confederation, and union; the fathers of the Constitution. Mr. Henretta, Mr. Nash

**171C-171D-171E. Social History of American Women.** A survey of the major demographic, economic, social and intellectual factors shaping the lives of women in families, at work, and in larger social collectivities. Class, regional, racial, and ethnic comparisons will be emphasized.

171C. Colonial and Early National - 1600-1820.

171D. Victorian and Industrial - 1800-1920.

171E. 20th Century - 1900-1975.

Ms. Sklar

**172A-172B. The United States: 1800-1850.**

172A. Jeffersonian America. Jeffersonian Republican ascendancy and the Era of Good Feelings, 1800-1828; disintegration of the Federalist opposition; the testing of American nationality in the second war with Britain; beginnings of the transportation and industrial revolutions; restructuring of politics in an increasingly egalitarian age.

172B. Jacksonian America and Beyond. The "Jacksonian Revolution" and its aftermath, 1829-1850; the problem of national power versus state sovereignty; problems of rapid social change through industrialization and urbanization; reform impulse; antislavery movements; territorial expansion as focus for sectional rivalry.

Mr. Gatell, Mr. Saxton

**173A. The United States: Civil War and Reconstruction.** The topics studied will include: the rise of sectionalism, the antislavery crusade; the formation of the Confederate States; the war years; political and social reconstruction. Mr. Robinson

**173B. The United States, 1875-1900.** American political, social, and institutional history in a period of great change. Emphasis on the altering concepts of the role of government and the responses to that alteration. Mr. Saxton

**174A-174B. The United States: The Twentieth Century.** The political, economic, intellectual, and cultural aspects of American democracy in the twentieth century. Mr. Coben, Mr. Weiss

**174C. The United States Since 1945.** A history of the political, social and diplomatic developments that have shaped the United States since 1945. The Staff

**175A-175B. Economic History of the United States Since the Civil War.** A study of the changes in agriculture, industry, labor, banking, transportation, and commerce in a capitalist society, and of some of the prominent personalities who made these changes possible. Mr. Saloutos

**176A-176B. Afro-American History.** An emphasis of the social, cultural and political history of Black People in the United States. Mr. Robinson

**176C. Comparative Slavery Systems.** An examination of the slavery experience in various New World slave societies. The course focuses on outlining the similarities and the differences among the legal status, treatment and slave cultures of North American, Caribbean and Latin American Slave Societies. Mr. Robinson

**176D. Afro-American Urban History.** An examination of Afro-American urban life prior to 1945. The course focuses on the transformation from slavery to freedom and the shift from southern to northern areas. It looks closely at the forces which both propelled Afro-Americans to the cities and which also inhibited their adjustment to them. Mr. Robinson

**176E. Afro-American Nationalism in the First Half of the Twentieth Century.** A critical examination of the Afro-American search in the first half of the twentieth century for national/group cohesion through collectively built institutions, associations,

organized protest movements, and ideological self-definition.

Mr. Hill

**177A-177B. Intellectual History of the United States.** The principal system of ideas about man and God, nature and society, which have been at work in American history. Emphasis on the sources of these ideas, their connections with one another, and their expression in great documents of American thought. Mr. Howe

**177C. History of Religion in the United States.** Consideration of the religious dimension of people's experience in the United States. A number of religious traditions which have been important in this country will be examined, and attention devoted to relating developments in religion to other aspects of American culture. Mr. Howe

**178A-178B. American Diplomatic History.**

178A. The establishment of an independent foreign policy, the territorial expansion of the United States, and the emergence of a world power.

178B. The role of the United States in the 20th century world. Mr. Dallek

**179A-179B. Constitutional History of the United States.** A study of the origins and development of the Federal Constitution.

**180A-180B. American Social History, 1750-1960.** An historical analysis of American society and culture, with emphasis on the family, religious values, Afro-American life, women's work, urbanization and industrialization, immigration and nativism, and movements for social reform. 180A will cover the period 1750-1860; 180B, 1860-1960. Mr. Coben, Mr. Henretta

**180F. 180G-180H. North American Indian History.** History of Native Americans from contact to the present. Emphasizes the ethnohistorical dimensions of culture change, Indian political processes and the continuity of Native American cultures. Focuses on selected Indian peoples in each period.

180F. Contact - 1760.

180G. 1760-1860.

180H. 1860-Present.

Mr. Morrison

**180J-180K. History of American Architecture and Urban Planning: 1600-The Present.** (Formerly numbered M180C.) Aspects of American cultural history as explored through architecture, urban planning and the allied arts. The focus is on the development of an architectural consciousness in America, ways in which the built environment has affected its users and observers, and the extent to which it has reflected their values and ways of living. 180J covers from 1600 to 1890. 180K covers from 1890 to the present. Mr. Hines

**181. The American West.** A study of the West as frontier and as region, in transit from the Atlantic seaboard to the Pacific, and from the 17th century to the present. Mr. Hundley

**182. The Immigrant in America.** An historical analysis of the social and economic causes and effects of immigration, particularly after the 1880's, emphasizing the problems of acculturation and adjustment. The restrictionists and the implications of immigration policy on U.S. foreign policy will be stressed. Mr. Laslett

**183. The United States and the Philippines.** An examination of the interrelationships of immigration and of colonialism and independence between the United States and the Philippines focused mainly within the time period 1898 to the present. (Survey level familiarity with Southeast Asia or United States history, or both, is recommended but not a prerequisite.) Mr. Saxton

**184. American Reform Movements and Reformers.** A study of educational, monetary, labor and agrarian reforms advocated in the nineteenth and twentieth centuries.

**185A-185B. American and Comparative Working Class Movements.** Examines major episodes in institutional, economic, and cultural development of American working class from colonial times to present, emphasizing both organized and unorganized labor in a comparative context. A.F. of L., rise of industrial unionism, and labor politics are also discussed. Mr. Laslett

**186A-186B. History of the Chicano Peoples.** The character, values, economy, social structure, politics, culture, and intellectual heritage of the Mexican-American peoples as related to the history of the United States and Mexico, with emphasis on the Southwest. Mr. Gómez-Quinones

**187. American Political Biography.** Leading American statesmen, as seen through the best of their biographies, with an examination of the making and unmaking of American heroes, and changing fashions in the art of biography. The Staff

**188. History of California.** The economic, social, intellectual, and political development of California from the earliest times to the present. Mr. Hundley

**189A-189B. American Urban History.**

189A. A social analysis of the urbanization process down to 1900.

189B. A social analysis of American urbanization in the 20th Century. Mr. Monkonnen

**191A-191B-191C. History of China.** Prerequisite: course 9B or 191A or equivalent readings are prerequisite to 191B.

191A. Origins to 900.

191B. 900-1500.

191C. 1500-1800.

Mr. Farquhar, Mr. Huang

**191D. Modern China, 1840-1920.** From the Opium War to the May Fourth Movement, Imperialism, semi-colonial China, and popular movements; some attention to contrasts between established and revolutionary interpretations. Mr. Huang

**191E. The Chinese Revolution.** From the founding of the Chinese Communist Party to the present. Special emphasis on: the evolution of Mao's thought, the history of the Communist movement, the conditions in the Chinese countryside, the revolutionary developments under the People's Republic. Mr. Huang

**191F. The Mongols in East Asian History.** Prerequisite: course 9B, or 191B, or 191C. Emphasis on the period 1200-1900. Special attention will be paid to nomadic pastoralism, Mongolian society, the first empire, and relations with China and Tibet. Mr. Farquhar

**192. Asians in American History.** A study of the politically troubling question of entry into the United States of immigrants ineligible for citizenship, and their citizen children in American history.

**193. Diplomatic History of the Far East.** The role of the Far Eastern states in the international community beginning with the establishment of the Treaty System in China and the opening of Japan to intercourse with the rest of the world in 1854.

**195A-195B-195C. Japanese History.** The political, economic, and cultural development of Japan, from pre-history to the present.

195A. Ancient: Pre-history-1600.

195B. Early Modern: 1600-1868.

195C. Modern: 1868-present.

Mr. Notehelfer

**196A. Early History of India.** Prerequisite: course 9A or equivalent. Introduction to the civilization and institutions of India. A survey of the history and culture of the South Asian subcontinent from the earliest times to the founding of the Mughal Empire. Mr. Wolpert

**196B. Recent History of India and Pakistan.** Prerequisite: course 9A or 96A. History of the South Asian subcontinent from the founding of the Mughal Empire, through the eras of European expansion, British rule, and the nationalist movement, to the present. Mr. Wolpert

**196C-196D. History of Southeast Asia.**

196C. Early History of Southeast Asia. A political and cultural history of the peoples of Southeast Asia from the earliest times to about 1815.

196D. Southeast Asia since 1815. History of modern Southeast Asia with emphasis on expansion of European influence in the political and economic spheres, growth of nationalism and the process of decolonization. Mr. SarDesai

**197. Undergraduate Seminars.** (Two courses only may be taken for credit.) Limited to 15 students meeting with a faculty member. Seminars will be organized on a topics basis with readings, discussions, papers. Signups and descriptions of offerings each quarter at the History Department Undergraduate Adviser's office (6248 Bunche Hall). May be concurrently scheduled with courses 240A-T, 240Z. The Staff

**199. Special Studies in History.** Prerequisite: consent of instructor. Two courses only may be taken for credit. An intensive directed research program. Enroll in Department. The Staff

**199HA-199HB-199HC. Directed Studies for Honors.** Prerequisite: a three-quarter sequence restricted to history honors majors.

199HA. Extensive reading and research in the field of the student's proposed honors thesis. Reports on work in progress will be made to the sponsoring professor at regular intervals.

199HB. Continued reading and research culminating in a draft of the student's honors thesis.

199HC. Revisions of draft and preparation of polished honors thesis; oral examination on thesis. The Staff

**Graduate Courses**

**200-228. Graduate Lecture Courses and Colloquia.** Prerequisite: graduate status or, with permission of instructor, upper division standing.

**200H. Colloquium in U.S. History.** A critical introduction to the historical method, with emphasis on new methodological and conceptual approaches, the use of source materials, and the current state of U.S. historiography. Normally limited to and required of all entering graduate students in U.S. history. The Staff

**201A. History of the Eurasian Nomadic Empires.** This course outlines the history of the great Eurasian nomadic empires (2nd century B.C.-13th century A.D.) with emphasis on their relations with the late Roman and the Byzantine Empires as well as the peoples of Eastern Europe and the Near East. Mr. Bodroglieti

**203. History of Ancient Egypt in the Late Period.** Prerequisite: course 117 and a background in Graeco-Roman history. A cultural history of ancient Egypt from the end of the new kingdom to the coming of Christianity.



**205A-205B. Medieval and Renaissance Italy.** The course will treat Italian city-states, particularly Venice, Florence, Milan, and Genoa, between 1100 and 1500, emphasizing urban society, urban problems, politics, and institutions. Italian cities will be contrasted with major Northern European cities. Mr. Martines

**210A-210B. Morocco and Europe to the End of the French Protectorate.** The interaction of indigenous traditions, political, social, institutional, with European influence emerging mostly from Portugal, Spain and France. Morocco will be the focus of attention with the rest of North Africa providing a basis for comparison.

**212. Introduction to the Professional Study of African History.** Required of all entering graduate students in African History. Source identification, research methodologies, historiographical traditions, historical interpretation, and approaches to teaching are examined. Strongly recommended for History concentrators in M.A. African Studies Program. The Staff

**214. Social and Intellectual History of Recent Japan.** The social changes which accompanied the political and economic transformation of modern Japan and the necessary adaptation of the Confucian value system. Mr. Notehelfer

**M215A-215B-215C. History of Western Education.** (Same as Education M201A-201C.)

**M215A.** The rise of western educational tradition from the Greeks to the 20th Century.

**M215B.** The history of American education to 1860.

**M215C. History of American Education.** (Same as Education M201C.) The aim is to depict the social forces impinging on American education from the 1860s to the present, and to analyze the relation between these social forces and the philosophy, curriculum, structural organization, and functions of education at all levels. Mr. Cohen

**216A-216B. Colloquium for entering graduate students in Modern European History.** Prerequisite: Admission to graduate study in Modern European history. An introduction to the topics, methods, and historiography of Modern European history. Required of all graduate students in Modern European history. IP grading. The Staff

**217. Early Modern Britain and the Continent: Comparative Studies in Social Change.** Socio-political change in relation to ideological development, 1550-1700, with emphasis placed on the periods of the religious wars and on the "Seventeenth Century Crisis" of the state and of the economy. Mr. Brenner, Mr. Symcox

**218A-218B. Modern Britain and the Continent: Comparative Studies in Economic Change.** Prerequisite: course for 218B is 218A. The Industrial Revolution in Europe, with emphasis on the relationship between agrarian structure, population changes, and industrialization. Considerable attention is given to problems of methodology.

**221A. African Archaeology-Field Techniques.** (½ to 2 courses) Prerequisite: any introductory course in archaeology and preferably an African History course. A field course on an African excavation to provide the basic skills—reconnaissance, surveying, excavation techniques, conservation and scientific sampling required by an archaeologist in Africa together with an introduction to ethnographic survey and oral data collection. Mr. Posnansky

**221B. African Archaeology-Data Analysis.** (½ to 2 courses) Course 221A (African Archaeology-Field Techniques) must be taken before or in conjunction. A field course to equip a student to handle finds from excavations. The course will involve analysis, description, illustration and interpretation of an actual archaeological and/or ethnographic collection. Mr. Posnansky

**222A-222B. Studies in Medieval Latin Literary History.** An introduction to medieval Latin literary history, examining several basic forms of literature produced in the monastery, the university, and the secular world. Considerable attention given to the survival of the classical authors and to the contemporary sources for the study of medieval literary history. Mr. Rouse

**223A-223B. Introduction to the Sources of Medieval and Early Modern History.** This course describes and exemplifies the main types of sources and introduces the student to the use of libraries, archives and source collections as well as to the principal auxiliary sciences of history such as codicology, diplomatics, chronology and sphragistics. Mr. Rouse

**224. Later Medieval Latin Palaeography and Manuscripts, 1100-1500.** An intensive training in the reading of select Medieval and Renaissance hands and in the tools and techniques of textual and literary history. Mr. Rouse

**225. Introduction to Historical Methods.** An historical and analytical examination of the methods of historical study and the assumptions and premises to which these methods are related. Mr. Moore

**226. Quantitative Methods.** An introduction to the application of quantitative methods to historical problems, stressing the practical use of data processing and elementary statistical techniques. Mr. Berkner

**227. Theories of Scientific Change.** Prerequisite: consent of instructor. Historical and philosophical perspectives on science focusing upon the rationality of scientific change and the logic and psychology of scientific discovery. Readings and seminar-style

discussions of such authors as: Popper, Kuhn, Toulmin, Lakatos, Holton, Buchdahl, Feyerabend and others. Mr. Westman

**228. Methods in Armenian Oral History.** Prerequisite: Proficiency in the Armenian language. Lectures and laboratory in the methods of taking, processing, and utilizing depositions and other oral sources for Armenian history. The course will include a project assignment in the field. May be concurrently scheduled with course 131D. Mr. Hovannisian

**\*3230A-230T. Advanced Historiography.** A. Ancient Greece; B. Ancient Rome; C. Medieval; D. Early Modern Europe; E. Modern Europe; F. Russia/Eastern Europe; G. Britain; H. United States; I. Latin America; J. Near East; K. India; L. China; M. Japan; N. Africa; O. Science/Technology; P. History of Religions; Q. Theory of History; R. Jewish History; S. Armenia and the Caucasus; T. Southeast Asia. May be repeated for credit. The Staff

**M231. Latin American Research Resources.** (Same as Latin American Studies M200.) The course will acquaint students with general and specialized materials in fields concerned with Latin American Studies. Library research techniques will provide the experience and competency required for future bibliographic and research sophistication as the basis for enhanced research results. Mr. Lauerhass

**\*3240A-240T. Topics in History.** A through T as for 230. A graduate course involving reading, lecturing, and discussion of selected topics. This course does not fulfill the seminar requirements for the Ph.D. degree. May be repeated for credit. May be concurrently scheduled with course 197. The Staff

**240JX. Topics in History: Near East.** (¼ course) A graduate course involving reading, lecturing, and discussion of selected topics. This course does not fulfill the seminar requirements for the Ph.D. degree. May be repeated for credit. Mr. Buccellati

**240Z. Topics in Comparative History.** Prerequisite: consent of instructor. Course will be in the general format of the 240 (Topics) series. Possible topics that it might cover would be study of European expansion and its impact on non-European societies; the American Revolution in an international perspective, etc. The Staff

Admission to all graduate seminars is subject to the instructor's approval and to appropriate language qualifications. Credit and grades will be given only on completion of the full seminar sequence. IP grading for 250-291 series.

**250A-250B. Seminar in Ancient History.** Mr. Chambers

**251A-251B. Seminar in Church and Monarchy in the Middle Ages.** Textual studies and interpretative problems in the constitutional, legal, and intellectual history of the Latin Church and of the Western European monarchies, with special attention to the German monarchy, from the 11th century to the 14th. Mr. Benson

**252A-252B-252C. Seminar in Byzantine History.** Mr. Vryonis

**253A-253B. Seminar in Medieval History.** Mr. R. I. Burns, S.J.

**254A-254B. Seminar in the Italian Renaissance.** Mr. Martines

**255A-255B. Seminar in the Reformation.** Mr. Clasen

**256A-256B. Seminar in the History of Science.** Mr. Burke, Mr. Westman

**257A-257B. Seminar in Early Modern European History.** Mr. Lossky, Mr. Martines

**258A-258B. Seminar in English History: Middle Ages.** Mrs. Searle

**259A-259B. Seminar in English History: Modern History.** Mr. Moore

**260A-260B. Seminar in Modern European History.** Mr. Loewenberg

**261A-261B. Seminar in Modern European Intellectual and Cultural History.** Mr. Weber, Mr. Wohl

**262A-262B. Seminar in the Modern History of Spain, Italy and Portugal.** Mr. Wohl

**263A-263B. Seminar in Russian History.** Mr. Rogger

**264A-264B. Seminar in British Empire History.** Mr. Galbraith

**265A-265B. Seminar in African History.**

**266A-266B. Seminar in Latin American History: 19th and 20th Centuries.** Mr. Burr

**266C-266D. Seminar in Brazilian History.** Mr. Burns

**266E-266F. Seminar in Recent Latin American History.** Mr. Wilkie

**266G-266H. Seminar in Colonial Latin American History.** Mr. Lockhart

**267A-267B. Seminar in Near Eastern History.** The seminar will concentrate on studies in the History of the Near East, and, in alternate years, on Westernization of the Arab-speaking world. Mrs. Marsot

**268A-268B. Seminar in Jewish History.** Studies in the intellectual and social history of the Jewish people from ancient times to the modern period. Mr. Funkenstein

**269A-269B. Seminar in Early American History.** Mr. Henretta, Mr. Nash

**270A-270B. Seminar in Recent United States History.** Mr. Coben

**271A-271B. Seminar in Recent American History.**

**272A-272B. Seminar in United States History of the Middle Nineteenth Century.**

**273A-273B. Seminar in United States Social and/or Intellectual History.** Mr. Howe, Mr. Saxton

**274A-274B. Seminar in the History of the American West.** Mr. Hundley

**275A-275B. Seminar in Jacksonian America.** Mr. Gatell

**276A-276B. Seminar in American Diplomatic History.** Mr. Dallek

**277A-277B. Seminar in Afro-American History.** Social and political history of the Afro-American including an emphasis on the development and structure of race relations in America, and racial concepts and dilemmas, black and white. Mr. Robinson

**278A-278B. Seminar in Medieval Intellectual History and History of Science.** Chosen problems from medieval and early modern philosophy, science, political theory, theology. Mr. Funkenstein

**279A-279B-279C. Seminar in Chinese History.** Mr. Farquhar, Mr. Huang

**280A-280B. Seminar in South and Southeast Asia.** Mr. SarDesai, Mr. Wolpert

**281A-281B. Seminar in Modern Japanese History.** Mr. Notehelfer

**282A-282B. Seminar in the History of Religions.** Mr. Bolle

**283A-283B. Seminar in Ottoman and Modern Turkish History.** Mr. Shaw

**284A-284B. Seminar in the Social History of the Middle East.** The interrelationship of city, tribe, and village in the Middle East; the role of such definable social groups as women, religious classes, middle classes, landlords, tribesmen, and peasants; social change. Ms. Keddie

**285A-285B. Seminar in United States Urban History.**

**286A-286B. Seminar in Armenian History.** Prerequisite: course 131A-131B-131C or their equivalent. No credit or letter grade will be assigned until completion of entire seminar sequence. Mr. Hovannisian

**M287A. Topics in History of Education: Discussion, Research, and Writing.** (Same as Education M250A.) Mr. S. Cohen

**M287B. Seminar in Bibliography and Historiography in History of Education.** (Same as Education M250B.) Study of sources and new developments in the field. Emphasis will be on representative historians of education and their different modes of writing history. Mr. S. Cohen

**288A-288B. Seminar in Working Class History.** Mr. Laslett

**289A-289B. Seminar in Chicano History.** Mr. Gómez-Quinones

**290A-290B. Seminar in Social History of Women in the U.S.** Ms. Sklar

**291A-291B. Seminar in Medieval Middle Eastern History.** Mr. Morony

**292A-292B. Seminar in Native American History.** Mr. Morrison

#### Individual Study and Research

**495. The Teaching of History.** Prerequisite: graduate standing; required of all new Teaching Assistants. Consisting of lectures, readings, discussions, and practice teaching sessions within the structure of a seminar; students receive unit credit toward full-time equivalence, but not towards the nine course requirement for the M.A. degree. Graded satisfactory/unsatisfactory. The Staff

**501. Cooperative Program.** (½ to 2 courses) Prerequisites: Approval of UCLA Graduate Advisor and Graduate Dean. Approval of host campus, Instructor, Department Chairman and Graduate Dean. The course is used to record the enrollment of UCLA students in courses taken under cooperative arrangements with neighboring institutions. To be graded S/U.

**596. Directed Studies.** (¼ to 2 courses) The Staff

**597. Directed Studies for Graduate Examinations.** (¼ to 2 courses) Preparation for either the Master's Comprehensive Examination or the Ph.D. Qualifying Examinations. The Staff

**599. Doctoral Research and Writing.** (¼ to 2 courses) Open only to students who have passed the qualifying examination for the Ph.D. degree. The Staff

#### Related Course in Another Department

The following course is offered in the Department of Medical History and is accepted for credit.

**Medical History 107B.** Historical Development of Medical Science.

## HUMANITIES

Arnold J. Band, Ph.D., *Professor of Hebrew and Comparative Literature.*  
Pier-Maria Pasinetti, Ph.D., *Professor of Italian and Comparative Literature.*

Ross P. Shideler, Ph.D., *Associate Professor of Scandinavian Languages and Comparative Literature.*

Kathleen L. Komar, *Assistant Professor of German and Comparative Literature.*

Albert R. Braunmuller, Ph.D., *Associate Professor of English.*

Richard K. Cross, Ph.D., *Associate Professor of English.*

Albert D. Hutter, Ph.D., *Assistant Professor of English.*

Selected masterpieces of world literature representing different times and national origins. Recommended as courses to satisfy the H-requirement in the College of Letters and Science.

**1A. World Literature: Antiquity to Renaissance.** Class meets three hours a week plus one section per week. The Staff

**1B. World Literature: Renaissance to Modern Period.** Class meets three hours a week plus one section per week. The Staff

**2A. Survey of Literature: Antiquity to the Renaissance.** Lecture, two hours; discussion, two hours. Prerequisite: completion of Subject A requirement. The study of selected texts from Antiquity to the Renaissance with emphasis on literary analysis and expository writing. Essays on topics related to the assigned readings will be required. Not open to students who have taken Humanities 1A. This course may be taken to satisfy the Letters and Science "D" requirement (English Composition). The Staff

**2B. Survey of Literature: Renaissance to Modern.** Lecture, two hours; discussion, two hours. Prerequisite: completion of Subject A requirement. The study of selected texts from the Renaissance to the Modern Period with emphasis on literary analysis and expository writing. Essays on topics related to the assigned texts will be required. Not open to students who have taken Humanities 1B. This course may be taken to satisfy the Letters and Science "D" requirement (English Composition). The Staff

**20. Asian American Literature.** A survey of the past traditions of Asian American literature. The Staff

**101. The Romantic Dilemma.** Prerequisites: course 1A-1B, or English 1 and 2, or consent of the instructor. The theme of Romantic individualism and rebellion, pursued through literary examples of Romantic hero types (and anti-types) from Rousseau and Goethe to Dostoevsky and Hesse. The Staff

**102. Satire.** Prerequisites: course 1A-1B, or English 1 and 2, or consent of the instructor. The changing nature of satire as illustrated by examples of the genre from Horace and Juvenal to Ionesco and Nabokov. The Staff

**104. The Twentieth Century Continental Novel: Mann and Proust.** Prerequisites: course 1A-1B, or English 1 and 2, or consent of the instructor. An intensive study of *The Magic Mountain* and *The Remembrance of Things Past* as works of art and as expressions of the sense of social and cultural dissolution felt in early twentieth century Europe. Mr. Pasinetti

**M105. The Comic Spirit.** (Same as Comparative Literature M205.) Prerequisite: upper division standing and literature major. (Reading knowledge of one appropriate foreign language for graduate students.) Literary masterpieces, both dramatic and non-dramatic, selected to demonstrate the varieties of comic expression. This course is cross-listed with Comparative Literature M205. Students seeking U/G credit will be allowed to read all works in translation. Students taking the course for graduate credit will be required to prepare papers based on texts read in the original language. These students will meet as a group an additional hour each week. Mr. Band

**107. The Epic.** Prerequisites: course 1A-1B, or English 1 and 2, or consent of the instructor. A survey of the epic as a literary form from Homer to Camoens, with analysis of individual works in relation to their contemporary societies and a comparison of the salient differences between oral and literary epic. The Staff

**108. The Faust Theme.** Prerequisite: course 1A-1B, or English 1 and 2, or consent of the instructor. The course will explore artists' and intellectuals' use and abuse of their disciplines to find refuge from spiritual dryness. Readings of works by such writers as Marlowe, Goethe, Melville, Valery, Mann, and Malcolm Lowry. Mr. Cross

**M109. The Crisis of Consciousness in Modern Literature.** (Same as Comparative Literature M209.) Prerequisites: upper division standing and literature major. (Reading knowledge of one appropriate foreign language for graduate students.) Study of modern European and American works which are concerned both in subject matter and artistic methods with the growing self-consciousness of the artist and his society, focusing on works of Flaubert, Joyce, Gide, Mann and Nabokov. This course is cross-listed with Comparative Literature M209. Students seeking U/G credit will be allowed to read all works in translation. Students taking the course for graduate credit will be required to prepare papers based on texts read in the original language. These students will meet as a group an additional hour each week. The Staff

**110. Man and His Fictions.** Prerequisite: course 1A-1B, or English 1 and 2, or consent of the instructor. An exploration of dialogue and tale-telling, the wisdom or knowledge they possess, how the exchange of tales defines and sustains a community, how a narrator

clarifies his form and meaning for his audience. Readings from writers such as Plato, Dante, Proust, Freud. The Staff

**111. Tragedy.** Prerequisite: upper-division standing. Major tragic drama of the Western tradition: a study of theme and form. The Staff

**112. Modern Poetry of the Western World.** Prerequisite: upper-division standing or consent of the instructor. A study of selected 19th or 20th century European and American poetry. Mr. Shideler

**114. The Short Novel.** Prerequisite: course 1A and 1B, or English 1 and 2, or consent of the instructor. A study of selected short novels as works of literary art and as relevant intellectual statements. Texts by Melville, Flaubert, Dostoevsky, Kafka, et al. Mr. Pasinetti

**115. Four Modern Dramatists.** A study of several works by four major modern dramatists, focusing on understanding specific elements in each work and the authors' possible interrelations. Pirandello, Beckett, and Pinter will be read; the fourth author will be chosen from: Ionesco, Giraudoux, Cocteau. Mr. Braunmuller

**116. Man and Society in the Renaissance.** Lecture, three hours; discussion, one hour. Prerequisite: Humanities 1A-1B, or English 1 and 2, or consent of the instructor. Explorations of a change in Western man's relationship to his world, himself, and his art; reading of such works as *Don Quixote*, *The Essays of Montaigne*, *Gargantua and Pantagruel*, *The Praise of Folly*, *Utopia*. The Staff

**M117. The Mystery Novel.** (Same as Comparative Literature M297.) Prerequisite: upper division standing and literature major or consent of instructor. (Reading knowledge of French for graduate students.) A study of mystery and detective fiction in England, France, and the United States. The origin, form and historical significance will be developed through close readings of selected works. This course is cross-listed with Comparative Literature M297. Students seeking U/G credit will be allowed to read all works in translation. Students taking this course for graduate credit will be required to participate in a special discussion section and to prepare papers based on texts read in the original languages. Mr. Hutter

**M118. Mozart and the Literature of Opera.** (Same as Comparative Literature M268.) Prerequisites: Humanities 1A and 1B, or English 1 and 2, or consent of instructor. (Reading knowledge of either German or Italian for graduates.) The course will concentrate on opera as a dramatic and poetic medium, by focusing on the literary texts and musical settings of five major Mozart operas. Major topics: theatrical use of mixed media; recitative and aria; staging of opera; Mozart's career as a dramatic composer; Da Ponte as librettist. This course is cross-listed with Comparative Literature M268. Students seeking U/G credit will be allowed to read all works in translation. Students seeking graduate credit will participate in a special discussion section and will prepare all papers based on texts read in the original languages. The Staff

**M129. Archetypal Heroes in Literature.** (Same as Comparative Literature M229.) Prerequisite: upper division standing. (Reading knowledge of one appropriate foreign language for graduate students.) Survey and analysis of the function and appearance of such archetypal heroes as Osiris, Ulysses, Prometheus and Oedipus in literature from antiquity to the modern world. This course will be cross-listed with Comparative Literature M229. Students seeking U/G credit will be allowed to read all works in translation. Students taking the course for graduate credit will be required to prepare papers based on texts read in the original language, and will meet as a group an additional hour per week. The Staff

**M145. Renaissance Drama.** (Formerly numbered M103; same as Comparative Literature M245.) Prerequisite: upper division standing and literature major; consent of instructor. (Reading knowledge of one appropriate foreign language for graduates.) The course offers a broad introduction to the subject matter and types of plays in the Renaissance. Historical and literary influences on the plays will be considered. Readings will include works of such dramatists as: Tasso, Machiavelli, Lope de Vega, Racine, Jonson, Shakespeare. This course is cross-listed with Comparative Literature M245. Students seeking U/G credit will be allowed to read all works in translation. Students taking the course for graduate credit will be required to prepare papers based on texts read in the original language and will meet as a group one additional hour per week. Mr. Braunmuller

**M160. Literature and the Other Arts.** (Same as Comparative Literature M260.) Prerequisites: upper division standing and literature major. (Reading knowledge of French, Spanish, Italian or German for graduate students.) A comparative study of literature and the other art media. This course is cross-listed with Comparative Literature M260. Students seeking U/G credit will be allowed to read all works in translation. Students taking the course for graduate credit will be required to prepare papers based on texts read in the original language and will meet as a group one additional hour per week. Mr. Bensimon

**M172. The Grotesque in Romantic Literature and Art.** (Same as Comparative Literature M272.) Prerequisite: upper division standing and literature major. (Reading knowledge of either French, German or Spanish for graduate students.) A study of the various theories and modes of the grotesque in the visual and verbal arts of the Romantic period; interpretation will address the aesthetics of tragic-comic interaction, the demonic vision, and the satirical sketches of man's abnormality and perversity. This course is cross-

listed with Comparative Literature M272. Students seeking U/G credit will read all works in translation. Students taking the course for graduate credit will be required to prepare papers based on texts read in the original languages. These students will meet as a group an additional hour each week. Mr. Burwick

**M176. Fiction and History.** (Same as Comparative Literature M276.) Prerequisites: upper division standing and literature major; consent of instructor. (Reading knowledge of one appropriate foreign language for graduate students.) The course analyzes the use of historical events, situations, and characters, in works of fiction that are not necessarily "historical novels". Texts and individual assignments range from nineteenth century authors such as Stendhal, Tolstoy, Verhaeghe, to Proust and contemporaries like Vidal, Grass, Garcia Marquez. Use of fictional methods by historians may also be analyzed. Mr. Pasinetti

**M177. Sexual Stances in Modern Fiction.** (Same as Comparative Literature M277.) Prerequisite: upper division standing and literature major. An examination of sexual stances employed in fiction, beginning with heterosexuality in Stendhal and continuing through hypermasculinity in Hemingway, Mailer and Lawrence; aware femininity in Woolf, and Murdoch; and gayness in Gide, Forster and Isherwood. This course will be cross-listed with Comparative Literature M277. Students seeking undergraduate credit will be allowed to read all works in translation. Students taking the course for graduate credit will be required to prepare papers based on texts read in the original language, and will meet as a group an additional hour per week. The Staff

**M180. The Symbolist Tradition in Poetry.** (Same as Comparative Literature M280.) Prerequisite: upper division standing and literature major. (Reading knowledge of either French or German for graduate students.) A study of the symbolist tradition in English, French, and German poetry. This course is cross-listed with Comparative Literature M280. Students seeking U/G credit will read all works in translation. Students taking the course for graduate credit will be required to prepare papers based on texts read in the original languages. These students will meet as a group an additional hour each week. Mr. Shideler

**M181. Poetry and Poetics of the Post-Symbolist Period.** (Same as Comparative Literature M281.) Prerequisites: upper division standing and literature major. (Reading knowledge of either French or German for graduate students.) A study of some of the dominant poetic trends and figures in American and European poetry in the first half of the 20th century including such Surrealists as G. Apollinaire and A. Breton, imagists, and major individual poets such as E. Pound, T.S. Eliot, Paul Valery, R.M. Rilke, Stefan George, and Wallace Stevens. This course is cross-listed with Comparative Literature M281. Students seeking U/G credit will read all works in translation. Students taking the course for graduate credit will be required to prepare papers based on texts read in the original languages, and will meet as a group an additional hour each week. Mr. Shideler

### Related Courses in Other Departments

Integrated Arts 1A-1B-1C.

## IMMUNOLOGY

The Immunology faculty is associated with several departments and is joined in a common instructional program designed to meet the diverse needs of undergraduate, graduate, and professional students, as well as postdoctoral fellows. An *Interdisciplinary Course Sequence in Immunology* with a brief description of each course and the faculty involved may be obtained by writing the Department of Microbiology and Immunology, UCLA Center for the Health Sciences. Students seeking degrees with emphasis in immunology may choose to meet the general requirements of any of the following four departments: Anatomy, Bacteriology, Biology, or Microbiology and Immunology.

## INDO-EUROPEAN STUDIES (INTERDEPARTMENTAL)

Raimo A. Anttila, Ph.D., *Professor of Indo-European and General Linguistics.*

Henrik Birnbaum, Ph.D., *Professor of Slavic Languages.*

Marija Gimbutas, Ph.D., *Professor of European Archaeology (Department of Slavic Languages).*

Jaán Puhvel, Ph.D., *Professor of Classics and Indo-European Studies.*

Hartmut Scharfe, Ph.D., *Professor of Indic Studies (Department of Oriental Languages).*

Hanns-Peter Schmidt, Ph.D., *Professor of Indo-Iranian Studies (Department of Near Eastern Languages).*

Donald J. Ward, Ph.D., *Professor of Folklore and German.*

Terence H. Wilbur, Ph.D., *Professor of Germanic Linguistics and Philology.*

Patrick K. Ford, Ph.D., *Associate Professor of Celtic Studies (Department of English).*

### Graduate Degrees (C.Phil. and Ph.D.)

These degrees are offered under the jurisdiction of an interdepartmental committee.

### Admission to Graduate Status

Students admitted to graduate status must have an A.B. degree

with a major in an Indo-European language field (e.g., German, Slavic, Latin, Greek, Romance Languages), or a major in Linguistics (with emphasis on historical linguistics) or a major in Anthropology (with concentration on Europe and Asia). If deficiencies exist in prerequisites to specific work at the graduate level, a student may be admitted conditionally and will be expected to remove these deficiencies as soon as possible upon enrollment.

#### Requirements for the Doctor's Degree

*General Requirements.* See Candidate in Philosophy Degree.

*Foreign Language.* During the first year of graduate study, the student is expected to absolve the standard reading examinations set by the Graduate Division in any two of German, French, and Russian. During the second year a similar test is to be passed in the remaining language. Unless the candidate demonstrates beforehand adequate facility in its research use.

*Program of Study.* The doctorate in Indo-European Studies is offered with three alternative major emphases: (1) Indo-European linguistics, (2) Indo-Iranian or other specialized language area studies, (3) European and related archaeology. In preparation for the written qualifying examinations it is normally necessary to devote at least two years of full-time graduate study to a systematic program of courses and seminars. The general requirements for all students include Vedic Sanskrit, Homeric Greek, one upper division course in Latin, basic competence in Indo-European linguistics (e.g., IES 150, 210), mythology (e.g., Classics 168), and archaeology (e.g., IES 131, 132). Additional requirements for the concentration in (1) Indo-European linguistics include an advanced seminar in comparative grammar, a minimum of five ancient Indo-European languages from different sub-branches, and additional units in courses offered by linguistics (e.g., structural linguistics, phonetics) and related departments. Additional requirements for the concentration in (2) Indo-Iranian or other specialized language area studies include an advanced seminar in comparative grammar, a minimum of two ancient Indo-European languages from different sub-branches, and additional units in language and cultural courses in the area of specialization. Additional requirements for the concentration in (3) European and related archaeology include a minimum of one ancient Indo-European language, an advanced seminar in European archaeology, a course in analytical methods in archaeology, and additional units in archaeology, anthropology, and related fields. The additional units in each area of concentration are to be chosen in close consultation with the student's advisor and/or guidance committee.

*Qualifying Examinations.* Before advancement to doctoral candidacy and conferral of the C.Phil. degree, a student must pass a series of qualifying examinations, both written and oral. The written examination covers the major and minor fields and includes translation and analysis of passages from prescribed texts in ancient Indo-European languages. The oral examination, conducted by the doctoral committee, probes the student's grasp of the entire program.

*Dissertation.* A dissertation must be submitted, on a subject approved by the candidate's doctoral committee, dealing with a segment of the major field or combining the major and minor fields. The dissertation must be the result of original research and constitute a significant contribution to knowledge.

*Final Examination.* This oral examination, administered by the doctoral committee, covers the dissertation and its place both within the candidate's field of emphasis and the discipline as a whole.

#### Upper Division Courses

**131. European Archaeology: Proto-Civilizations of Europe.** A survey of European cultures from the beginning of the food-producing economy in the 7th millennium B.C. to the beginning of the Bronze Age in the 3rd millennium B.C. Mrs. Gimbutas

**132. European Archaeology: The Bronze Age.** Prerequisite: course M131 or consent of the instructor. A survey of European cultures from around 3000 B.C. to the period of the destruction of the Mycenaean culture about 1200 B.C. The course covers the Aegean area and the rest of Europe. Mrs. Gimbutas

**M150. Introduction to Indo-European Linguistics.** (Same as Linguistics M150.) Prerequisite: one year of college-level study (course 3 or better, 8 units minimum) of either Greek or Latin and either German or Russian. A survey of the Indo-European languages from ancient to modern times; their relationships and their chief characteristics. Mr. Anttila

**199. Special Studies.** (½ to 2 courses) The Staff

#### Graduate Courses

**210. Indo-European Linguistics: Advanced Course.** Prerequisite: course M150 or the equivalent. Comparative study of phonology, morphology, syntax, and lexicon. Problems in analysis and reconstruction. Mr. Anttila

**M250A-250B. European Archaeology.** (Same as Anthropology M206A-206B.) Prerequisite: consent of the instructor. Credit is given only upon completion of both quarters. The full sequence may be repeated for credit. Studies in ancient European archaeological materials, and their relationship to the Near East, Western Siberia, and Central Asia. Mrs. Gimbutas

**280A-280B. Seminar in Indo-European Linguistics.** Prerequisite: course 210. Selected topics in Indo-European comparative grammar for advanced graduate students.

Mr. Anttila

**596. Directed Individual Studies.** (½ to 2 courses) The Staff

**597. Preparation for Doctoral Qualifying Examination.** (½ to 2 courses) The Staff

**599. Research for the Dissertation.** (½ to 2 courses) The Staff

#### Related Courses in Other Departments

**Ancient Near East (Near Eastern Languages) 160A-160B.** Introduction to Near Eastern Archaeology.

161A-161B-161C. Archaeology of Mesopotamia.

260. Seminar in Ancient Near Eastern Archaeology.

261. Practical Field Archaeology.

**Anthropology 109A-109B.** Old Stone Age Archaeology.

123A-123B. Origins of Old World Civilization.

175A. Strategy of Archaeology.

175B. Archaeological Research Techniques.

**M175C.** Dating Techniques in Environmental Sciences and Archaeology.

175E. Laboratory Analysis in Archaeology.

183. History of Archaeology.

230. Analytical Methods in Archaeological Studies.

232. Archaeology.

286. Selected Topics in Historical Reconstruction and Archaeology.

**Archaeology 259.** Field Work in Archaeology.

**Armenian (Near Eastern Languages) 130A-130B.** Elementary Classical Armenian.

131A-131B. Intermediate Classical Armenian.

132A-132B. Advanced Classical Armenian.

**Classics 161.** Introduction to Classical Mythology.

166A. Greek Religion.

166B. Roman Religion.

168. Introduction to Comparative Mythology.

180. Introduction to Classical Linguistics.

230A-230B. Language in Ancient Asia Minor (Hittite, Palaic, Luwian).

251A. Seminar in Classical Archaeology.

260. Seminar in Roman Religion.

268. Seminar in Comparative Mythology.

**English M111D.** Introduction to Celtic Folklore and Mythology.

M111E. Survey of Medieval Celtic Literature.

211. Old English.

216A-216B. Old Irish.

217A-217B. Medieval Welsh.

218. Celtic Linguistics.

**Folklore M112.** Survey of Medieval Celtic Literature.

M122. Introduction to Celtic Folklore and Mythology.

M126. Introduction to Baltic and Slavic Folklore and Mythology.

**German 230.** Survey of Germanic Philology.

231. Gothic.

232. Old High German.

233. Old Saxon.

M245A. Germanic Religions and Mythology.

245B. Germanic Antiquities.

252. Seminar in Historical and Comparative German Linguistics.

**Greek (Classics) 240A-240B.** History of the Greek Language.

242. Greek Dialects and Historical Grammar.

243. Mycenaean Greek.

**Hindi (Linguistics) 171A-171B-171C.** Hindi.

**Iranian (Near Eastern Languages) 169.** Civilization of Pre-Islamic Iran.

170. Religion in Ancient Iran.

190A-190B. Introduction to Modern Iranian Studies.

210A-210B. The History of the Persian Language.

M222A-222B. Vedic.

230A-230B. Old Iranian.

231A-231B. Middle Iranian.

**Latin (Classics) 240.** History of the Latin Language.

242. Italic Dialects and Latin Historical Grammar.

**Linguistics 100.** Introduction to Linguistics.

103. Introduction to General Phonetics.

110. Introduction to Historical Linguistics.

120A-120B. Linguistic Analysis.

160. History of Linguistics through the 19th Century.

202A. Linguistic Change: Phonology.

202B. Linguistic Change: Morpho-syntax.

225A. Linguistic Structures: Indo-European.

225E. Linguistic Structures: Indo-Aryan.

270. Historical Linguistics. Seminar.

**Oriental Languages 160.** Elementary Sanskrit.

161. Intermediate Sanskrit.

162. Advanced Sanskrit.

165. Readings in Sanskrit.

214A-214B. Pali and Prakrits.

221A-221B. Introduction to Panini's Grammar.

247. Selected Readings in Sanskrit Texts.

**Scandinavian (Germanic Languages) 151.** Elementary Old Icelandic.

152. Intermediate Old Icelandic.

M245. Scandinavian Mythology.

**Semitics (Near Eastern Languages) 140A-140B.** Elementary Akkadian.

141. Advanced Akkadian.

220A-220B. Ugaritic.

**Slavic 177.** Baltic Languages and Cultures.

M179. Introduction to Baltic and Slavic Folklore and Mythology.

201. Introduction to Old Church Slavic.

202. Introduction to Comparative Slavic Linguistics.

241A-241B. Advanced Old Church Slavic.

242. Comparative Slavic Linguistics.

251. Introduction to Baltic Linguistics.

**Urdu (Near Eastern Languages) 101A-101B-101C.** Elementary Urdu.

## INTEGRATED ARTS

The main manifestations of the creative spirit in the arts of Western Civilization and the problems of their interrelation (literature excluded). For the general student; a knowledge of European history is expected.

\***1A. Integrated Arts.** Lecture, three hours. From Classic Antiquity to the end of the Middle Ages.

\***1B. Integrated Arts.** Lecture, three hours. From the Renaissance to the rise of Classicism.

\***1C. Integrated Arts.** Lecture, three hours. From the French Revolution to the present.

## INTERDISCIPLINARY COLLOQUIA

Organized colloquia involving several disciplines are offered from time to time in conformity with faculty and student interests. They are open to all faculty members and to graduate students assigned to the colloquia by their advisers. Graduate credit is not awarded directly, but may be given through appropriate departmental courses.

For information about the Committees in charge of these colloquia, call the secretary of the Dean of the College of Letters and Science, 825-4453.

#### African Studies

A colloquium on Africa in the social sciences will meet biweekly throughout the year. Papers presented and discussed in this colloquium will focus each quarter upon a different integrating theme, such as Urbanization and Migration, Development and Adaptation of Legal Systems in Africa, the Plural Societies of Africa, and similar topics amenable to interdisciplinary discourse.

#### Mathematics in the Behavioral Sciences

Meetings are announced in the UNIVERSITY CALENDAR.

A colloquium on mathematics in the behavioral sciences will meet biweekly throughout the year. Papers presented and discussed in this colloquium use mathematical language to improve communication between behavioral sciences, and also between these sciences and other branches of knowledge.

## ISLAMIC STUDIES (INTERDEPARTMENTAL)

For details of the undergraduate major, see Curriculum in Near Eastern Studies.

### Master of Arts in Islamic Studies

The interdepartmental program for the Master of Arts in Islamic Studies is designed primarily for the student desiring to prepare for an academic career. It may, however, be found useful also for the student seeking a general education and desiring a special emphasis in this particular area or for a student who plans to live and work in this area, whose career will be aided by a knowledge of the peoples, languages, and institutions. (Such a career might be centered on teaching, research, business, engineering, journalism, librarianship, or government service.) Subject to the limitations indicated below, the special course of studies is formulated for each candidate according to his experience and requirements.

### Requirements for the Master's Degree

*General Requirements.* See the Graduate Division.

*Admission to the Program.* Admission to the Graduate Division with a degree of Bachelor of Arts in Near Eastern Studies or its equivalent is required. The committee to administer the interdepartmental degree in Islamic Studies will pass on the application for admission to the program. A student entering the program is normally expected to have completed the equivalent of advanced intermediate Arabic (Arabic 102A-102B-102C); and advanced Persian (Persian 102A-102B-102C; or advanced Turkish (Turkish 103A-103B). In the case of Arabic, the student must demonstrate his proficiency by passing an examination within the first two weeks of instruction (those failing the examination will be required to take all or part of the first two years of Arabic at UCLA).

*Plan.* The program is offered under the Comprehensive Examination Plan only. The candidate must pass written examinations in two Near Eastern languages, the history of the Near East and one other social science.

### Language Requirements

A candidate for the degree of Master of Arts in Islamic Studies will be required to show proficiency in either French or German, in addition to two Near Eastern languages of his field of specialization. The student is expected to pass the graduate foreign language reading examination in either French or German by the end of the second quarter of residence. In view of the scholarly literature in the field, a candidate is earnestly advised to acquaint himself with a second European language in which relevant material for his studies is available.

*Program.* The program of each candidate will be especially prescribed by the interdepartmental advisory committee. The program should, wherever possible, be established before the candidate enters his first quarter of work. The program will be planned to emphasize Arabic, Persian or Turkish (Islamic) studies and is intended particularly for the student desiring to prepare for an academic career in this field.

*Program in Arabic, Persian or Turkish (Islamic) Studies.* The student will be required to continue his language work by taking no fewer than four courses on the appropriate level in the two Near Eastern languages of his choice. Students electing Arabic as one of the two Near Eastern languages of their choice are required to take a course on the third-year level (Arabic 103A-103B-103C, 130A-130B-130C, or 140A-140B-140C) earning at least a B average, or, in exceptional cases (at the discretion of the advisory committee), may be allowed to satisfy this requirement by examination. The remaining five courses are to be chosen from the relevant upper division and graduate courses in history, political science or any of the other fields represented in the program depending on the student's preparation and specific needs, with the proviso that the selection must be limited to two of these disciplines. The omission of history may be approved only in exceptional cases.

Other study arrangements in the Near Eastern field are available through the Department of Near Eastern Languages.

### Requirements for the Ph.D. Degree in Islamic Studies

*General Requirements.* See Doctoral Degrees.

*Admission to the Program.* Competence in one of the relevant Near Eastern languages, or an undergraduate major in one of the social sciences affiliated with the program, that is, at present, history, political science, anthropology, and sociology, with some specialization in the Near East. The student may be required to take additional work to remove any deficiency in his undergraduate program especially in connection with language preparation. Students proceeding directly to the Ph.D. degree and students who enter the program with an M.A. from another university must satisfy the requirements for the M.A. degree with regard to the two Near Eastern languages of their choice by examination.

*Requirements of the Program.* At the beginning of his first quarter in residence, the candidate will present to the chairperson of the committee to administer the interdepartmental degree in Islamic Studies a written statement explaining his preparation in the two modern languages required by the University (generally French and German). He is expected to pass the graduate foreign language reading examination in both languages by the end of his second year of residence. For work in some fields, a reading knowledge of Italian and/or Spanish and/or Russian is essential. In the first year

of graduate study, the candidate will follow essentially the existing master's program in Islamic (Arabic, Persian or Turkish) studies which calls for two Near Eastern languages and literatures as well as two social sciences. Students are expected to continue taking courses beyond the intermediate level in the two Near Eastern languages of their choice and to take a proficiency examination in these languages 9 to 12 months prior to their scheduled qualifying examinations. Normally the candidate will devote the second year to courses and seminars in departments affiliated with the program, these courses to be determined by the candidate's advisory committee to be appointed by the end of the third quarter of graduate work. This committee is to consist of four faculty members who will supervise the four fields in which the candidate is to be examined. Upon completion of these courses, he will take his qualifying examinations and advance to candidacy. A final year will normally be devoted by the candidate chiefly to the preparation of his dissertation, after which he will take his final oral examination. During this year the candidate may satisfy the residence requirements either by taking additional seminars or by registering in Islamics 599.

### The Qualifying Examination

The qualifying examination will depend on the social science concentration elected by the student. If, for example, his chosen field is history, he will be examined on the whole range of Near Eastern history, in one field of anthropology, sociology or political science, and in the particular Near Eastern languages and literatures of his approved program. Qualifying examinations for students with different concentrations will be constructed accordingly.

### Lower Division Courses

**Arabic** 1A-1B-1C. Elementary Arabic.

**Art** 50. Ancient Art.

**Classics** M70. Survey of Medieval Greek Culture. (Formerly numbered 145A. Same as History M70).

**Geography** 1B. Introduction to Geography: Cultural Elements.

**Hebrew.\***

\*See Department of Near Eastern Languages and Cultures for complete listing and detailed description.

**History** 9D. History of the Near and Middle East.

10A-10B. A Cultural Survey of Africa.

M70. Survey of Mediaeval Greek Culture. (Same as Classics M70.)

99. Introduction to Historical Practice.

**Iranian** 10A-10B-10C. Persian Conversation.

**Music** 71K. Music of Persia.

### Upper Division Courses

**African Languages.\*\***

\*\*See Linguistics Department for complete listing and detailed description.

**Ancient Near East** 120A-120B-120C. Elementary Ancient Egyptian

121A-121B-121C. Intermediate Ancient Egyptian.

123A-123B. Coptic.

130. Ancient Egyptian Religion.

140A-140B. Elementary Sumerian.

145. Sumerian Literary Texts.

150A-150B-150C. Survey of Ancient Near Eastern Literatures in English.

160A-160B. Introduction to Near Eastern Archaeology.

161A-161B-161C. Archaeology of Mesopotamia.

162. Archaeology of Palestine.

170. Introduction to Biblical Studies.

171. Old Testament: Hebrew and Septuagint Texts.

172. Semitic Background of the New Testament.

199. Special Studies in the Ancient Near East.

**Anthropology** 110. Peoples of the Middle East: Arab Culture.

122A. Comparative Society.

123A-123B. Origins of Old World Civilization.

140. Comparative Religion.

145. Introduction to Psychological Anthropology.

163. Women in Culture and Society.

**Arabic** 102A-102B-102C. Intermediate Arabic.

103A-103B-103C. Advanced Arabic.

110. Introduction to Islam.

111A-111B-111C. Spoken Arabic.

113A-113B-113C. Spoken Iraqi Arabic.

114A-114B-114C. Spoken Moroccan Arabic.

130A-130B-130C. Classical Arabic Texts.

132A-132B-132C. Philosophical Texts.

140A-140B-140C. Modern Arabic Texts.

141. Modern Arabic Literature.

150A-150B. Survey of Arabic Literature in English.

199. Special Studies in Arabic.

**Armenian** 101A-101B-101C. Elementary Modern Armenian.

102A-102B-102C. Intermediate Modern Armenian.

103A-103B. Advanced Modern Armenian.

130A-130B. Elementary Classical Armenian.

131A-131B. Intermediate Classical Armenian.

132A-132B. Advanced Classical Armenian.

150A-150B. Survey of Armenian Literature in English.

160A-160B. Armenian Literature of the 19th and 20th Centuries.

199. Special Studies in Armenian Language and Literature.

**Art** 101A-101B-101C. Egyptian Art and Archaeology.

101D. Art of the Ancient Near East.

103A. Greek Art.

103B. Hellenistic Art.

104B-104C-104D. Architecture and the Minor Arts of Islam in the Middle Ages.

105A. Early Christian Art.

105B. Early Medieval Art.

105E. Byzantine Art.

114A. The Early Art of India.

115A. Advanced Indian Art.

199. Special Studies in Art.

**Berber** 101A-101B-101C. Elementary Berber.

102A-102B-102C. Advanced Berber.

120A-120B-120C. Introduction to Berber Literature.

130. The Berbers.

199. Special Studies in Berber Languages.

**Classics** M170A-170B. Byzantine Civilization. (Same as History M122A-122B.)

**Classics Greek** 130. Readings in the New Testament.

**French** 121A. Franco-African Literature.

**Geography** 187. The Middle East.

188. Northern Africa.

**Hebrew.\***

\*See Department of Near Eastern Languages and Cultures for complete listing and detailed description.

**History** 117. History of Ancient Egypt.

121A. The Early Middle Ages.

121B. The Later Middle Ages.

M122A-122B. Byzantine Civilization. (Same as Classics M170A-170B.)

123A-123B-123C. Byzantine History.

124A-124B. Introduction to the History of Religions.

124C. Religions of the Ancient Near East.

129. History of Northeast Africa.

130A-130B-130C. Islamic Iran.

131A-131B-131C. Armenian History.

132. The Caucasus since 1801.

133A-133B. History of North Africa from the Moslem Conquest.

134A-134B. Near and Middle East from 600 A.D. to 1500 A.D.

135A. Introduction to Islamic Cultures.

135B. Islamic Institutions and Political Ideas.

136A-136B. The Middle East: 1500 to the Present.

137A-137B. Jewish Intellectual History.

138A-138B. Jewish History.

138C-138D. Focal Themes in Jewish History.

139A-139B-139C. History of the Turks.

140A-140B. History of Ancient Mesopotamia and Syria.

149A-149B-149C. History of the Balkans.

196A. Early History of India.

196B. Recent History of India and Pakistan.

197. Undergraduate Colloquia.

199. Special Studies in History.

**Iranian** 101A-101B-101C. Elementary Persian.

102A-102B-102C. Intermediate Persian.

103A-103B-103C. Advanced Persian.

140. Contemporary Persian Belle Lettres.  
 141. Contemporary Persian Analytical Prose.  
 150A-150B. Survey of Persian Literature in English.  
 169. Civilization of Pre-Islamic Iran.  
 170. Religion in Ancient Iran.  
 190A-190B. Introduction to Modern Iranian Studies.  
 199. Special Studies in Iranian.  
**Jewish Studies** 110. Social, Cultural and Religious Institutions of the Jews.  
 151A-151B. Modern Jewish Literature in English.  
 190. Undergraduate Seminar in Jewish Studies.  
 199. Special Studies.  
**Music** 171K. Music of Persia.  
**Near Eastern Languages** 198. Special Studies in Near Eastern Languages.  
**Philosophy** 104. Topics in Islamic Philosophy.  
**Political Science** 132. International Relations of the Middle East.  
 164. Governments and Politics in the Middle East.  
 165. Government and Politics in North Africa.  
**Semitics** 101A-101B-101C. Elementary Amharic (Modern Ethiopic).  
 102A-102B-102C. Advanced Amharic (Modern Ethiopic).  
 110. Neo-Aramaic.  
 130. Biblical Aramaic.  
 140A-140B. Elementary Akkadian.  
 141. Advanced Akkadian.  
 142. Akkadian Literary Texts.  
**Sociology** 132. Population and Society in the Middle East.  
 133. Comparative Sociology of the Middle East.  
 151. Culture and Personality.  
**Turkic Languages** 101A-101B. Elementary Turkish.  
 102A-102B. Intermediate Turkish.  
 103A-103B. Advanced Turkish.  
 110A-110B-110C. Old and Middle Turkic.  
 112A-112B-112C. Uzbek.  
 114A-114B-114C. Bashkir.  
 180A-180B-180C. Introduction to Turkic Studies.  
 199. Special Studies in Turkic Languages.
- Graduate Courses**
- African Languages.\*\***
- \*\*See Linguistics Department for complete listing and detailed description.
- Ancient Near East** 210. Late Egyptian.  
 220. Seminar in Ancient Egypt.  
 250. Seminar in Ancient Mesopotamia.  
 260. Seminar in Ancient Near Eastern Archaeology.  
 261. Practical Field Archaeology.  
 596. Directed Individual Study.  
 597. Examination Preparation.  
 599. Dissertation Research and Preparation.  
**Anthropology** 214. Cultures of the Middle East.  
 265. Selected Topics in Cultures of the Middle East.  
**Arabic** 220A-220B-220C. Islamic Texts.  
 230A-230B-230C. Arabic Poetry.  
 240A-240B-240C. Arab Historians and Geographers.  
 250A-250B-250C. Seminar in Arabic Literature.  
 260A-260B-260C. Introduction to Modern Arabic Dialects.  
 280. Structure of Classical Arabic.  
 596. Directed Individual Study.  
 597. Examination Preparation.  
 599. Dissertation Research and Preparation.  
**Archaeology** 200. Archaeology Colloquium.  
 259. Field Work in Archaeology.  
 596. Individual Studies for Graduate Students.  
 597. Preparation for Doctoral Qualifying Examinations.  
**Armenian** 210. History of Armenian Language.  
 220. Armenian Literature of the Golden Age (A.D. Fifth Century).  
 250A-250B. Seminar in Armenian Literature.  
 290. Seminar in Armenian Paleography.  
 596. Directed Individual Study.

597. Examination Preparation.  
 599. Dissertation Research and Preparation.  
**Art** 210. Egyptian Art.  
 211. Topics in Egyptian Art.  
 212. Problems in Islamic Art.  
 213. Seminar in Problems in Islamic Art.  
 222A-222B. Greco-Roman Art.  
 223. Classical Art.  
 225. Medieval Art.  
 226A-226B. Medieval Art and Architecture.  
 260. Asian Art.  
**Classics, Greek** 231A-231B-231C. Seminar in Patristic and Byzantine Literature.  
 233. Byzantine Poetry.  
**French** 221A. Introduction to the Study of the French-African Literatures.  
 221B. French-African Literature of Madagascar and Bantu Africa.  
 221C. French-African Literature of Berbero-Sudanese and Arabo-Islamic Africa.  
 257A-257B. Studies in French-African Literature.  
**Geography** 287. Middle East.  
 288. Northern Africa.  
**Hebrew.\***
- \*See Department of Near Eastern Languages and Cultures for complete listing and detailed description.
- History** 201A. History of the Eurasian Nomadic Empires.  
 203. History of Ancient Egypt in the Late Period.  
 207. Armenian Intellectual History.  
 210A-210B. Morocco and Europe to the End of the French Protectorate.  
 228. Methods in Armenian Oral History.  
 230J. Advanced Historiography. The Near East.  
 230P. Advanced Historiography. History of Religions.  
 230R. Advanced Historiography. Jewish History.  
 230S. Advanced Historiography. Armenia and the Caucasus.  
 240J. Topics in History. The Near East.  
 240P. Topics in History. History of Religions.  
 240R. Topics in History. Jewish History.  
 240S. Topics in History. Armenian History.  
 250A-250B. Seminar in Ancient History.  
 252A-252B-252C. Seminar in Byzantine History.  
 267A-267B. Seminar in Near Eastern History.  
 268A-268B. Seminar in Jewish History.  
 278A-278B. Seminar in Medieval Intellectual History and History of Science.  
 282A-282B. Seminar in the History of Religions.  
 283A-283B. Seminar in Ottoman and Modern Turkish History.  
 284A-284B. Seminar in the Social History of the Middle East.  
 286A-286B. Seminar in Armenian History.  
 291A-291B. Seminar in Medieval Middle Eastern History.  
 596. Directed Studies.  
 597. Directed Studies for Graduate Examinations.  
 599. Doctoral Research and Writing.  
**Iranian** 210A-210B. The History of the Persian Language.  
 211A-211B. Modern Iranian Dialects.  
 220A-220B. Classical Persian Texts.  
 221. Rumi the Mystic Poet of Islam.  
 M222A-222B. Vedic.  
 230A-230B. Old Iranian.  
 231A-231B. Middle Iranian.  
 250. Seminar in Classical Persian Literature.  
 251. Seminar in Contemporary Persian Literature.  
 596. Directed Individual Study.  
 597. Examination Preparation.  
 599. Dissertation Research and Preparation.  
**Islamic Studies** 596. Directed Individual Study.  
 597. Examination Preparation.  
 598. Thesis Research and Preparation.  
 599. Dissertation Research and Preparation.  
**Linguistics** 220A. Linguistic Areas. Africa.  
 225M. Linguistic Structures: Berber.

- 225U. Linguistic Structures: Persian Phonology and Syntax.  
 225V. Linguistic Structures: Persian Syntax.  
**Music** 282. Music of Persia.  
 284. Music of the Arabic Near East.  
**Near Eastern Languages** 200. Bibliography and Method of Near Eastern Languages and Literatures.  
 210. Survey of Hamito-Semitic Languages.  
**M241. Folklore and Mythology of the Near East.**  
 290. Seminar in Paleography.  
 596. Directed Individual Study.  
 597. Examination Preparation.  
 599. Dissertation Research and Preparation.  
**Political Science** 250F. Seminars in Regional and Area Political Studies. Middle East.  
 250K. North African Studies.  
**Semitics** 201A-201B-201C. Old Ethiopic.  
 202A-202B-202C. Readings in Old Ethiopic Literature.  
 209A-209B-209C. Comparative Study of the Ethiopian Languages.  
 210. Ancient Aramaic.  
 215A-215B. Syriac.  
 220A-220B. Ugaritic.  
 225. Phoenician.  
 230. Seminar in Northwest Semitic Languages and Literatures.  
 240. Seminar in Akkadian Language.  
 241. Seminar in Akkadian Literature.  
 280A-280B-280C. Seminar in Comparative Semitics.  
 290A-290B-290C. Comparative Morphology of the Semitic Languages.  
 596. Directed Individual Study.  
 597. Examination Preparation.  
 599. Dissertation Research and Preparation.  
**Sociology** 236. Social Change in the Middle East.  
 237. Social Stratification in the Middle East.  
**Turkic Languages** 210A-210B-210C. Ottoman.  
 211. Ottoman Diplomats.  
 220A-220B-220C. Chagatay.  
 230A-230B-230C. A Historical and Comparative Survey of the Turkic Languages.  
 240A-240B-240C. Islamic Texts in Ottoman.  
 250A-250B-250C. Islamic Texts in Chagatay.  
 596. Directed Individual Study.  
 597. Examination Preparation.  
 599. Dissertation Research and Preparation.  
**Urdu** 101A-101B-101C. Elementary Urdu.  
 199. Special Studies in Urdu.

## ITALIAN

(Department Office, 340 Royce Hall)

Giovanni Cecchetti, Dottore in Lettere, *Professor of Italian*.  
 Fredi Chiappelli, Dottore in Lettere; Doct. Lett. "Honoris Causa",  
*Professor of Italian*.  
 Margherita Cottino-Jones, Ph.D., Dottore in Lettere, *Professor of Italian (Chairman of the Department)*.  
 Pier-Maria Pasinetti, Ph.D., Dottore in Lettere, *Professor of Italian and Comparative Literature*.  
 Franco Belli, Ph.D., *Associate Professor of Italian*.  
 Franco Masciandaro, Ph.D., *Associate Professor of Italian*.  
 Edward F. Tuttle, Ph.D., *Associate Professor of Italian*.

Mirella Cheeseman, Dottore in Legge, *Lecturer in Italian*.  
 Althea Reynolds, M.A., *Lecturer in Italian*.

The program of studies leading to the Bachelor of Arts in Italian consists of two distinct phases: preparation in the language, and study of the literature. While literature courses constitute the bulk of the program, a good knowledge of the language is a prerequisite to all upper division literature courses credited toward the Major in Italian. All degree programs are designed to give students the best possible preparation in the field at the appropriate level. The use of Italian is stressed at all levels of study. Detailed information on programs and specific degree requirements may be obtained in the department publication, *Programs in Italian Studies*, and in the office of the Department of Italian located in 340 Royce Hall.

### Preparation for the Major

Courses 1, 2, 3, 4, 5, 6, and 25, or their equivalents are required.

### The Major in Italian

Required: 14 Upper Division courses out of 16 courses regularly

offered once every or every other academic year. Seven of these are required; specifically Italian 101, 102A-102B-102C, 113A-113B, 190; an additional seven are to be chosen from the other nine courses ranging from 114 through 122.

Strongly recommended: three upper division courses from other departments as follows: Classics 143 or 144, History 148A or 148B, and English 110. Recommended: Art 106A, 106B, or 106C; upper division courses in another literature and philosophy and a second language (Latin, French, Spanish or German) at least on level 3. All majors must organize their programs in consultation with their major advisor.

#### The Major in Italian and Special Fields

Preparation: Italian 1, 2, 3, 4, 5, and 6 or their equivalents are required, plus additional required courses associated with the field of specialization in consultation with the departmental undergraduate adviser.

Required: 14 Upper Division courses, seven of which must be in Italian. Italian 102A-102B-102C series is required, while the remaining four may be chosen from the other thirteen courses ranging from 113 through 122 as determined by the student's area of specialization. The other seven courses are to be chosen from offerings in another department, as determined by the field of specialization.

Study programs fulfilling requirements for the major in Italian and Special Fields have been developed with the Departments of Anthropology, Art, Classics (Latin), English, French, History, Linguistics, Music, and Theater Arts. Students should consult the Department of Italian for definitive requirements in the various fields of specialization.

NOTE: Students participating in the major in Italian and Special Fields will be required to plan their study lists each quarter in consultation with the departmental undergraduate adviser. Courses will be assigned in accordance with the student's needs as determined by the area of specialization pursued. When consultation with an area adviser is deemed necessary, the study list will require his approval also. In certain cases, as many as two courses (8 units) on the graduate level may be applied toward the 14-course minimum requirements.

#### Requirements for the Master's Degree

General Requirements. See Master's Degrees. The Department favors the Comprehensive Examination Plan, but, with departmental approval, the Thesis Plan may be followed. See Thesis or Comprehensive Examination.

#### Program A: Master of Arts in Italian Literature

Departmental Requirements. Thesis Plan. The preparation and examination of each candidate will be the responsibility of a guidance committee composed of three members of the Department. The chairman of the committee will be the instructor under whom the candidate proposes to write his thesis. No committee shall be appointed before a candidate has completed two full quarters of work in graduate standing in the Department.

1. Foreign Language. The same as for the Comprehensive Examination Plan.
2. Courses. Nine courses of which a minimum of six must be in the 200 series.
3. Thesis and Examination. The subject and general plan of investigation for the thesis must be approved by the Department and the instructor concerned before a guidance committee can be appointed. After completion of the thesis, the candidate must pass a two-hour oral examination testing his knowledge of the field of his thesis and his general competence. Only those students who attain a 3.5 grade-point rating in the examination will be encouraged to proceed to candidacy for the Ph.D. degree.

Departmental Requirements. Comprehensive Examination plan.

1. Foreign Language. A reading knowledge of one other foreign language approved by the graduate adviser, or evidence of successful completion of courses through at least level 3. This requirement must be met at least one quarter before the date of the comprehensive examination.
2. Courses. Twelve courses, three of which may be upper division, and nine of which must be distributed as follows: three in the Medieval period, three in the Renaissance and Baroque periods, and three in the Modern period (from the 18th to the 20th century). At least one quarter of Italian 205 is required. Related courses in other Departments, such as History 205A and 205B and Art 230 are strongly recommended.
3. The Comprehensive Examination. One four-hour written examination, administered by a faculty committee appointed by the Chairman, to be given the next to the last week preceding the final examination period of the fall and spring quarters. After the written examination, the candidates are required to take an oral examination.

#### Program B: Master of Arts in Italian Language

The program is designed as a terminal degree program with emphasis on the methodology of teaching language and elementary literature.

Departmental Requirements. Thesis Plan. The preparation and examination of each candidate will be the responsibility of a guidance committee composed of three members of the

Department. The Chairman of the committee will be the instructor under whom the candidate proposes to write his thesis. No committee shall be appointed before a candidate has completed two full quarters of work with graduate standing in the Department.

1. Foreign Language. A reading knowledge of one other foreign language approved by the graduate adviser, or evidence of successful completion of courses through at least level 3. This requirement must be met at least one quarter before the date of the oral examination.
2. Courses. Twelve courses, six of which must be on the graduate level and distributed as follows: two in the Medieval Period (seminars on Dante strongly recommended); two in the Renaissance Period; and two in the Modern Period. Italian 130, Italian 259A, 259B, 259C, Latin 232 (Vulgar Latin), Linguistics 100 and/or 140.
3. Thesis and Examination. The subject and general plan of investigation for the thesis must be approved by the Department and the instructor concerned before a guidance committee can be appointed. After completion of the thesis, the candidate must pass a two-hour oral examination testing his knowledge of the field of his thesis and his general competence.

Departmental Requirements. Comprehensive Examination Plan.

1. Foreign Language. A reading knowledge of one other foreign language approved by the graduate adviser, or evidence of successful completion of course through at least level 3. This requirement must be met at least one quarter before the date of the comprehensive examination.
2. Courses. Twelve courses, six of which must be on the graduate level and distributed as follows: two in the Medieval Period (seminars on Dante strongly recommend); two in the Renaissance Period; and two in the Modern Period. Italian 130, Italian 259A, 259B, 259C, Latin 232 (Vulgar Latin) or Italian 210A.
3. The Comprehensive Examination. One four-hour written examination, administered by a faculty committee appointed by the Chairman, to be given in the next to the last week preceding the final examination period of the fall and spring quarters. After the written examination, at the discretion of the Department, the candidate may be required to take an oral examination.

#### Requirements for the Ph.D. Degree in Italian

General Requirements. See Candidate in Philosophy Degree.

Departmental Requirements.

1. Foreign Language. A student normally will pass this requirement by giving evidence of successful completion of courses through level three in at least two of the following languages: Latin, French, German, or Spanish. All language requirements must be fulfilled prior to taking the qualifying examinations.
2. Required Courses. In addition to those required for the master's degree, or equivalent: at least ten other quarter courses, of which no more than two 596, or one 596 and one 495, courses may apply. In addition, the student will take such courses as his guidance committee will prescribe in preparation for the qualifying examinations, such as 596 and 597.
3. Fields of Specialization. The Department recognizes the following fields of specialization, from which *one major* and *one minor field* will be selected: Medieval, Renaissance and Baroque, Modern.
4. Qualifying Examinations. Part I. An M.A. in Italian from UCLA is accepted as Part I of the Ph.D. qualifying examinations. Graduate students entering the Ph.D. Program in Italian with an M.A. from another University will take Part I at the end of their first graduate year at UCLA. (Note: This requirement may be waived under certain circumstances at the discretion of the Department and upon petition by the student.) This qualifying examination Part I is similar to the comprehensive examination for the M.A. (See Thesis or Comprehensive Examination.)
5. Qualifying Examinations. Part II. The qualifying examinations will consist of one four-hour written examination in the candidate's major field; one four-hour written examination covering the minor fields; a two-hour oral examination. The qualifying examinations are normally taken no later than nine quarters after the B.A. and six quarters after receiving the M.A. A summary of requirements entitled "Regulations for the Ph.D. Examination" is available in the Department on request.
6. The Dissertation. The dissertation should be presented within a period of three years after formal advancement to candidacy for the degree. After the acceptance of the dissertation in its final form, the candidate may be required to take an oral examination which will cover principally the field within which the dissertation falls.

#### Lower Division Courses

Enrollment in the Italian open language laboratory is required of all students of Italian 1, 1A, 2, 2A, and 3. Enrollment in Italian culture sections is required of all students of Italian 2, 2A and 3 as the fifth hour of instruction for these courses.

1. **Elementary Italian—Beginning.** Sections meet five hours weekly plus one hour in the laboratory.

Mrs. Cheeseman in charge

- 1A. **Elementary Italian—Accelerated. (2 courses)** Sections meet eight hours weekly plus two hours in the laboratory. Designed

for those students having the capacity and desire to learn the language at a much faster pace than normal. Encompasses material ordinarily intended for courses 1 and 2.

Mrs. Cheeseman in charge

2. **Elementary Italian—Continued.** Sections meet five hours weekly plus one hour in the laboratory. Prerequisite: course 1 or one year of high school Italian.

Mrs. Cheeseman in charge

- 2A. **Elementary Italian Accelerated (Continued). (2 courses)** Sections meet eight hours weekly plus two hours in the laboratory. Prerequisite: Italian 2 or Italian 1A, or two years of high school Italian. Designed for those students having the capacity and desire to learn the language at a much faster pace than normal. Encompasses the material ordinarily intended for Italian 3 and Italian 4.

Mrs. Cheeseman in charge

3. **Elementary Italian—Continued.** Sections meet five hours weekly plus one hour in the laboratory. Prerequisite: course 2 or two years of high school Italian.

Mrs. Cheeseman in charge

4. **Intermediate Italian.** Sections meet five hours weekly plus one hour in the laboratory. Prerequisite: course 3 or three years of high school Italian.

Mr. Masciandaro in charge

5. **Intermediate Italian.** Sections meet five hours weekly plus one hour in the laboratory. Prerequisite: course 4 or four years of high school Italian.

Mr. Masciandaro in charge

6. **Intermediate Italian.** Sections meet five hours weekly plus one hour in the laboratory. Prerequisite: course 5.

Mr. Masciandaro in charge

- 8A-8B-8C. **Italian Conversation. (½ course each)** Sections meet two hours weekly. Prerequisite: permission of instructor. This sequence of courses is intended for students who have taken 3-6 quarters of language instruction and have developed considerable skills in Italian. Its purpose is to help the students to improve further their spoken proficiency through constant exposure and practice of the language. Each of these courses may be repeated once for credit.

Ms. Reynolds in charge

25. **Advanced Italian.** Sections meet five hours weekly. Prerequisite: course 6. An advanced grammar and composition course with readings from select literary works.

Mr. Masciandaro in charge

#### Upper Division Courses

Sixteen quarter units in Italian or the equivalent are required for admission to any upper division course. Upper division courses for the Majors will be conducted mainly in Italian and will all be 4 units courses and meet three hours weekly.

101. **Preparation for Advanced Italian Studies.** A course designed to acquaint Juniors with the research tools fundamental to the study of Italian culture. Will focus on how to find texts and collateral material, how to utilize bibliographies, dictionaries, encyclopedias, manuals and periodicals and how to proceed in literary analysis.

Mr. Chiappelli

- 102A-102B-102C. **The Italian Cultural Experience.** A study of the cultural development of Italy conducted especially with a view to contemporary situations.

102A. From the disruption of Roman unity to feudal and communal society and culture.

102B. From Renaissance civilization to the Baroque Age.

102C. Historical and cultural issues from the Age of Enlightenment to our day.

The Staff

- 113A-113B. **Dante's 'Divina Commedia'.** This course focuses on the Divine Comedy. Selective readings from the text will be integrated with relevant information on scholasticism, classical tradition, medieval literature and poetics, and the socio-political structure of Dante's World.

113A. A General Introduction and Readings from *Inferno*.

113B. Readings from *Purgatorio* and *Paradiso*.

Ms. Masciandaro

- 114A-114B. **Italian Literature of the Middle Ages.** Classes meet three hours weekly. Emphasis on "Stil Novo," Dante's minor works, Petrarca and Boccaccio.

Mrs. Cottino-Jones, Mr. Tuttle

- 116A-116B. **Italian Literature of the Renaissance.** Emphasis on Lorenzo de'Medici, Poliziano, Castiglione, Machiavelli, Ariosto, Tasso.

Mr. Betti, Mr. Masciandaro

118. **Italian Literature of the Eighteenth Century.** Emphasis on Goldoni, Parini, Alfieri.

Mr. Betti, Mr. Pasinetti

119. **Italian Literature on the 19th Century.** This course surveys the 'Romantic Age' as it expresses values and national aspirations of 19th Century Italy. Emphasis is placed on the innovative approach to poetry as seen in the works of Foscolo and Leopardi, and to the socio-historical novel of Foscolo, Manzoni and Verga.

Mr. Betti

120. **Italian Literature of the Twentieth Century.** Following a brief introduction to Italian literature after unification of the country, the course will concentrate on selected writers seen in their political, social, and artistic contexts.

Mr. Pasinetti

121. **Italian Cinema.** A comparative study of specific literary works and their translations into films, and of the different techniques in the two forms of expression. Texts will include literary works, screenplays, and works on literary and film theory.

Mr. Pasinetti

**122. The Italian Theater.** The course concentrates on what is alive today (read and performed) in the Italian theater. Texts will range from the Renaissance to the present. Mrs. Cottino—Jones

**130. Advanced Grammar and Composition (Teaching).** The Teaching of Italian Idiomatic Structure: Grammar. A study in depth of the idiomatic phenomena of the language from both the grammatical and syntactical points of view. Mr. Chiappelli

**131. Reading and Reciting.** Prerequisite: consent of instructor based on sufficient knowledge of the language. Emphasis on diction, interpretation and performance of one-act plays as vehicles for perfection of pronunciation, comprehension and fluency. Mrs. Reynolds

**190. History of the Italian Language.** Examines the main forces which have shaped literary or Standard Italian and specific ways in which the language has evolved. Traces its changing relations with other European languages, and surveys the effects wrought by historical events, changes in taste and altered social functions. Mr. Tuttle

**199. Special Studies. (½ to 1 course)** Prerequisite: consent of the instructor. A course of independent study for advanced undergraduates who wish to pursue a special research project under the direction and close supervision of a faculty member. The Staff

### Service Courses

No knowledge of Italian is required for these courses. No credit is given toward the major.

**1G. Special Reading Course. (No credit)** Class meets three hours weekly. Mainly designed for graduate students in other areas. The Staff

**2G. Special Reading Course. (No credit)** Class meets three hours weekly. Mainly designed for graduate students in other areas. The Staff

**42A-42B-42C. Italian Civilizations of Italy Through the Ages.** A general survey of the history, literature, art, music and architecture audio-visually illustrated with emphasis on Italy's cultural contributions to Western Civilization. A service course designed to meet the breadth requirements.

42A. From the origins through the Middle Ages.

42B. From Renaissance to the Enlightenment.

42C. Modern Italy.

**46A-46B-46C. Literary and Socio-Political Trends in Italian Cinema (In English).** Lecture, two hours; discussion, two hours. The influence of Italian literature, socio-political thought, and aesthetics on the development and evolution, thematic emphases, and treatment of specific directors and genres of Italian cinema after World War II. 46C is intended as a general (and introductory) survey, while 46B and 46A focus on a particular emphasis — director or genre. Designed for students with majors other than Italian. Mrs. Cottino—Jones in charge

**50A-50B. Main Trends in Italian Literature.**

50A. Italian Literature to the Baroque Period. A study of selected works of the major writers of the period, including Dante, Petrarca, Boccaccio, Ariosto, Machiavelli, Castiglione, Tasso, Bruno, Galileo, Marino.

50B. Italian Literature from 1700 to the Present. A study of selected works by the major writers of the period, including Vico, Parini, Alfieri, Foscolo, Leopardi, Manzoni, Verga, Pirandello, Svevo, Moravia, Ungaretti, Montale.

**105. Tradition and Innovation in Italian Culture.** Italy's basic social structures and cultural institutions are delineated through their historical development and as they are manifest in the stresses to which the industrializing state currently is subject. Mr. Tuttle

**110A-110B. The Divine Comedy of English.** Class meets three hours weekly. The Staff

**M140. From Boccaccio to Basile (in English).** (Same as Folklore M140.) Class meets three hours weekly. A study of the origins and the development of the Italian novella in its themes, in its structure, in its historical context, and in its European ramifications. The course is designed for students in other departments who wish to become acquainted with either the premises or the growth of similar literary genres. It is also intended for students majoring in Folklore and Mythology, who will be given an insight into Italian popular tales when these (as in the case of Boccaccio) were translated into highly sophisticated literary forms, as well as when (as in the case of Basile) they become embedded into the folk tradition of the Western world. Mrs. Cottino—Jones

**150. Modern Italian Fiction in Translation.** Class meets three hours weekly. The Staff

**M158. Women in Italy.** (Same as Women's Studies M158.) This course is designed with the intent of examining the role that women have played in Italian society. It will concentrate alternatively on the world of the Medieval and Renaissance "Matriarch" and on the "liberated" women of our times. Historical and political documents and also social and religious taboos will be presented and discussed together with other data derived from literature and art. Mrs. Cottino—Jones

### Graduate Courses

**201. Bibliography and Methods of Research.** Class meets three hours weekly. Mrs. Cottino—Jones

**205A-205B. Methods of Literary Criticism.** Classes meet three hours weekly.

205A. Brief History of Literary Criticism.

205B. Discussion of Modern Critical Approaches. Mrs. Cottino—Jones

**210A-210B-210C. Early Italian Literature.** Classes meet three hours weekly.

210A. The Origins of Italian Language and Early Texts. Mr. Tuttle

210B. The *Scuola Siciliana* and Early Poetry in Central and Northern Italy. Mr. Tuttle

210C. The *Dolce stil novo*. Ms. Masciandaro

**214A-214G. Italian Literature of the Fourteenth Century.** Classes meet three hours weekly.

214A. Dante's *Vita Nuova* and *Rime*. Mr. Chiappelli

214B. *Convivio* and *De Vulgari Eloquentia*. Mr. Masciandaro

214C. The *Commedia* and the *Monarchia*. Mr. Chiappelli

214D. Petrarca. Mr. Chiappelli

214E. The *Decameron*. Mrs. Cottino—Jones

214F. Boccaccio's Other Works. Mrs. Cottino—Jones

214G. Sacchetti and Other Prose Writers. Mrs. Cottino—Jones

**215A-215B-215C. Italian Literature of the Fifteenth Century.** Classes meet three hours weekly.

215A. Fiction and Other Prose Texts. Mr. Chiappelli

215B. Writings of the Humanists. Mr. Masciandaro

215C. The Age of Lorenzo de'Medici and Poliziano. Mr. Betti

**216A-216E. Italian Literature of the Sixteenth Century.** Classes meet three hours weekly.

216A. Machiavelli. Mr. Chiappelli

216B. Ariosto. Mr. Masciandaro

216C. Bembo, Folengo, Aretino, and the Theatre. Mrs. Cottino—Jones

216D. Prose (Castiglione, Della Casa, Guicciardini, Cellini). Mrs. Cottino—Jones

216E. Tasso. Mr. Chiappelli

**217A-217B-217C. Italian Literature of the Seventeenth Century.** Classes meet three hours weekly.

217A. Bruno, Campanella, Galilei, Magalotti. Mrs. Cottino—Jones

217B. *Commedia dell'arte* and the Theatre. Mrs. Cottino—Jones

217C. Marino and Marinisti. Mrs. Cottino—Jones

**218A-218E. Italian Literature of the Eighteenth Century.** Classes meet three hours weekly.

218A. The Prose from Vico to Cesarotti. Mr. Betti

218B. Essayists and Autobiographical Writers. Mr. Betti

218C. The Theater, Especially Metastasio, Goldoni, C. Gozzi. Mr. Pasinetti

218D. Parini and the Poets of Arcadia. Mr. Pasinetti

218E. Alfieri. Mr. Betti

**219A-219F. Italian Literature of the Nineteenth Century.** Classes meet three hours weekly.

219A. Foscolo. Mr. Chiappelli

219B. Leopardi. Mr. Cecchetti

219C. Manzoni. Mr. Pasinetti

219D. Trends in Fiction before Verga. Mr. Betti

219E. Verga. Mr. Cecchetti

219F. Italian Literature at the Turn of the Century. Mr. Pasinetti

**220A-220B-220C. The Italian Literature of the Twentieth Century.** Classes meet three hours weekly.

220A. From D'Annunzio to Futurism and the Early Twenties. Mr. Cecchetti

220B. Contemporary Italian Poetry. Mr. Cecchetti

220C. Contemporary Italian Fiction. Mr. Pasinetti

**M230A-230B. Folk Tradition in Italian Literature.** (Same as Folklore M230A-230B.) Course meets two hours weekly. The Staff

**Seminars**

**250A-250D. Seminar on Dante.** Course meets three hours weekly. Mr. Chiappelli, Mr. Masciandaro

**251. Seminar on Petrarch.** Course meets three hours weekly. Mr. Chiappelli

**252. Seminar on Boccaccio.** Course meets three hours weekly. Mrs. Cottino—Jones

**253A-253B-253C. Seminar on Chivalric Poetry in Italy.** Course meets three hours weekly. The relationship between the genre and its French medieval sources, with a study of its evolution in Italy, through Pulci, Boiardo, Ariosto, and Tasso. Mrs. Cottino—Jones

**254. Seminar on Machiavelli.** Course meets three hours weekly. Mr. Chiappelli

**255A-255B. Seminar on the Baroque.** Course meets three hours weekly. Mrs. Cottino—Jones

**256A-256B. Seminar on the Eighteenth Century.** Course meets three hours weekly. Mr. Pasinetti

**257A-257B. Seminar on Romanticism.** Course meets three hours weekly. Mr. Pasinetti

**258A-258B. Seminar on Contemporary Italian Literature.** Course meets three hours weekly. Mr. Cecchetti

**259A-259B-259C. Studies in the History of Italian Language.**

259A. History of the Italian Language. Prerequisite: graduate status. A historical survey of the development of the language from Medieval times to the unification of the country (1861). *Questione della lingua*, general acceptance of Florentine speech, and its evolution into the national language. Mr. Tuttle

259B. The structure of Modern Italian. Prerequisite: graduate status. Various tendencies in modern and contemporary Italian. Foreign influences in today's Italian language. Relationship between the national language and the various dialects. Mr. Tuttle

259C. Italian Dialectology. The historical differentiation of the Italian dialects will be considered in its areal dimension. Specific geolinguistic problems and solutions will illustrate the growth of the discipline up to its present merging with sociolinguistics as Italian dialects become more vertically defined. Mr. Tuttle

**370. Problems and Methods in the Teaching of Italian.** Course meets two hours weekly. Mrs. Cheeseman

### Individual Study and Research

**495. Techniques in Teaching Literature at the College and University Level.** Prerequisite: consent of instructor. Open to all graduate students at the post-M.A. level. Especially recommended for teaching assistants. Students collaborate with instructors in the study of problems and methodologies associated with instruction in the departmental subject field. May be repeated once for credit. The Staff

**596. Directed Individual Studies. (1 to 2 courses)** The Staff

**597. Preparation for Comprehensive Examinations. (1 to 2 courses)** The Staff

**599. Doctoral Research and Writing. (1 to 2 courses)** The Staff

## JOURNALISM

(Department Office, 371 Kinsey)

Walter Wilcox, Ph.D., *Professor of Journalism*  
Joseph A. Brandt, M.A. (Oxon.), B.Litt. (Oxon.) LL.D., *Emeritus Professor of Journalism*  
William W. Johnson, M.A., *Emeritus Professor of Journalism*

Digby Diehl, M.A., *Lecturer in Journalism*  
James H. Howard, M.A., *Lecturer in Journalism (Chairman of the Department)*

John Fleischman, B.A., *Lecturer in Journalism*  
Jerome Jacobs, B.Litt., *Lecturer in Journalism*  
Marshall Lumsden, B.S., *Lecturer in Journalism*  
David Noyes, *Lecturer in Journalism*  
Laurence J. Pett, B.A., *Lecturer in Journalism*

### Undergraduate Courses

The Department offers undergraduate courses, primarily upper division courses.

**2. Fundamentals of Journalism.** Lectures, field trips, and workshops. Survey of journalism principles and techniques.

**101A. Reporting.** Fundamentals of the news communication process.

**101B. Photojournalism.** Basic graphic arts illustration, and photojournalism for the mass media.

**112. The History of American Journalism.** History of the news media and their ancillary agencies with special attention to the news and information function. Course emphasizes historical context, including the main forces in development of the free press and social responsibility concepts.

**180. Radio and Television News.** Lecture, two hours; laboratory, three hours. Prerequisite: course 2 or equivalent. Fundamentals of broadcast news; FCC regulations; network, station, and news agency problems and policies. Laboratory: exercises and experiments in preparing the newscast, with emphasis on television.

**181. Reporting of Public Affairs.** Prerequisite: course 2 or equivalent. Reporting governmental functions with emphasis upon judicial, legislative and administrative procedures at the city and county level.

**182A. Magazine Writing.** Analysis of the general magazine. Writing non-fiction articles; research, style and structure.

**182B. Magazine Writing.** Continuation of course 182A. Prerequisite: course 182A or equivalent and consent of the instructor.

**190. The Foreign Press.** Analysis of the four theories of the press; study of the flow of international news; analysis of the foreign media including problems of propaganda, government control, language and economic support.

**192. The Media of Mass Communications.** Institutional analysis of the mass media with emphasis upon the press and broadcasting in the mass communications process; interaction with other institutions; critical evaluation.

**193. The Press, the Law and the Constitution.** Legal sanctions and constitutional freedoms affecting the printed and broadcast media.

**195. The Critical Function of the Press.** Analysis and evaluation of the press in its role as critic of the popular arts, including television, books and motion pictures. Special lectures by professional critics.

**199. Individual Studies.** (¼ to 1 course) Prerequisite: upper division status and consent of instructor. Individual study for upper division students wishing to do research on the performance of the news media and their relation to society. This course will permit upper division students to do research on the operation and/or influence of the mass media in areas of special interest. These areas may be coordinated with a student's major field or with various special community projects of the University. Students will be expected to develop their own study plan, execute either primary data collection or perform secondary analysis of existing data, and produce a study report. The Staff

*Required courses outside the Department:* Biology 4B, Chemistry 11A, Physics 3A and one introductory course in statistics. One introductory course from two of the following departments: Anthropology, Philosophy, Psychology and Sociology. In addition to the above, students emphasizing Area I (see description below) must complete two years of chemistry (Chemistry 11A-11B-11BL-11C-11CL, 21, 23, 25) and two quarters of calculus (Math 3A, B). Area II students are highly encouraged to take Chemistry 15.

A grade of C or better will be required in each preparation course in the Department. A grade of C or better or a nonletter grade of pass will be required in each preparation course outside the Department.

#### Requirements of the Major

*Required courses in the Department:* 110, 111, 130, 131, 150, 151.

*Upper Division Electives:* A total of nine electives (36 units) are required. Six courses (24 units) must be taken in Kinesiology with at least one course in each content area and no more than 4 courses in any one area: Area I — 115, 117, 118, 119; Area II — 132, 134A, 134B, 137, 139, 140, 145; Area III — 134C, 160, 165, 170A, 170B, 175, 178. Selection of area electives establishes the student's area of concentration within Kinesiology. Courses not assigned to an area (105, 106, 191, 199, 199H) may be selected, but 402 and 430 may not be used to satisfy the elective requirement for the major.

Two extra-departmental electives, related to student's area of concentration, are required. A list of approved courses is available in the Student Affairs Office, MG 206.

The ninth elective may be selected either from any upper division elective in the Department or from the approved extra-departmental list.

A "C" average must be maintained in all upper division courses taken in the department. If the student fails to attain these minimal standards, dismissal from the major will be recommended. All upper division courses required for the major (including extradepartmental requirements) must be taken for a letter grade.

Each major should consult the departmental counselor on a regular basis. Appointments can be made through the Student Affairs Office, MG 206.

#### Honors in Kinesiology

Honors in Kinesiology are intended to recognize superior academic achievement and to encourage undergraduate students with distinguished scholastic records to conduct independent research. Requirements for admission to candidacy are the same as those required for admission to the Honors Program in the College of Letters and Science. *Honors in Kinesiology* are awarded at graduation to honor students who have achieved 3.5 or better in upper division Kinesiology courses, at least 9 of which must be completed at UCLA. *Highest Honors in Kinesiology* are awarded at graduation to honor students who have satisfactorily completed an honors research project (199H) and who have achieved at least 3.7 in upper division Kinesiology courses. Inquiries concerning Honors in Kinesiology should be directed to the Student Affairs Office, MG 206.

#### Departmental Scholar Program

Under the Departmental Scholar Program, honor students in Kinesiology (juniors and seniors) are permitted to pursue bachelor's and master's degree programs simultaneously. The Departmental Scholar must be provisionally admitted to the Graduate Division, and no course can be used to fulfill requirements for both degrees. Although the two degrees can be awarded simultaneously, it is not a requisite of the program and the master's degree can be completed after the bachelor's degree has been awarded. Inquiries concerning the Departmental Scholar Program should be directed to the Student Affairs Office MG 206.

#### Admission to Graduate Status

Students seeking admission to graduate status in the Department of Kinesiology will be expected to meet the general requirements of the Graduate Division for admission, as described under "In Graduate Status". Questions should be directed to the Chairperson, Graduate Affairs Committee, Men's Gym 206.

#### Requirements for the Master's Degree

The degree of Master of Science is awarded in Kinesiology. Study under the Thesis Plan or the Comprehensive Examination Plan (see Index) is available.

The Master of Science degree program comprises an integrated course of study primarily in the theoretical foundations of kinesiology. The program is an interdisciplinary one with emphasis upon research and general principles. It is designed to provide the student with the intellectual orientation necessary for scholarly studies, research and professional work in the human movement field.

Requirements are based on a minimum of nine courses taken for this degree, of which six must be 200 series. Five courses in the 200 series must be taken in the Department of Kinesiology. Three courses must be selected, with the approval of the major adviser, from one of the departments of Physiology, Psychology or Sociology. The MS program must include one course of either a second level statistics or computer engineering or research methods/design. Course requirements will be developed on an individual basis in conference with a faculty adviser.

#### Lower Division Courses

**12. Introduction to Human Physiology.** (1½ courses) Lecture, five hours; laboratory, three hours. Prerequisites: course 14, Biology 1A, Chemistry 11A. An introduction to human physiology. Mr. Roy

**13. Introduction to Human Anatomy.** (1½ courses) Lecture, five hours; laboratory, three hours. Prerequisites: Biology 1A or 2. A structural survey of the human body including the skeletomuscular, nervous, circulatory, respiratory, digestive, and genito-urinary systems. Laboratory includes examination of human cadaver specimens. Course is not intended for Kinesiology majors; combination of Kinesiology 13 and 14 will be equivalent to nine units. Ms. Rankin (Sp)

**14. Human Neuromuscular Anatomy.** (1½ course) Lecture, four hours; laboratory, four hours. Prerequisites: Biology 1A. A thorough study of the skeletal, articular, muscular, and nervous systems. Special emphasis is placed on relating these body structures to human movement capabilities. Laboratory includes examination of prosected human cadaver specimens. Ms. Rankin (F,W)

**16. Human Motor Performance.** Lecture, three hours; laboratory, two hours. Basic psycho-social concepts in the study of human movement. Mr. Keogh

#### Upper Division Courses

**105. Movement Taxonomy and Composition.** Lecture, three hours; laboratory, two hours. Prerequisite: course 14. Clarification and organization of movement concepts through the study of definition, classification, division and composition of human movement. Ms. Brown

**106. Theories of Kinesiology.** A study of ethical, logical and aesthetic valuing in human movement and human development with special consideration given to traditional and modern approaches. Ms. Brown

**Area I: Biochemical, morphological, and general physiological adaptations of man to exercise and environmental conditions**

**110. Exercise Physiology.** Prerequisites: courses 12, 14, Chemistry 11A, Biology 1A. Response of organs and systems to chronic and acute exercise. Mr. Edgerton, Mr. Gardner (F,Sp)

**111. Laboratory in Exercise Physiology.** (¼ course) Must be taken concurrently with course 110. Mr. Edgerton, Mr. Gardner (F,Sp)

**115. Aquatic Kinesiology.** Lecture, three hours; laboratory, two hours. Prerequisites: course 12 and 14 or consent of instructor. A study of man's adaptation to the aquatic environment. Mr. Egstrom

**117. Conditioning for Maximum Performance.** Prerequisites: courses 110, 111, 130, 131, or consent of instructor. Study of factors and conditions accelerating and retarding levels of performance and work under various physiological and environmental conditions. Mr. Egstrom, Mr. Gardner, Mr. Morehouse

**118. Cellular Dynamics of Exercise.** Prerequisites: Kinesiology 110, 111, Chemistry 11C, 11CL or 15 or consent of instructor. Cellular responses to acute and chronic exercise. Mr. Edgerton

**119. Laboratory Experimentation in Exercise Biology.** Prerequisites: courses 110, 111, 118, and consent of instructor. Assessment of biochemical properties of muscle and blood, histochemistry of muscle, physiological properties of muscular and cardiorespiratory systems during exercise. Mr. Edgerton, Mr. Roy

**Area II: Description of human movement and the neuromuscular and biomechanical determinants of motor performance**

**130. Biomechanics of Human Movement.** Prerequisites: courses 12 and 14; Physics 3A. Kinematic and kinetic principles underlying human movement focusing on the human neuromuscular and skeletal systems. Mr. Gregor, Mr. Zernicke (W)

**131. Laboratory in Biomechanics of Human Movement.** (¼ course) Must be taken concurrently with course 130. Mr. Gregor, Mr. Zernicke (W)

**132. Biomechanics of Musculoskeletal Injury.** Prerequisites: courses 130-131 or the equivalent and consent of instructor. Anatomical, physiological and mechanical characteristics of cartilaginous, fibrous, and bony tissues are examined in normal and abnormal stress situations. Connective tissue growth processes, normal physiology and repair mechanisms are analyzed in conjunction with musculoskeletal injuries and effects of exercise and physical activity. Mr. Zernicke

**134A. Electromyographic Assessment.** Lecture, three hours; laboratory, two hours. Prerequisites: courses 130, 131. Techniques of electromyographic analysis combining theoretical aspects with laboratory experiences. Mr. Gregor

**134B. Cinematographic Assessment.** Lecture, three hours; laboratory, two hours. Prerequisites: course 130, 131. High-speed motion picture films of human movement; techniques of data collection, analysis, and interpretation. Mr. Gregor, Mr. Zernicke

**134C. Performance Assessment.** Lecture, three hours; laboratory, two hours. Prerequisites: course 150, 151. Critical analysis of

## KINESIOLOGY

(Department Office and Student Affairs Office, 206 Men's Gymnasium)

Camille Brown, Ed.D., *Professor of Kinesiology.*  
 Bryant J. Cratty, Ed.D., *Professor of Kinesiology.*  
 W. Reggie Edgerton, Ph.D., *Professor of Kinesiology.*  
 Glen H. Egstrom, Ph.D., *Professor of Kinesiology.*  
 Gerald W. Gardner, Ph.D., *Professor of Kinesiology.*  
 Valerie V. Hunt, Ed.D., *Professor of Kinesiology.*  
 Jack F. Keogh, Ed.D., *Professor of Kinesiology.*  
 Norman P. Miller, Ed.D., *Professor of Kinesiology.*  
 Laurence E. Morehouse, Ph.D., *Professor of Kinesiology.*  
 Raymond A. Snyder, Ed.D., *Professor of Kinesiology.*  
 Rosalind Cassidy, Ed.D., *Emeritus Professor of Kinesiology.*  
 Donald T. Handy, Ed.D., *Emeritus Professor of Kinesiology.*  
 Wayne W. Massey, Ph.D., *Emeritus Professor of Kinesiology.*  
 Ben W. Miller, Ph.D., *Emeritus Professor of Kinesiology.*  
 Carl H. Young, Ed.D., *Emeritus Professor of Kinesiology.*  
 Serena E. Arnold, Ed.D., *Associate Professor of Kinesiology (Chairperson of the Department).*

Marjorie E. Latchaw, Ph.D., *Associate Professor of Kinesiology.*

R. James Barnard, Ph.D., *Associate Professor of Kinesiology.*

<sup>1</sup>Judith L. Smith, Ph.D., *Associate Professor of Kinesiology (Vice Chairperson of the Department).*

Robert J. Gregor, Ph.D., *Assistant Professor of Kinesiology.*

Tara K. Scanlan, Ph.D., *Assistant Professor of Kinesiology.*

Ronald F. Zernicke, Ph.D., *Assistant Professor of Kinesiology.*

Lucinda L. Rankin, *Lecturer in Kinesiology.*

Roland Roy, Ph.D., *Adjunct Assistant Professor of Kinesiology.*

Diane Shapiro, Ph.D., *Acting Assistant Professor of Kinesiology.*

Orsie M. Thomson, M.A., *Emeritus Supervisor of Kinesiology.*

#### Bachelor's Degree in Kinesiology.

Kinesiology is the study of the biochemical, morphological and general physiological responses of the human to exercise and environmental conditions; the description of movement and the neuromuscular and biomechanical determinants of motor performance; and the development, acquisition and modification of motor performance. The purpose of this study is intended to develop and integrate principles and concepts of human movement (Kinesiology).

Students intending to major in Kinesiology must confer with the departmental counselor before enrollment in classes. Advising appointments can be made in the Student Affairs Office, MG 206.

The Department is implementing admission screening procedures. Admission may be limited in relation to the number of students currently enrolled. Qualification for admission will depend upon courses and units completed. Questions regarding the screening procedures should be directed to the Student Affairs Office, MG 206.

#### Preparation for the Major

*Required courses in the Department:* 12, 14, 16.



theoretical and practical aspects of assessment techniques as well as individual and group evaluation procedures. The Staff

**137. Therapeutic Exercise.** Prerequisite: courses 110, 111, 130, 131. The role of exercise in the improvement of movement in physically handicapped individuals. Care and prevention of athletic injuries. Mr. Gardner, Mr. Morehouse

**139. Dissection Anatomy.** Lecture, two hours; laboratory, six hours. Prerequisites: courses 14, 130-131, and consent of the instructor. Study and dissection of upper and lower extremities of human cadavers; dissection of thorax and abdomen limited to musculature and neurovascular supply; students will be demonstration prosectors for course 14. Ms. Rankin, Ms. Smith

**140. Mechanisms of Neuromuscular Control.** Lecture, three hours; laboratory, two hours. Prerequisites: courses 12, 14, and Psychology 15 or 115. Neuromuscular mechanisms for the control of somatic muscles are covered in detail including skeletomotor and fusimotor systems and proprioceptive feedback necessary for motor control. Laboratory emphasizes neuroanatomy. Ms. Smith

**145. Analysis of Expressive Movement.** Interpretation of the expressive aspects of human movement. Ms. Y. Hunt

#### Area III: Development, acquisition and modification of human motor performance

**150. Motor Performance and Skill Acquisition.** Prerequisites: course 16 and an introductory course in statistics. An examination of motor performance and motor learning and the influence of selected psychological variables upon human movement. Ms. Shapiro

**151. Laboratory in Motor Performance and Skill Acquisition.** (¼ course) Must be taken concurrently with course 150. Ms. Shapiro

**160. Human Movement Development.** Prerequisite: course 16. Movement development throughout life with emphasis upon individual and societal determinants. Mr. Keogh

**165. Perceptual Motor Education.** Prerequisites: courses 150, 151, and 160 recommended. Movement problems of the minimally-neurologically handicapped with emphasis on the clumsy child syndrome. Mr. Cratty

**170A-170B. Theoretical Aspects of Play, Leisure and Recreation.** A consideration of the historical development, philosophical concepts and social forces influencing leisure and recreation in American life. Ms. Arnold

**175. Sports in American Life.** The national and international roles and interrelationships of American sports emphasizing socio-cultural values, changing patterns, current trends, problems and issues. Mr. Snyder

**178. Group Dynamics in Sport.** Lecture, three hours; laboratory, two hours. Prerequisites: 150-151 or consent of instructor. Examination of group dynamics in sport. Topics include: group productivity, group structure, leadership, motivational factors, cohesion, conflict. Ms. Scanlan

#### Other Courses

**191A-191B-191C. Proseminars in Kinesiology.** Prerequisites: upper division standing and consent of the instructor. Seminars may be taken in any order; only one seminar (four units) may be counted as a Departmental elective. Enrollment is limited to 15 students. Seminars A, B and C are related to topics in Core Areas I, II and III, respectively. The Staff

**199. Special Studies in Kinesiology.** (½ or 1 course) Prerequisites: Last quarter junior or senior major in Kinesiology with an overall 3.0 GPA, and consent of the instructor and chairperson of the Department. A course application (available in WG 124) signed by the instructor shall be submitted to the chairperson on or before the first day of class. The course will be identified by a two-letter code using the initials of the sponsoring instructor (see Department for code). The number of units of 199 or 199H that an individual student may take toward an undergraduate degree is limited to 4 units toward the major and an additional 4 units toward the University graduation requirements, for a total of 8 units. Honor students may substitute 199H for the 199, but in no case can they exceed 4 units total of either 199 or 199H or any combination thereof to be applied toward the major. The Staff

**199H. Special Studies—Honors.** (½ or 1 course) Prerequisites: senior major in Kinesiology, achievement of College Honors status, at least a 3.5 GPA for the upper division required courses and two upper division electives in Kinesiology, and consent of instructor and chairperson of the Department. A course application (available in WG 124) signed by the instructor shall be submitted to the chairperson on or before the first day of class. The course will be identified by a two-letter code using the initials of the sponsoring instructor (see Department for code). The number of units of 199 or 199H that an individual student may take toward an undergraduate degree is limited to 4 units toward the major and an additional 4 units toward the University graduation requirements, for a total of 8 units. No student may exceed 4 units total of either 199 or 199H or any combination thereof to be applied toward the Kinesiology major. The Staff

#### Graduate Courses

**205. Human Movement Theory.** Significant theoretical formulations of the body of knowledge of human movement. Ms. Brown

#### 210A-210B-210C. Exercise Physiology.

**210A. Cardiovascular and Respiratory Factors.** Prerequisite: course 118. Topics include coronary blood flow, cardiac contractile properties, blood flow distribution, blood pressure, vasoregulation ventilatory mechanics, and O<sub>2</sub> and CO<sub>2</sub> absorption and transport in exercise and training and in some diseased conditions. Mr. Barnard, Mr. Gardner

**210B. Neuromuscular and Metabolic Factors.** Prerequisite: course 118. Fundamental aspects of skeletal muscle contraction and metabolic demands under various exercise and training conditions, including neural and endocrine mechanisms potentially involved in inducing specific training effects on skeletal muscle, liver, kidney, gastrointestinal tract and brain. Mr. Edgerton

**210C. Environmental Factors.** Prerequisite: course 118. Environmental pressures of high altitude and underwater diving as well as temperature factors as they affect work performance; adaptation to unusual environments. Mr. Egstrom

**211. Advanced Exercise Cardiovascular Physiology.** Lecture, two hours; laboratory, three hours. Prerequisites: course 210A and Physiology 101. Attention is focused on cardiovascular adaptations to acute exercise as well as adaptations associated with regular exercise training. Mr. Barnard

**221. Underwater Kinesiology.** Prerequisites: courses 110 and 130 or consent of instructor. Biomechanical, physiological, methodological and behavioral limitations to underwater activities. Mr. Egstrom

**230A. Muscle Dynamics.** Prerequisites: courses 130, 131; 134A recommended. Integrated study of electrical and dynamic parameters of muscle-action to include topics in length-tension and force-velocity interrelationships; critical analysis of electromyographic and digital computer techniques. Mr. Gregor, Mr. Zernicke

**230B. Musculoskeletal Mechanics.** Prerequisites: courses 130, 131, Mathematics 3A, 3B. Mechanical parameters of the moving human musculoskeletal system including the use of cinematographic, force platform and digital computer techniques; topics include physical properties of bone and fibrous connective tissues, biostatics, biodynamics, and empirical data modeling. Mr. Gregor, Mr. Zernicke

**237. Advanced Kinesiotherapy.** Prerequisite: course 137 or consent of instructor. Selected studies in therapeutic exercises. Mr. Morehouse

**240. Neural Systems for Motor Control.** Prerequisites: course 140 and Psychology 115 (or equivalent). Proprioception, the skeletomotor and fusimotor systems and their control by spinal reflexes and supraspinal centers including the cerebellum, basal ganglia and cerebral cortices. Ms. Smith

**250. Motor Learning.** Analysis of selected variables which influence the learning of skills. Ms. Shapiro

**255. Social Processes and Motor Behavior.** Prerequisite: course 178 or consent of the instructor. Influence of social psychological processes on motor behavior with particular attention to the influences of situational variables in the social environment, intra-personal intervening variables, and the interaction between these external and internal factors on motor behavior. Ms. Scanlan

**256. Movement Behavior.** Qualitative nature of movement style approached from perceptual and emotional organization, and body image, time, space and weight concepts. Ms. Hunt

**260. Motor Development.** Prerequisite: course 160. Critical analysis of behavioral approaches in the formulation of motor development theory. Mr. Keogh

**262. Movement Disorders.** Prerequisite: 160 or 165 or consent of instructor. Current research in developmental and behavioral aspects of movement disorders. Topics include early identification and intervention, perceptual and cognitive relationships, and evaluation of movement training programs. Mr. Cratty, Mr. Keogh

**270. Social Correlates of Human Movement.** A critical analysis of the social relationships between sports, games, exercise and other forms of man's movement patterns and the cultural and social structures of the American society. Mr. Synder

**275. Social Bases of Leisure and Recreation.** A synthesis of basic concepts and processes underlying theories of leisure and recreation with implications for solution of fundamental problems. Ms. Arnold

**276. Play Theory.** A critical analysis of theoretical propositions explaining the phenomenon of play. Ms. Arnold

**280A-280L. Advanced Topics in Kinesiology.** The subject matter of these courses will be in a field of kinesiology in which the staff member giving the course has developed special proficiency owing to his research interest.

**280B. Human Energy Fields.** Ms. Hunt

**280E. Psychology and the Athlete.** Prerequisites: course 250 and consent of instructor. Mr. Cratty

**280H. Physical Working Capacity.** Prerequisites: course 118 and consent of instructor. Mr. Gardner

**280J. Seminar in Exercise Biology.** Prerequisites: course 210A or the equivalent and consent of the instructor. Student analysis, presentation and discussion of topics dealing with biochemical and/or physiological aspects of acute and/or chronic exercise. Mr. Barnard, Mr. Edgerton, Mr. Gardner

**280K. Sport Competition and Psycho-Social Development.** Prerequisite: course 255 and consent of the instructor. Current approaches to the study of competition in sport as a social evaluation process. Psycho-social short-term and long-term developmental effects of sport competition on children. Ms. Scanlan

**280L. Metabolism of Skeletal Muscle.** Prerequisite: course 118 or consent of instructor. Muscle energetics and metabolism. The Staff

**285. Research in Human Movement.** Application of research designs to problems in human movement. The Staff

**294A-294B. Seminars in Neuromuscular Control.** Prerequisites: courses 140 and 118, and either 210B or 240. Selected topics on the muscular and neural determinants of movement behavior. Mr. Edgerton, Ms. Smith

#### Professional Courses

**\*1402. Administration of Physical Education.** Principles and policies applied to the unique organizational problems of physical education. Mr. Snyder

**430. Sports Medicine.** Prerequisites: course 130; 132 recommended. A survey of advances in athletic training; etiology and diagnostic techniques relative to rehabilitation and protection from injury in sport; professional and legal aspects of sports medicine. Mr. Gregor, Mr. Morehouse, Mr. Zernicke

#### Individual Study and Research

**501. Cooperative Program.** (½ to 2 courses) Prerequisites: approval of UCLA Graduate adviser and Graduate Dean. Approval of host campus instructor, Department Chairman and Graduate Dean. The course is used to record the enrollment of courses taken under cooperative arrangements with neighboring institutions. To be graded S/U.

**596A-596ZZ. Individual Studies for Graduate Students.** (½ to 2 courses) Prerequisites: course petition signed by the faculty sponsor, graduate adviser and Graduate Affairs Committee Chair shall be submitted prior to the second week of class. The course will be identified by a two-letter code using the initials of the faculty sponsor (see department for code). A total of 8 units may be taken for credit; only one course (4 units) will count toward the minimum graduate course requirement for the M.S. in Kinesiology. Offered on a letter graded basis only. The Staff

**597A-597ZZ. Preparation for Master's Comprehensive Examination.** (½ to 2 courses) To be arranged with the faculty member serving as the student's comprehensive examination chair. The course will be identified by a two-letter code using the faculty's initials (see department for code). Course 597 may not be used to fulfill any course requirement for the Master's degree. Graded on a S/U basis. The Staff

**598A-598ZZ. Research for the Preparation of the Master's Thesis.** (½ to 4 courses) Each member of the faculty supervises research of master's students and holds research group meetings, seminars, and discussions with students that take his master's research course which is identified by the same two-letter code used to identify the 596 course. Course 598 may not be used to fulfill any of the course requirements for the master's degree. Graded on a satisfactory/unsatisfactory basis. The Staff

## LATIN AMERICAN STUDIES (INTERDEPARTMENTAL)

(Office, 10347 Bunche Hall)

Shirley L. Arora, Ph.D., *Professor of Spanish*  
Charles F. Bennett, Ph.D., *Professor of Geography*  
C. Rainer Berger, Ph.D., *Professor of Anthropology*  
William O. Bright, Ph.D., *Professor of Linguistics and Anthropology*  
Henry J. Bruman, Ph.D., *Professor of Geography*  
E. Bradford Burns, Ph.D., *Professor of History*  
Robert N. Burr, Ph.D., *Professor of History*  
David K. Eiteman, Ph.D., *Professor of Finance*  
John Friedmann, Ph.D., *Professor of Planning*  
Edward Gonzalez, Ph.D., *Professor of Political Science*  
Claude L. Hulet, Ph.D., *Professor of Spanish and Portuguese*  
Derrick B. Jelliffe, M.D., D.T.M.&H., D.C.H., F.R.C.P., *Professor of Public Health and Professor of Pediatrics*  
Kenneth L. Karst, A.B., LL.B., *Professor of Law*  
James Lockhart, Ph.D., *Professor of History*  
Clement W. Meighan, Ph.D., *Professor of Anthropology*  
Henry B. Nicholson, Ph.D., *Professor of Anthropology*  
Carlos P. Otero, Ph.D., *Professor of Spanish and Romance Linguistics*  
Harvey S. Perloff, Ph.D., *Professor of Planning*  
Stanley L. Robe, Ph.D., *Professor of Spanish*  
Milton I. Roemer, M.D., M.P.H., *Professor of Public Health and Professor of Preventive and Social Medicine*

David Stea, Ph.D., *Professor of Architecture/Urban Design and Urban Planning.*

Robert M. Stevenson, Ph.D., *Professor of Music.*

Johannes Wilbert, Ph.D., *Professor of Anthropology.*

James W. Wilkie, Ph.D., *Professor of History.*

Telford H. Work, M.D., M.P.H., D.T.M.&H., *Professor of Infectious and Tropical Diseases, Professor of Microbiology and Immunology and Professor of Preventive and Social Medicine.*

Maurice Zeitlin, Ph.D., *Professor of Sociology.*

Ichak Adizes, Ph.D., *Associate Professor of Managerial Studies.*

John R. Dominguez, Ph.D., *Associate Professor of Business Economics.*

Christopher Donnan, Ph.D., *Associate Professor of Anthropology.*

Bruce H. Herrick, Ph.D., *Associate Professor of Economics.*

Allan Johnson, Ph.D., *Associate Professor of Anthropology.*

Thomas J. La Belle, Ph.D., *Associate Professor of Education.*

Gerardo Luzuriaga, Ph.D., *Associate Professor of Spanish.*

Alfred K. Neumann, M.D., M.P.H., *Associate Professor of Public Health in Residence.*

Susan Kaufman Purcell, Ph.D., *Associate Professor of Political Science.*

Richard M. Reeve, Ph.D., *Associate Professor of Spanish.*

Fadwa El Guindi, Ph.D., *Assistant Professor of Anthropology.*

John Hawkins, Ph.D., *Associate Professor of Education.*

Barclay M. Hudson, Ed.D., *Assistant Professor of Planning.*

Cecelia Klein, Ph.D., *Assistant Professor of Art.*

David E. Lopez, Ph.D., *Assistant Professor of Sociology.*

Alfred E. Osborne, Ph.D., *Assistant Professor of Management.*

David O'Shea, Ph.D., *Assistant Professor of Education and Sociology.*

Susan Plann, Ph.D., *Assistant Professor of Spanish and Portuguese.*

Susan Scrimshaw, Ph.D., *Assistant Professor of Public Health.*

A. John Skirius, *Assistant Professor of Spanish.*

Carlos Velez, Ph.D., *Assistant Professor of Anthropology.*

Rolando Armijo, M.A., M.P.H., *Professor of Epidemiology in Residence.*

Jose M. Cruz Salvadores, M.A., *Lecturer in Spanish.*

Eduardo Mayone Dias, Ph.D., *Lecturer in Spanish and Portuguese.*

Ludwig Lauerhass, Jr., Ph.D., *Lecturer in History.*

Emilio Pulido-Huizar, *Lecturer in Dance.*

George L. Voyt, J.D., *Lecturer in Spanish.*

The Latin American Studies program, coordinated through UCLA's NDEA Latin American Studies Center, offers the Bachelor of Arts and Master of Arts degrees. Special aspects include articulated programs with professional masters and doctoral degrees.

Committee in charge of Latin American Studies: Graduate, Susan Kaufman Purcell, Political Science (Chairperson); Bradford Burns, History; Richard M. Reeve, Spanish and Portuguese; Charlotte Crabtree, Education; Howard Freeman, Sociology; John Friedmann, Urban Planning; Bruce Herrick, Economics; Edward Gonzalez, Political Science; Susan Scrimshaw, Public Health. Undergraduate, Fadwa El Guindi, Anthropology (Chairman); Charles F. Bennett, Geography; William O. Bright, Linguistics; John A. Skirius, Spanish and Portuguese; Bruce H. Herrick, Economics; Carlos Velez, Anthropology; Cecelia Klein, Art.

### The Bachelor's Degree in Latin American Studies

Undergraduate studies of the Latin American region are designed to serve the needs of (1) students desiring a general education focused on the Latin American cultural region; (2) students planning to enter business, government or international agency service; (3) students preparing to teach social science or language; and (4) students preparing for advanced academic study of Latin America.

*Preparation for the Major:* History 8A-8B; Latin American Studies 99 and Spanish/Portuguese M44 or, if Major Core 2 (Economics) is chosen, Economics 1-2; Spanish 5 or Portuguese 3, which may be passed by examination whenever possible.

*Major Requirements:* Eighteen upper division courses distributed among Core, Concentration, and Elective requirements.

*Major Language Requirements:* Proficiency equivalent to (a) Spanish 25 and Portuguese 3 or (b) Portuguese 25 and Spanish 5. In lieu of Portuguese 1-3 students may take Portuguese 102A-102B which is designed for persons who have a background in Spanish.

*Major Core:* Twelve courses, with two in six of the seven following areas:

1. Anthropology 105A or 105B or 105C, 123C or 123D or 123E. †
2. Economics 110, 111, 112, or Special Courses. †
3. Fine Arts: Art 117A, 117B, 117C, 118B, Dance 146, Music 131A, Music 131B, Music 157, Theater Arts 106C, or Special Courses.
4. Geography 121, 181, 182A, 182B, or Special Courses. †
5. History 162A, 162B, 162C, 163A, 163B, 163C, 164, 166, 168A-168B, 169, 197, 198A, or Special Courses. †
6. Political Science 131, 163A, 163B, or Special Courses. †
7. Spanish American or Brazilian Literature, two course in one language chosen from Spanish 121A, 121B, 137, 139, 141, 142A, 142B and Special Courses, or Portuguese 121A, 121B, 127, 129, 135, 137, and Special Courses. †

†Special courses such as 197, 198, 199, 596, 597, 598 and any courses which occasionally have Latin American content (for example, Political Science 139, Management 297A, etc.) may be counted toward the degree by petition in which the student agrees to write a paper on a Latin American topic. In regard to these petitions, students are encouraged especially to relate theoretical or methodological courses in the various disciplines to the study of Latin America.

*Major Concentration:* Three additional courses in one of the above core disciplines, chosen from the List of Approved Latin American Courses.

*Major Electives:* Three additional courses chosen from the List of Approved Latin American Courses or from the general theory and method courses in the various disciplines.

*Course Limitations:* No student may take more than 8 units of 199† for letter grade credit nor more than 8 units in any single term. No courses taken on a Pass/Fail basis can be counted toward the major. In order to register in a 199 course, a student must have advanced junior standing and an overall GPA of 3.0, or senior standing.

*Graduate Courses:* Advanced undergraduates may enroll in graduate courses, with the professor's approval.

*Double Majors:* Through judicious use of electives, students may find it possible to secure the B.A. degree with two majors, e.g., Latin American Studies and history. Interested students who have achieved junior class standing should consult the undergraduate advisers of both departments involved, initiating the appropriate petition with the undergraduate adviser in Latin American Studies.

*Study in Latin America:* Students are encouraged to spend up to one year in Latin America either (a) to study with an education abroad program; (b) to study in Latin American universities; or (c) to conduct research; or (d) complete an Internship in an international or development agency. Full credit will be granted according to the individual programs arranged in consultation with the undergraduate adviser. Proposals must be presented in writing to the Interdepartmental Committee.

*Departmental Scholar Program:* Exceptionally promising undergraduate students may be nominated as Departmental Scholars to pursue bachelor's and master's degree programs simultaneously.

### The Master's Degree in Latin American Studies

*General Requirements:* See Master's Degrees.

*Preparation:* The B.A. degree in Latin American Studies or the equivalent constitutes the normal basis for admission. Applicants with Latin American Field experience or special methodological studies will be given special consideration. For admission to graduate status, the Latin American Studies program requires three letters of recommendation and a curriculum vitae.

The program requires Graduate Record Examinations. Information and applications for the Graduate Record Examination may be obtained by writing to the Educational Testing Service, 1947 Center Street, Berkeley, California 94704 or, for applicants east of the Rocky Mountain states, the Educational Testing Service, Box 955, Princeton, New Jersey, 08540.

Students may be admitted with subject deficiencies, but such deficiencies will have to be made up by taking courses in addition to requirements for an advanced degree program.

*Plans:* The comprehensive examination plan is followed, but in exceptional cases a student may petition to write a thesis. Both plans are designed to facilitate admission to Ph.D. programs.

*Comprehensive Examination Plan:* A minimum of nine courses is required, among three disciplines either on a 4-3-2 or 3-3-3 basis (including five graduate courses, with at least one falling in each discipline). Students prepare for the examination by developing a graduate research paper in consultation with a professor in two of the three disciplines, one professor of whom shall be the chairman under whose direction the paper is prepared, preferably in a seminar, topics course, or certain Special Courses.† These two professors form the examining committee charged with testing the candidate's ability to relate knowledge across disciplinary boundaries; a professor representing the third discipline will attend the examination mainly in the capacity of observer. In determining the result of the examination the three professors will take into consideration the candidates (a) research paper; and (b) oral defense of the investigation and its implications; as well as (c) the rationale and record of course work for the M.A. For more complete information (including discussion of the M.A. honors program) consult a copy of the "Guidelines for the Comprehensive Examination," available at the Latin American Studies Office.

*Thesis Plan:* A minimum of ten courses is required as follows:

- (a) Four courses (including three graduate courses) in one discipline, which constitutes the area of core concentration;
- (b) three courses each in two minor disciplines (including one graduate course in each field). An interdisciplinary thesis is written under the direction of a faculty member in the core area, with approval also required by one professor in each minor field. For more information consult the "M.A. Thesis Plan Guidelines," available at the Latin American Studies Office.

*Articulated Degree Programs:* The graduate program in Latin American Studies offers several articulated degree programs wherein a student may earn the M.A. in Latin American Studies and a professional degree in (1) Public Health, (2) Library Science, (3) Management. Admission to the professional degree program is not automatic. Students complete the M.A. in Latin American Studies by selecting a professional field as one of their three areas of specialization. Upon acceptance to the professional degree program, students with an M.A. in Latin American Studies will have partially fulfilled the requirements for the professional degree. Additional information on the articulated degree programs is available from the Latin American Studies Office.

*Modular Programs:* Modular programs exist in which a student may pursue graduate studies in environment, society, and culture.

Specifically, by concentrating on environment, the student develops a training and research focus dealing with problems of ecology. Three modular programs now exist: Human ecology, ecological conservation, and societal strategies for survival and adaptation.

Concentration on society centers on problems of population, its vital statistics, migration and other aspects of population dynamics.

The third curricular and research orientation is provided by problems of culture, with modular problems in humanistic culture and anthropological culture.

The graduate advisor has the specific requirements for these modular programs.

*Professional Fields:* In addition to the articulated degree programs, graduate students in Latin American Studies may choose, as one of their three areas of specialization, courses in education, urban planning, and law as well as in those professions with which articulated degrees are possible.

*Field Requirements:* At least one of the required three disciplines must fall in the social sciences (Anthropology, Economics, Geography, History, Political Science or Sociology).

*Language Requirements:* Proficiency equivalent to Spanish 25 and Portuguese 3 or Portuguese 25 and Spanish 5. In lieu of Portuguese 1-3 students may take Portuguese 102A-102B which is designed for persons with a background in Spanish. Because these courses do not count toward the M.A. degree, students are encouraged to pass these proficiency levels by examination. In certain cases a major Indian language may be substituted for either Spanish or Portuguese. All of these courses must be taken for letter grade, except lower division language courses.

*Course Limitations:* (1) Students may include only two independent graduate study courses (596, 597, 598)† in their program. (2) Selection of courses is dictated by the Center's List of Approved Latin American Courses, except that the following are not applicable: language courses (in contrast to linguistic and literature courses), and Special Courses, except by petition.† (3) Courses numbered in the 300-400 level series are not applicable to the minimum requirements for the M.A. degree. Graduate courses usually may be repeated for credit, except graduate lecture courses.

†Special courses such as 197, 198, 199, 501, 596, 597, 598 and any courses which occasionally have Latin American content (for example, Political Science 139, Management 297A, etc.) may be counted toward the degree by petition in which the student agrees to write a paper on a Latin American topic. In regard to these petitions, students are encouraged especially to relate theoretical or methodological courses in the various disciplines to the study of Latin America.

*Standards of Scholarship:* Students in the M.A. in Latin American Studies program whose grade point average falls below 3.0 must bring the average up to 3.0 within one quarter or be dismissed.

Students whose aim is to enter a doctoral program following award of the M.A. in Latin American Studies are advised that most departments will consider only those applicants whose grade point average exceeds 3.5.

*Time Limitation on Enrollment:* All work for the M.A. degree must be completed in seven consecutive quarters (excluding summer sessions), as long as normal progress is being made toward completion of the degree. Students are expected to integrate thesis and examination studies into seminar, topic, and independent study courses. Students must be formally enrolled each quarter as they proceed to the M.A. degree in Latin American Studies, regardless of whether or not they have finished their course work. Only two exceptions are permitted: (1) Students who have completed all of their studies except their examination or thesis by the end of a Spring quarter are obligated to pay only a filing fee for completion of their degree provided that they complete their work before the beginning of a Fall quarter. (2) Students who are not using faculty time, the University libraries, or other University facilities must request a formal leave of absence.

*Certificate of Resident Study for Foreign Students:* This certificate may be issued to foreign students who do not seek the M.A. degree but (a) complete at least nine courses in full-time resident study with a grade-point average of at least 3.0; (b) conduct satisfactorily a program of organized studies; (c) have a student visa requiring return to their home country upon completion of study in the United States.

## INTERDISCIPLINARY COURSES

**99. Introduction to Latin American Problems.** An interdisciplinary seminar for lower division students; enrollment limited to 15 students. Since this course is not a general survey and its content varies with each section, students will be permitted to repeat it for credit.

The Staff

**199. Special Studies in Latin American Studies. (1 or 2 courses)** Prerequisite: upper division standing. An intensive directed research program in which students conduct interdisciplinary research or complete an Internship with an international agency

or program dealing with Latin America. Faculty sponsorship and written reports are required.  
The Staff

**M200. Latin American Research Resources.** (Same as History M231.) The course will acquaint students with general and specialized materials in fields concerned with Latin American Studies. Library research techniques will provide the experience and competency required for future bibliographic and research sophistication as the basis for enhanced research results.  
Mr. Lauerhass

**201. Statistical Resources for Latin American Research.** The course will acquaint students with the contemporary statistical materials important for research in Latin American Studies. Discussion will focus on the qualitative and interpretative aspects of the material especially as it relates to data developed for publication in the Latin American Center's *Statistical Abstract of Latin America and its Supplement Series*.  
The Staff

**M232. Disease Problems of Socio-Economic and Political Impact in Latin America.** (Same as Public Health M232.) Prerequisite: consent of the instructor. A graduate course for students with knowledge of the geography and social and political systems for the diverse nationalities which constitute Latin America. The focus will be on important disease problems in respect to their social, economic and political impact on Latin American countries with only a minimum of medical and technical details necessary to understand the nature of the disease as it afflicts individuals and populations.  
Mr. Work

**250A-250B. Interdisciplinary Seminar in Latin American Studies.** Problem-oriented on critical areas stressed in the University's cooperative programs in Latin America. Preparation of thesis and field study. This course is offered on an In Progress basis which requires students to complete the full two quarters sequence at the end of which time a grade is given for all quarters of work.  
Mr. Wilbert

**250C. Interdisciplinary Topics in Latin American Studies.** Prerequisite: permission of the instructor. A seminar devoted to selected topics of an interdisciplinary nature. Normally, a reading knowledge of the Spanish or Portuguese language is essential.  
The Staff

**Individual Study and Research**

**501. Cooperative Program.** (1/2 to 2 courses) Prerequisites: approval of UCLA Graduate Advisor and Graduate Dean. Approval of host campus Instructor, Department Chairman, and Graduate Dean. The course is used to record the enrollment of UCLA students in courses taken under cooperative arrangements with neighboring institutions. To be graded S/U.

**596. Directed Individual Study or Research.** Only one 4-unit course may apply toward the minimum course requirement for the master's degree.  
The Staff

**597. Preparation for the Comprehensive Examination for the Master's Degree.** This course is ordinarily taken only during the quarter in which the student is being examined. A grade of Satisfactory (S) or Unsatisfactory (U) will be assigned by the Committee on the basis of the student's performance.  
The Staff

**598. Research for and Preparation of the Master's Thesis.** A grade of Satisfactory (S) or Unsatisfactory (U) will be assigned by the professor supervising the master's thesis. Only one course may apply toward the minimum course requirement for the degree.  
The Staff

**LATIN AMERICAN SOCIAL SCIENCES COURSES**

\*Special courses which may be applied to B.A. and/or M.A. degree requirements by petition wherein the student agrees to write a paper on Latin America. In petitioning to count courses not listed here, students are encouraged to relate theoretical or methodological courses in the various disciplines to the study of Latin America.

**Anthropology** 105A. Peoples of South America.

105B. Peoples of Middle America.

105C. Latin American Societies.

119. Culture Stability and Culture Change.

\*122A. Comparative Society.

\*122C. Technology and Environment.

123C. Ancient Civilizations of Western Middle America (Nahuatl Sphere).

123D. Ancient Civilizations of Eastern Middle America (Maya Sphere).

123E. Ancient Civilizations of Andean South America.

\*153. Economic Anthropology.

\*160. Urban Anthropology.

\*161. Development Anthropology.

\*172. Methods and Techniques of Ethno-history.

\*174. Laboratory Methods in Technology and Inventions.

\*175E. Laboratory Analysis in Archaeology.

\*177A. Field Methods in Linguistic Anthropology; Practical Phonetics.

207. Indians of South America.

\*212. Anthropological Linguistics.

\*221. Social Movements and Social Crisis.

\*222A-222B. Research Methods and Procedures.

\*223. Ideology and Utopia in Anthropology.

\*252. Selected Topics in Higher Cultures of Nuclear America.

257. Indians of South America.

259A-259B. Contemporary Latin American Problems.

\*261. Selected Topics in Ethnology.

\*270. Selected Topics in Culture Change.

\*271. Urban Anthropology.

\*286. Selected Topics in Historical Reconstruction and Archaeology.

\*287. Selected Topics in Prehistoric Non-Agricultural Societies.

\*289. Selected Topics in Prehistoric Civilizations of the New World.

\*291. Analysis of Field Data.

\*293A. Selected Topics in Field Training in Ethnography.

\*M294A. Seminar in Ethnographic Film (same as Theater Arts M209C).

\*298. Research Colloquium.

Archaeology \*200. Archaeology Colloquium.

\*259. Field Work in Archaeology.

Economics 110. Economic Problems of Underdeveloped Countries.

111. Theories of Economic Growth and Development.

112. Policies for Economic Development.

\*190. International Economics.

\*191. International Trade Theory.

\*192. International Finance.

212. Economic Development of Underdeveloped Areas: Theory and Policy.

213. Selected Problems of Underdeveloped Areas.

\*291. International Trade Theory.

\*292. International Finance.

\*293. International Economics: Selected Topics.

Folklore M149. Folk Literature of the Hispanic World (same as Spanish M149).

\*201A-201B. Folklore Collecting and Field Research.

248. Theory and Method in Latin American Folklore Studies.

M249. Hispanic Folk Literature (same as Spanish M249 and Portuguese M249).

M286B. Studies in Hispanic Folk Literature: Narrative and Drama (same as Spanish M286B).

M286C. Studies in Hispanic Folk Literature: Ballad, Poetry, and Speech (same as Spanish M286C).

Geography 121. Conservation of Resources: Underdeveloped World.

181. Middle America.

182A. Spanish South America.

182B. Brazil.

History \*118A. Latin America: Reform and Revolution.

\*118B. Latin American Social History.

162A. Latin America in the 19th Century.

162B. Latin America in the 20th Century.

162C. Topics in Latin American Cultural History Since 1900.

163A-163B. The History of Brazil.

163C. Brazilian Intellectual History.

164. Latin American Elitology.

166. The Mexican Revolution since 1910.

168A-168B. Colonial Latin America.

169. Latin American International Relations Since Independence.

197. Undergraduate Colloquia: Latin America.

198Z. History of Argentina.

230I. Advanced Historiography: Latin America.

240I. Topics in History: Latin America.

266A-266B. Seminar in Latin American History: 19th and 20th Centuries.

266C-266D. Seminar in Brazilian History.

266E-266F. Seminar in Recent Latin American History.

266G-266H. Seminar in Colonial Latin American History.

Philosophy \*190. Third World Political Thought.

Political Science \*119A-119Z. Special Studies in Political Science.

131. Latin American International Relations.

\*139. Special Studies in International Relations.

\*146. Political Behavior Analysis.

\*149. Special Studies in Politics.

163A-163B. Government and Politics in Latin America.

\*167. Ideology and Development in World Politics.

\*169. Special Studies in Comparative Government.

\*183. Administration of International Agencies and Programs.

\*188A. Comparative Public Administration.

\*188B. Comparative Urban Government.

\*189. Special Studies in Public Administration.

\*191. Urban and Regional Planning and Development.

197B. Undergraduate Proseminar: Latin America.

\*218A. Public Administration and Local Government.

\*224A. Quantitative Applications.

\*M229. Urban Government (same as Architecture M217).

\*230. Comparative Development Administration.

\*235. Selected Topics in Comparative Politics.

250A. Seminar in Regional and Area Political Studies: Latin American Studies.

\*256A-256B. Seminar in Comparative Government.

Sociology \*123. Social Stratification.

\*126. Social Demography.

131. Latin American Societies.

\*235. Social Structure and Social Movements.

\*292A-292B-292C. Research Development.

**LANGUAGE COURSES**

\*Special courses which may be applied to B.A. and/or M.A. degree requirements by petition wherein the student agrees to write a paper on Latin America. In petitioning to count courses not listed here, students are encouraged to relate theoretical or methodological courses in the various disciplines to the study of Latin America.

**Spanish** \*11. Elementary Spanish.

\*11G. Reading Course for Graduate Students (no credit).

2. Elementary Spanish.

2G. Reading Course for Graduate Students (no credit).

3. Elementary Spanish.

4. Intermediate Spanish.

5. Intermediate Spanish.

25. Advanced Spanish.

M44. Civilization of Spanish America and Brazil (same as Portuguese M44).

100. Phonology and Pronunciation.

\*105. Intermediate Composition.

\*109. Advanced Composition.

**Portuguese** \*11. Elementary Portuguese.

2. Elementary Portuguese.

3. Intermediate Portuguese.

25. Advanced Portuguese.

M44. Civilization of Spanish America and Brazil (same as Spanish M44).

100. Phonology and Pronunciation.

\*101A. Advanced Reading and Conversation.

\*101B. Advanced Composition and Style

102A-102B. Intensive Portuguese.

**Indigenous Languages of Latin America** \*118A-118B-118C. Elementary Quechua.

**LINGUISTICS COURSES**

\*Special courses which may be applied to B.A. and/or M.A. degree requirements by petition wherein the student agrees to write a paper on Latin America. In petitioning to count courses not listed here, students are encouraged to relate theoretical or methodological courses in the various disciplines to the study of Latin America.

**Anthropology** 212. Anthropological Linguistics.

\*M276A. Linguistic Anthropology I.

Linguistics \*100. Introduction to Linguistics.

\*103. Introduction to General Phonetics.

120A. Linguistic Analysis: Phonology.

\*120B. Linguistic Analysis: Grammar.

\*165A. Linguistic Theory: Phonology.

- \*165B. Linguistic Theory: Grammar.  
\*210A. Field Methods I.  
\*210B. Field Methods II.  
220G. Aboriginal Latin America.  
225T. Linguistic Structures: Mayan.

**Spanish** \*103. Syntax.

- \*115. Applied Linguistics.  
\*M118. History of the Spanish and Portuguese Languages (same as Portuguese M118).  
\*M203A-203B. Development of the Spanish and Portuguese Languages (same as Portuguese M203A-203B).  
\*204A-204B. Transformational Grammar.  
\*206. Linguistics.  
\*209. Dialectology.  
\*256A. Studies in Linguistics.  
\*256B. Studies in Dialectology.

**Portuguese** \*103. Syntax.

- \*M118. History of the Portuguese and Spanish Languages (same as Spanish M118).  
\*M203A-203B. Development of the Portuguese and Spanish Languages (same as Spanish M203A-203B).

**LITERATURE COURSES**

\*Special courses which may be applied to B.A. and/or M.A. degree requirements by petition wherein the student agrees to write a paper on Latin America. In petitioning to count courses not listed here, students are encouraged to relate theoretical or methodological courses in the various disciplines to the study of Latin America.

**Spanish** 121A-121B. Survey of Spanish American Literature.

137. The Literature of Colonial Spanish America.  
139. 19th Century Spanish American Literature.  
141. Mexican Literature.  
142A. Spanish American Literature in the 20th Century: Poetry and Drama.  
142B. Spanish American Literature in the 20th Century: Prose Fiction.  
M149. Folk Literature of the Hispanic World (same as Folklore M149).  
151. Folk Song in Spain and Spanish America.  
\*1160B. Hispanic Literature in Translation (not applicable to B.A. if major concentration is in Literature).  
M200. Bibliography (same as Portuguese M200).  
237. Chroniclers of the Americas.  
239. Neo-Classical and Romantic Prose and Poetry in Spanish America.  
240. The Modernist Movement.  
243. Contemporary Spanish American Poetry.  
244. Contemporary Spanish American Novel and Short Story.  
245. Contemporary Spanish American Essay.  
246. Contemporary Spanish American Theater.

- M249. Hispanic Folk Literature (same as Folklore M249 and Portuguese M249).  
277. Studies in Colonial Spanish American Literature.  
278. Studies in 19th Century Spanish American Literature.  
280A. Studies in Contemporary Spanish American Literature: Modernist Poetry.

- 280B. Studies in Contemporary Spanish American Literature: Post-Modernist Poetry.  
280C. Studies in Contemporary Spanish American Literature: Novel and Short Story.  
280D. Studies in Contemporary Spanish American Literature: The Essay.

- M286B. Studies in Hispanic Folk Literature: Narrative and Drama (same as Folklore M286B).

- M286C. Studies in Hispanic Folk Literature: Ballad, Poetry and Speech (same as Folklore M286C).

**Portuguese** 121A-121B. Survey of Brazilian Literature.

127. Colonial Brazilian Literature.  
129. Romanticism in Brazil.  
135. Naturalism, Realism and Parnasianism in Brazil.  
137. Contemporary Brazilian Literature.  
243A. Colonial Literature.  
243B. 19th Century Literature.  
243C. 20th Century Literature.

- M249. Hispanic Folk Literature (same as Folklore M249 and Spanish M249).

- 253A. Special Studies in Brazilian Literature: The Novel.  
253B. Special Studies in Brazilian Literature: The Poetry.  
253C. Special Studies in Brazilian Literature: The Theater.  
253D. Special Studies in Brazilian Literature: The Short Story and the Essay.

**FINE ARTS COURSES**

\*Special courses which may be applied to B.A. and/or M.A. degree requirements by petition wherein the student agrees to write a paper on Latin America. In petitioning to count courses not listed here, students are encouraged to relate theoretical or methodological courses in the various disciplines to the study of Latin America.

**Art** 117A. Advanced Studies in Pre-Columbian Art: Mexico.

- 117B. Advanced Studies in Pre-Columbian Art: Central America.  
117C. Advanced Studies in Pre-Columbian Art: The Andes.  
118B. The Arts of Pre-Columbian America.  
220. The Arts of Africa, Oceania and Pre-Columbian America.

**Dance** \*1171J. **Dance of Mexico.** (½ course)

146. Dance in Latin America.  
171J. Dance of Mexico. (½ course)  
\*1181K. **Music and Dance of Mexico.** (½ course)

**Music** \*1181K. **Music and Dance of Mexico.** (½ course)

- 131A-131B. Music of Hispanic America.  
157. Music of Brazil.  
259. Seminar in Music of Latin America.

**Theater Arts** 106C. History of African, Asian and Latin American Film.

- \*112. Film and Social Change.  
\*M209C. Seminar in Ethnographic Film (same as Anthropology M294A).

**PROFESSIONAL COURSES**

\*Special courses which may be applied to B.A. and/or M.A. degree requirements by petition wherein the student agrees to write a paper on Latin America. In petitioning to count courses not listed here, students are encouraged to relate theoretical or methodological courses in the various disciplines to the study of Latin America.

**\*Architecture and Urban Planning.** 208. Social Theory for Planning.

- 211A-211B. Urban Regional Development Theory.  
212A-212B. Urbanization and National Development.  
216. Processes of Change.  
230A-230B. Advanced Seminar in Urban-Regional Development Policy.  
239. Special Topics in Urban-Regional Development Policy.  
250A-250B. Advanced Seminar in Social Development Policy.  
259. Special Topics in Social Development Policy.

**Education** \*204A. Schooling in Comparative Perspective.

- \*204B. Introduction to Comparative Education.  
\*204C. Education and National Development.  
\*204D. Minority Education in Cross-Cultural Perspective.  
\*204E. International Efforts in Education.  
\*253A. Seminar: Current Problems in Comparative Education.

253D. Seminar: Latin American Education.

**Law** \*216. International Law.

233. Law and Development in Latin America.

\*236. International Business Transactions.

\*239. Individual Research

348. Legal Development in Latin America.

\*352. International Law.

**Library Service** \*223. Literature of the Social Sciences.

224. Literature of the Humanities and Fine Arts.

**Management** 205A. International Business Economics.

- 205B. Comparative Market Structure and Competition.  
205C. Business Forecasting for Foreign Economies.  
208. Selected Topics in Business Economics.  
233A. International Business Finance.  
250C. Systems of Employee-Management Participation.  
261B. International Marketing Management.  
296A. International Business Management.  
297A. Comparative and International Management.  
297B. International Business Policy.

298B. Special Topics in International and Comparative Management.

**Public Health** \*161. Demography.

- \*206. Medical Care Systems in International Perspective. (½ course)  
\*211A-211D. Advanced Nutrition. (½ course each)  
\*216A-216B-216C. Infectious Diseases in Tropical Regions.

M232. Disease Problems of Socio-Economic and Political Impact in Latin America (same as Latin American Studies M232.)

263A. Seminar on Current Issues in Maternal and Child Health.

\*263B. Seminar in Maternal and Child Health. (½ course each)

266. Seminar in Epidemiology.

\*284. Seminar in Nutrition. (½ course)

\*286. Nutritional Problems in Developing Areas. (½ course)

\*290E. Special Group Studies: Population, Family and International Health.

\*290L. Special Group Studies: Public Health Nutrition.

\*290Q. Special Group Studies: Infectious and Tropical Diseases.

\*456A. International Health Agencies and Programs. (½ course)

\*456B. Comparative Analysis of Health Services and Disease Patterns. (½ course)

\*456C. Issues in International Health Administration. (½ course)

\*596. Directed Individual Study or Research.

Note: Independent study courses such as 198, 199, 596, 597, and 598 are available in most departments and may be taken by petition to the Latin American Studies Adviser.

**LAW**

(Department Office, 1224 Law Building)

- Benjamin Aaron, A.B., LL.B., *Professor of Law.*  
Richard L. Abel, A.B., LL.B., Ph.D., *Professor of Law.*  
Norman Abrams, A.B., J.D., *Professor of Law.*  
Reginald H. Alleyne, Jr. B.S., LL.B., LL.M., *Professor of Law.*  
Alison Grey Anderson, B.A., J.D., *Professor of Law.*  
Michael R. Asimow, B.S., LL.B., *Professor of Law.*  
John A. Bauman, B.S.L., LL.B., LL.M., Jur.Sc.D., *Professor of Law.*  
David A. Binder, A.B., LL.B., *Professor of Law.*  
Barbara E. Budno, B.A., M.A., J.D., *Professor of Law.*  
Jesse J. Dukeminier, A.B., J.D., *Professor of Law.*  
George P. Fletcher, B.A., J.D., M.C.L., *Professor of Law.*  
Carole E. Goldberg, B.A., J.D., *Professor of Law.*  
Kenneth W. Graham, Jr., B.A., J.D., *Professor of Law.*  
Donald G. Hagman, B.S., LL.B., LL.M., *Professor of Law.*  
Harold W. Horowitz, A.B., LL.B., LL.M., S.J.D., *Professor of Law.*  
Edgar A. Jones, Jr., A.B., LL.B., *Professor of Law.*  
Robert L. Jordan, A.B., LL.B., *Professor of Law.*  
Kenneth L. Karst, A.B., LL.B., *Professor of Law.*  
William A. Klein, A.B., LL.B., *Professor of Law.*  
Leon Letwin, Ph.B., LL.B., LL.M., *Professor of Law.*  
Wesley J. Liebler, B.A., J.D., *Professor of Law.*  
Richard C. Maxwell, B.S.L., LL.B., *Professor of Law.*  
Henry W. McGee, Jr., B.S., J.D., LL.M., *Professor of Law.*  
William M. McGovern, Jr., A.B., LL.B., *Professor of Law.*  
David Mellinkoff, A.B., LL.B., *Professor of Law.*  
Herbert Morris, A.B., LL.B., D.Phil. (Oxon.), *Professor of Law and Philosophy.*  
Melville B. Nimmer, A.B., LL.B., *Professor of Law.*  
Susan Westerberg Prager, A.B., M.A., J.D., *Professor of Law.*  
Monroe E. Price, B.A., LL.B., *Professor of Law.*  
Joel Rabinovitz, A.B., LL.B., *Professor of Law.*  
Arthur I. Rosett, B.A., LL.B., *Professor of Law.*  
Gary T. Schwartz, B.A., J.D., *Professor of Law.*  
Murray L. Schwartz, B.S., LL.B., LL.D., *Professor of Law.*  
Stanley Siegel, B.S., J.D., *Professor of Law.*  
James D. Sumner, Jr., A.B., LL.B., LL.M., J.S.D., *Professor of Law.*  
William D. Warren, A.B., J.D., J.S.D., *Professor of Law (Chairman of the Department).*  
Richard A. Wasserstrom, B.A., M.A., Ph.D., LL.B., *Professor of Law and Philosophy.*  
Kenneth H. York, A.B., LL.B., *Professor of Law.*  
Addison Mueller, A.B., LL.B., *Emeritus Professor of Law.*  
Rollin M. Perkins, A.B., J.D., J.S.D., *Emeritus Cornell Professor of Law.*  
Ralph S. Rice, B.S., J.D., LL.M., *Emeritus Cornell Professor of Law.*  
Harold E. Verrall, A.B., M.A., LL.B., J.S.D., *Emeritus Professor of Law.*

- Paul B. Bergman, B.A., J.D., *Senior Lecturer in Law.*  
Paul Boland, B.A., J.D., LL.M., *Senior Lecturer in Law.*  
Theodore Eisenberg, A.B., J.D., *Acting Professor of Law.*  
Charles M. Firestone, B.A., J.D., *Adjunct Professor of Law.*  
Rowan K. Klein, B.A., J.D., *Adjunct Professor of Law.*  
Robert F. Mann, B.A., J.D., *Adjunct Professor of Law.*  
Michael Rappaport, B.S., J.D., *Lecturer in Law.*  
Steven H. Shiffrin, B.S., J.D., *Acting Professor of Law.*  
Fred L. Slaughter, B.S., M.B.A., J.D., *Lecturer in Law.*  
Jonathan D. Varat, B.A., J.D., *Acting Professor of Law.*  
William J. Winslade, B.A., Ph.D., J.D., *Lecturer in Law.*

Gerald A. Wright, A.B., A.M., LL.B., *Acting Professor of Law*  
 Stephen C. Yeazel, B.A., M.A., J.D., *Acting Professor of Law*

## LIBRARY AND INFORMATION SCIENCE

(Department Office, 120 Powell Library Building)

Harold Borko, Ph.D., *Professor of Library and Information Science*  
 Richard K. Gardner, Ph.D., *Professor of Library and Information Science*  
 G. Edward Evans, Ph.D., *Professor of Library and Information Science*  
 Robert M. Hayes, Ph.D., *Professor of Library and Information Science*  
 (Chairman of the Department)  
 Russell Shank, D.L.S., *Professor of Library and Information Science*  
 Robert Vosper, M.A., LL.D., *Professor of Library and Information Science*  
 Page Ackerman, B.A., B.S.L.S., *Emeritus Professor of Library and Information Science*  
 Robert L. Collison, B.A., F.L.A., *Emeritus Professor of Library and Information Science*  
 Andrew H. Horn, Ph.D., *Emeritus Professor of Library and Information Science*  
 Seymour Lubetzky, M.A., LL.D., *Emeritus Professor of Library and Information Science*  
 Lawrence Clark Powell, Ph.D., Litt.D., L.H.D., H.H.D., *Emeritus Professor of Library and Information Science*  
 Raymond F. Wood, Ph.D., *Emeritus Professor of Library and Information Science*  
 John P. Comaromi, Ph.D., *Associate Professor of Library and Information Science*  
 Ann E. Hall, D.L.S., *Assistant Professor of Library and Information Science*  
 Cheryl Metoyer, Ph.D., *Assistant Professor of Library and Information Science*  
 Diana M. Thomas, Ph.D., *Assistant Professor of Library and Information Science*

Elizabeth R. Baughman, M.L.S. M.A. *Senior Lecturer in Library and Information Science*  
 Marion K. Cobb, M.L.S. M.A., *Lecturer in Library and Information Science*  
 Louise Darling, M.A., *Lecturer in Library and Information Science*  
 Elizabeth R. Eisenbach, M.L.S., *Lecturer in Library and Information Science*  
 James V. Mink, M.A., *Lecturer in Library and Information Science*  
 Betty Rosenberg, M.A., *Emeritus Senior Lecturer in Library and Information Science*  
 Gloria Werner, M.L., *Lecturer in Library and Information Science*  
 Rosalee I. Wright, B.S., B.L.S., *Lecturer in Library and Information Science*

Several members of the Library Profession of the community serve as part-time Lecturers in the School with responsibility for some of the specialized courses.

### Representatives of Other Departments on the Faculty of the Graduate School of Library and Information Science.

Arthur M. Cohen, Ph.D., *Professor of Education*  
 Jerome Cushman, A.B., B.S.L.S., *Senior Lecturer in English*  
 Robert Starr Kinsman, Ph.D., *Professor of English*  
 Michel A. Melkanoff, Ph.D., *Professor of Engineering*  
 Richard H. Rouse, Ph.D., *Professor of History*

For information regarding admission to the Graduate School of Library and Information Science and for degree and certificate requirements, refer to the paragraphs on the School of Library and Information Science under Schools and Colleges.

Graduate students of other schools or departments who wish to take courses in the School of Library and Information Science may do so with the permission of the Instructor teaching the course. Undergraduate students who wish to enroll in 400-series courses must obtain the permission of the Dean of the School of Library and Information Science.

*Graduate courses.* 200-series. Consent of instructor is prerequisite to admission to all 200-series courses. For individual study courses, see 500-series. For professionally oriented courses, see 400-series.

*Professional courses.* 400-series. Planned primarily for the professional degree, Master of Library Science, and for specialized professional study.

*Professional internship courses.* 490-series. Consent of the Dean is prerequisite to admission to all 490-series internships.

*Individual study courses.* 500-series. Approval of the Dean of the School of Library and Information Science is prerequisite to admission to all 500-series courses. Method of instruction is by individual conferences with assigned members of the staff. Seminar courses are numbered in all 200-series.

### Upper Division Courses

**100. American Indian Bibliography.** Introduction to bibliographical and research tools and methods for students of American Indian history and culture. Offered in collaboration with the American

Indian Culture Center. Students who enroll in Library Service 104 for credit may not take this course for credit.

**104. Afro-American Bibliography.** Introduction to bibliographical and research tools and methods for students of Black history and culture in the U.S. Offered in collaboration with the Center for Afro-American Studies. Students who enroll in Library Service 100 for credit may not take this course for credit.

**110. Information Resources and Libraries.** Prerequisite: Sophomore standing or consent of instructor. Provides an introduction to bibliographic and information resources and relevant research methodology. Covers both general and specialized materials. Designed to facilitate knowledgeable use of libraries and efficient retrieval of information. Discussion sections will focus on specific subject areas (such as Humanities, Physical Sciences, Social Sciences, Fine Arts, etc.).

### Graduate Courses

**205. Historiography of Librarianship, Bibliography and Information Science.** Prerequisite: approval of instructor. Identification of historical source material. Comprehensive and critical review of the historical and biographical literature. Identification of areas in need of research or reinterpretation.

**206. Seminar on Library History.** Prerequisite: approval of instructor. Special studies in biography and history of librarianship. Relationships to contemporaneous social, cultural, and intellectual history. Research papers on topics identified in course 205.

**207. Seminar on International and Comparative Librarianship.** Prerequisite: approval of instructor. Library development and service patterns in European and other countries; comparisons of these with librarianship in the United States. International library organizations and programs.

**210. Seminar in Descriptive and Bibliographical Cataloging.** Prerequisite: courses 410 (Descriptive Cataloging) and 411 (Subject Cataloging and Classification) or equivalent. Specialized studies in selected areas of descriptive and bibliographical cataloging, e.g., purposes, principles, instructional development, potentialities of automation. May be repeated once.

**211. Seminar in Subject Control of Library Materials.** Prerequisites: course 410 (Descriptive Cataloging) and 411 (Subject Cataloging and Classification) or their equivalents. Study of selected problems in the design and use of verbal headings and classification systems. Manual and mechanized systems. May be taken twice.

**213. Seminar on Indexing.** Prerequisite: consent of the instructor. Development of basic concepts as reflected in the history of scholarship. Current problems in the transition from individual to large-scale indexing projects. Contribution made by automation. Future of mechanized indexing. Trend toward international standardization. Acceleration systems in indexing.

**214. Seminar on Abstracting and Abstracting Services.** Prerequisite: consent of the instructor. Historical background and current situation, particularly in science and technology. Possibilities and present limitations of automation. Role in coordination of information services. Problems of standardization to achieve international coordination. Influence of changing needs.

**221. Bibliography of Science, Engineering and Technology.** (Formerly numbered 217.) Scientific and technical literature with emphasis on special types of publications, research material, reference and bibliographical aids to the physical sciences. Importance, purpose and nature of technical literature searches. Flow of information among scientists.

**222. Bibliography of Medical and Life Sciences.** Literature of the medical and life sciences: reference and bibliographical works; periodicals and other serials; abstracting and indexing services; audio visuals; notable books in the history of the biomedical sciences; organization of the literature; patterns of publication; applications of technological developments in the control of the biomedical literature.

**223. Literature of the Social Sciences.** (Formerly numbered 219.) Seminar on the literature of the social sciences, including a review of the classics in the various fields, monumental source collections, periodicals, bibliographies, catalogs, indexes, abstracts, etc. Trends in scholarly and popular writing. Interdisciplinary nature of the literature.

**224. Literature of the Humanities and Fine Arts.** (Formerly numbered 220.) Seminar on the literature of the humanities and fine arts, including a review of the classics in the various fields, comparisons of editions, periodicals, bibliographical apparatus and reviewing media. Trends in scholarly and popular writing.

**228. Legal Bibliography.** Prerequisite: approval of instructor. An introduction to the source materials of the law, with emphasis on primary authority, but covering as well secondary authority and the indexes and finding aids which the lawyer and professional law librarian use to gain access to legal information.

**229A. Afro-American Bibliography.** Prerequisite: consent of the instructor. Resources for the study of Afro-American history, culture and literature. Problems of identification, description, subject analysis. Bibliographical and reference apparatus.

**230. History of Publishing and the Book Trade.** Publishing and book trade history, with particular reference to libraries and book

collecting, changing aspects of book production and distribution within the setting of cultural history.

**240. Information Systems Analysis and Design.** (Formerly numbered 243.) Theories and principles of special systems development, including determination of requirements, technical design and evaluation, and internal organization.

**242. Information Retrieval Systems.** Survey of principal specialized vocabularies, methods of file organization, and search strategies in the control of publications in mechanized form.

**244. Information Networks.** Problems in the formulation, funding and operation of information networks are examined. A survey of some of the major networks, including institutional and computer systems.

**249. Seminar in Information Science.** (Formerly numbered 293.) Specialized studies in problem areas of information science: vocabulary development, representation coding, file organization and indexing, classification systems, searching procedures, measurement of relevancy, data reduction and presentation, and communication. May be repeated once for credit.

**251. Reading and Reading Interests.** (Formerly numbered 215.) Interests of the common reader, excluding children, with special reference to types of library patrons. Fiction and subject categories, popular and standard: philosophy, religion, social sciences, art, music, literature, history, science. Influence of paperbacks, best sellers and current interest books on reading habits.

**253. Reading Interest of Children.** Reading interests and correlative types of literature surveyed with reference to the growth and development of children. Emphasis on the role of the librarian in responding to the needs and abilities of children through individualized reading guidance. Recommended preparation is English 112 (Children's Literature) or equivalent.

**260. Historical Bibliography.** (Formerly numbered 211.) Early records and the manuscript period; history of the printed book and of periodical publications and newspapers, including materials and methods and production. Parallel history of scholarship, the book trade, and book collecting in ancient, medieval and modern Western civilization.

**261. Analytical Bibliography.** History and methods of analytical bibliography with emphasis on recent scholarship. The book as a physical object and its relationship to the transmission of the text. Emphasis on hand-press books. Theories of Bradshaw, Proctor, Greg, McKerrow, Pollard, Esdaile, Bowers, Stevenson, Hinman, McKenzie, and others. Recommended, but not prerequisite, is course 260 (Historical Bibliography) or its equivalent in background or experience.

**262. Seminar on Historical Bibliography.** Prerequisite: course 260 or consent of instructor. Special studies in the history of books and publishing. Topics will vary from quarter to quarter to allow emphasis on a particular historical period, geographical area, or other specific aspect such as a form of publication, genre or material of production such as paper or type. May be repeated for credit with consent of the instructor.

**271. Seminar on Intellectual Freedom.** Prerequisite: consent of the instructor. Investigation of the idea of intellectual freedom: historical and constitutional bases; civil liberties and civil rights; censorship and other restraints on freedom of speech, the press, the arts, and access to ideas and information.

**272. Seminar on Current Issues in Librarianship.** Prerequisite: consent of the instructor. Identification, analysis, and discussion of critical issues currently facing the profession. May be repeated once.

**290. Research Methodology.** Prerequisite: consent of the instructor. Role of research in bibliography, librarianship, and information science. Identification and design of research problems. Historical, statistical, analytical and descriptive techniques.

### Professional Courses

**400. Librarianship: The Institutional Setting and Professional Environment.** Overview of the history, roles and functions in society of libraries and information centers, including their current status, structure, and problems. Professional associations and responsibilities, education, and research. Trends in administration, national planning, networks, standards, legislation, technology.

**402. Fundamentals of Bibliography.** The development and fundamentals of the several branches of bibliography: historical, physical (analytical or critical, descriptive), enumerative or systematic; and the organization, control, and elements of bibliographical apparatus. New techniques and tools, theory, methods, and trends in bibliographical research in relationship to librarianship.

**404. Fundamentals of Information Science.** Scope of the information sciences and their relationship to libraries, information centers, information handling. Methods of systems analysis as applied to library operations; case studies of library systems, clerical operations and information retrieval. Survey of data processing equipment.

**405. Automation of Library Processes.** Prerequisite: basic knowledge of a programming language, preferably PL/I or IBM System/360 assembly language. Principles of application of data processing techniques to library procedures. Problems in the design, implementation, and testing of mechanized systems for

libraries. Study of programming languages for library applications with emphasis upon PL/I.

**410. Descriptive Cataloging.** (Formerly numbered 201A.) Entry and description of library materials. Constitution, structure, and form of the library catalog. Cataloging services, tools, and procedures. Cataloging rules and their application.

**411. Subject Cataloging and Classification.** (Formerly numbered 201B.) Subject treatment of library materials. Structure of subject heading lists and their application. Organization of the subject catalog. Structure and application of the Dewey Decimal and Library of Congress classification systems. Organization of the classed catalog and the shelflist.

**412. Cataloging and Classification of Nonbook Materials.** Prerequisites: courses 410 (Descriptive Cataloging), and 411 (Subject Cataloging and Classification). Problems in cataloging and classification of selected nonbook materials (e.g., films, maps, pictorial works, sound recordings) as separate collections and integrated collections.

**414. Principles of Indexing and Abstracting.** Basic professional techniques, concepts, and methods of indexing monographs, serials, and specialized materials; of preparing informative and indexing abstracts; and of analyzing secondary abstracting and indexing services as library reference tools.

**420. Basic Sources of Information.** (Formerly numbered 202A.) History, methods and materials of reference service and information retrieval. Survey of devices for bibliographical control of information. Encyclopedias, dictionaries, biographical compilations, directories, etc.

**421. Comprehensive Bibliography.** (Formerly numbered 202B.) Analysis and evaluation of bibliographical control of published and unpublished documents (books, periodicals, government publications, dissertations, reports, manuscripts). Systems of national bibliography, trade bibliography, indexing, abstracting, etc. American, British, French, German, Russian and other systems. Information retrieval using this apparatus. It is recommended that course 420 (Basic Sources of Information) be taken prior to course 421.

**423. Library Information Service.** Prerequisite: Completion of course 420 (Basic Sources of Information) and course 421 (Comprehensive Bibliography), or evidence of competencies represented by these courses. Identification of problems in library reference services. Applications of reference interview techniques, search strategies, and methodologies of teaching use of libraries and information resources. Evaluation of competence through supervised performance. Grading is satisfactory/unsatisfactory.

**429. Printing for Bibliographers.** Prerequisite 260 (Historical Bibliography) or 261 (Analytical Bibliography) and consent of the instructor. Printing processes as related to bibliography and librarianship. Discussions, demonstrations, and experiments in design, composition, and presswork with special emphasis on the 19th century handpress. To be graded S/U.

**430. Selection and Acquisition of Library Materials.** (Formerly numbered 204.) Background of publishing and the book trade (new and antiquarian) pertinent to order departments of public, school, academic and special libraries. Theory and practice of selecting and ordering books and other materials. Organization and administration of order departments.

**431. Special Problems in the Selection of Materials and Evaluation of Collections.** (Formerly numbered 205.) Subject and area collecting; special collections and rare books; building new collections. Evaluating and weeding collections. Cooperative collecting-regional, national and international. Storage centers; subject specialization. Special format materials: films, maps, sound recordings, etc. Copying methods; facsimile reprinting; changing character of research collections.

**432. Media Librarianship.** Prerequisite: consent of the instructor. Films, filmstrips, recordings, tapes, and other non-book materials in audiovisual collections or instructional media centers. Bibliographical apparatus. Evaluation and collection development. Organization and administration.

**440. Library Systems Analysis.** Analysis, design, and evaluation of data processing systems in the library. Includes management planning for automation, techniques for system description, criteria for cost/effectiveness evaluation, issues in system implementation — all in the context of library internal, technical processing.

**441. Management of Libraries.** Prerequisite: consent of the instructor. Principles of management, emphasizing management techniques applicable to libraries of various types and to library systems. Special attention to aspects of technical services.

**442. Library Personnel Administration.** Covers the basic principles of personnel management. Provides a survey of current personnel practices in libraries. Discusses how the basic principles apply or need to be modified to fit the library setting.

**446. Library Services for Youth.** Provides an overview of programs and services which are of interest to young adults (12-18 year olds). Discusses special problems in working with young people and the psychology of the teenager as it influences library programs.

**447. Library Space Planning.** Introduction to space planning and programming techniques and how they apply to libraries. Emphasis is on use of existing space, but planning new buildings

is included. Reading blue prints, use of scales, contracts, use of consultants.

**461. College, University and Research Libraries.** (Formerly numbered 401.) Organization, administration, collections, facilities, finances, and problems of college and university libraries and their relationships within the institutions of which they are a part. Functions of research libraries and work of their staffs in serving scholars.

**463. Public Libraries.** (Formerly numbered 402.) The government, organization, and administration of municipal, county, and regional public libraries; developments in the changing patterns of public library service.

**464. School Libraries.** (Formerly numbered 403.) Elementary and secondary school libraries as multimedia instructional materials centers. Relationships of school libraries to school programs and curricula. Emphasis on administration, planning materials, services, and equipment.

**465. Library Services and Programs for Children.** Philosophy and objectives of children's services in public and school libraries. Emphasis on services to groups and techniques of program planning which incorporate storytelling, puppetry, non-print media, etc.

**470. Special Libraries and Special Collections.** (Formerly numbered 405.) Organization, administration, collections, facilities, finances and problems of special libraries and of special collections within general libraries. Methods of handling nonbook materials. Current trends in documentation and mechanization.

**471. Health and Life Sciences Libraries.** (Formerly numbered 418.) Organization, administration, services and problems of health and life sciences libraries; relationships with institutions of which they are a part, and with the community. Several field trips scheduled.

**472. Law Librarianship.** Prerequisite: approval of instructor. An introduction to the profession of law librarianship; the organization of the professional associations and their activities; the character and distribution of law libraries throughout the United States; the distinctive characteristics of law library problems and their solutions.

**485. American Archives and Manuscripts.** Prerequisite: consent of instructor. Identification, description, subject analysis, and organization of records contained in archives and manuscript collections. Administration. User requirements. Problems of acquisition, legal title, literary property, preservation, accessibility, and use.

**489. Library Service to Special Population Groups.** Prerequisite: consent of the instructor. Special problems encountered by school, public, academic, special and research libraries in meeting the needs of minority groups in urban and rural settings. Library service to the old, the physically handicapped, and the institutionalized population.

### Professional Internship Courses

**490. University Library Internship.** Prerequisite: consent of the instructor. Supervised professional training in one or more departments or units of the UCLA College Library or University Library System. Field trips, when appropriate, to off-campus libraries. Minimum of 120 hours per quarter, including weekly critiques of bibliographical, administrative, and service problems. May be repeated twice. To be graded S/U.

**499. Off-Campus Internship.** Prerequisite: consent of instructor. Supervised professional training in a library system, library, department of a library, or other information service agency (e.g., archives) approved by the faculty of the School. Minimum of 120 hours per quarter, including weekly critiques of bibliographical, administrative, and service problems. May be repeated twice. To be graded S/U.

### Individual Study Courses

**501. Cooperative Program. (½ to 2 courses)** Prerequisite: approval of UCLA Graduate Adviser and Graduate Dean. Approval of host campus instructor, Department Chairman and Graduate Dean. The course is used to record the enrollment of UCLA students in courses taken under cooperative arrangements with neighboring institutions. To be graded S/U.

**596. Directed Individual Study or Research.** Prerequisite: consent of the instructor. Directed special studies in the fields of bibliography, librarianship, and information science. Variable conference time depending upon nature of study or complexity of research. May be repeated once. To be graded S/U.

## LINGUISTICS

(Office, 2113 Campbell Hall)

Raimo A. Anttila, Ph.D., *Professor of Indo-European and General Linguistics.*  
William Bright, Ph.D., *Professor of Linguistics and Anthropology.*  
Victoria A. Fromkin, Ph.D., *Professor of Linguistics.*  
Edward L. Keenan, Ph.D., *Professor of Linguistics.*

Peter Ladefoged, Ph.D., *Professor of Phonetics (Chairman of the Department).*

Paul M. Schachter, Ph.D., *Professor of Linguistics.*

Robert P. Stockwell, Ph.D., *Professor of Linguistics.*

William E. Welmers, Ph.D., *Professor of Linguistics and African Languages.*

Stephen R. Anderson, Ph.D., *Associate Professor of Linguistics.*

George D. Bedell, Ph.D., *Associate Professor of Linguistics.*

Joseph E. Emonds, Ph.D., *Associate Professor of Linguistics.*

Talmy Givón, Ph.D., *Associate Professor of Linguistics and African Languages.*

Sandra A. Thompson, Ph.D., *Associate Professor of Linguistics.*

Thomas J. Hinnebusch, Ph.D., *Assistant Professor of Linguistics and African Languages.*

Breyne A. Moskowitz, Ph.D., *Assistant Professor of Linguistics.*

Pamela L. Munro, Ph.D., *Assistant Professor of Linguistics.*

Russell G. Schuh, Ph.D., *Assistant Professor of Linguistics and African Languages.*

Benji Wald, Ph.D., *Assistant Professor of Linguistics.*

Christiane A. M. Baltaxe, Ph.D., *Assistant Professor of Psychiatry in Residence.*

Henrik Birnbaum, Ph.D., *Professor of Slavic Languages.*

J. Donald Bowen, Ph.D., *Professor of English.*

Giorgio Buccellati, Ph.D., *Professor of Ancient Near East.*

Russell N. Campbell, Ph.D., *Professor of English.*

Edward C. Carterette, Ph.D., *Professor of Psychology.*

Marianne Celce-Murcia, Ph.D., *Associate Professor of English.*

Kenneth G. Chapman, Ph.D., *Professor of Scandinavian Languages.*

Keith S. Donnellan, Ph.D., *Professor of Philosophy.*

Christopher Ehret, Ph.D., *Associate Professor of History.*

Michael S. Flier, Ph.D., *Associate Professor of Slavic Languages.*

Diane E. Larsen Freeman, Ph.D., *Assistant Professor of English.*

Jose Galvan, Ph.D., *Assistant Professor of English.*

Patricia M. Greenfield, Ph.D., *Associate Professor of Psychology.*

Evelyn R. Hatch, Ph.D., *Associate Professor of English.*

Robert S. Kirsner, Ph.D., *Assistant Professor of Dutch-Flemish and Afrikaans.*

Wolf Leslau, Docteur-ès-Lettres, *Emeritus Professor of Hebrew and Semitic Linguistics.*

Bengt Lofstedt, Ph.D., *Professor of Medieval Latin.*

Donald G. MacKay, Ph.D., *Associate Professor of Psychology.*

Lois McIntosh, Ph.D., *Emeritus Professor of English.*

C.P. Otero, Ph.D., *Professor of Spanish and Romance Linguistics.*

Thomas G. Penchoen, Ph.D., *Associate Professor of Near Eastern Languages.*

Clifford H. Prator, Ph.D., *Professor of English.*

Jaán Puhvel, Ph.D., *Professor of Indo-European Studies.*

A. Carlos Quicoli, Ph.D., *Lecturer in Portuguese.*

Earl Rand, Ph.D., *Associate Professor of English.*

Emanuel A. Schegloff, Ph.D., *Associate Professor of Sociology.*

John A. Schumann, Ph.D., *Assistant Professor of English.*

Michael Shapiro, Ph.D., *Professor of Russian Linguistics and Poetics.*

Alan H. Timberlake, Ph.D., *Associate Professor of Slavic Languages.*

Terence H. Wilbur, Ph.D., *Professor of German.*

Dean S. Worth, Ph.D., *Professor of Slavic Languages.*

### Undergraduate Majors

The majors described below are of three types: (1) a major which concentrates entirely on general linguistics; (2) several majors which combine the basic courses of the general program with a language concentration or other related fields; and (3) a major which concentrates entirely on an African language area. The combined majors in conjunction with teacher certification programs are especially appropriate for students who have nonuniversity teaching careers as goals; and the African major is for students with specific African interests.

### The Major in Linguistics

This major should be elected only by students with an exceptional interest in and aptitude for the study of languages and linguistics. It enables the undergraduate to gain substantial familiarity with several languages and types of linguistic structure, and to become conversant with the historical study of language and formal theories of linguistics.

*Preparation for the Major.* In the lower division, in addition to the general University requirements, the student must complete the equivalent of the sixth quarter of work in two foreign languages, or the sixth quarter in one language and the third quarter in each of two others. In addition the student must take Linguistics I and two of the following three courses: Philosophy 31, Psychology 10, one course in Cultural Anthropology.

*Requirements for the Major.* A minimum of eleven upper division or graduate courses which must include Linguistics 100, 103, 110, 120A, 120B, 164; the other five courses are electives, three of which must be upper division Linguistics courses, to be selected by the student subject to the approval of his adviser. These electives have typically been selected from the following list, though it is not exhaustive: Linguistics 104, 125, 130, 140, 145, M146, M150, 160, 165A, 165B, 170, 180, 195, 199 (if four units), African Languages 190, Anthropology 177B, Indo-European Studies 160, 161, 162, Philosophy 127A, 127B, 172, 192, Psychology 122, 123, English 121, 122, 123; or advanced courses in a foreign language or literature (those beyond the sixth quarter of language instruction). In addition to the eleven upper division courses, at least three courses (which may be either upper or lower division) are required in a language other than those in the Romance, Slavic,

or Germanic families. These courses may be applied toward fulfillment of the foreign language requirement described above under *Preparation for the Major*. A student who completes an advanced language course is considered to have completed the equivalent of whatever courses are prerequisite to that one: e.g., if he completes French 101, he has automatically satisfied the requirement of the sixth quarter of work in one language. 165A-165B and 195 are recommended for students planning to pursue graduate work in linguistics at UCLA.

To enroll in Linguistics 195, the student must consult with the department's Senior Essay Counselor.

#### Honors in Linguistics

Honors in Linguistics will be awarded at graduation to those students who have a grade point average of 3.6 or better in their Junior or Senior years and who have received a grade of A in Linguistics 195.

#### The Major in Linguistics and English

*Preparation for the Major*. Linguistics 1; English 2, 10A, 10B, 10C, Philosophy 31; completion of the sixth quarter of work in two foreign languages, or the sixth quarter in one foreign language and the third quarter in each of two other foreign languages.

*Requirements for the Major*. Fifteen upper division courses as follows: Linguistics 100, 103, 110, 120A, 120B, 164, and two upper division electives from other Linguistics courses or English 123; and English 121, 122, 140, and four electives chosen from 141, 142A, 142B, 143, the 150 series (one course only), the 160 series (one course only), the 170 series (one course only).

#### The Major in Linguistics and French

*Preparation for the Major*. Linguistics 1; French 1-6, 12, 15; and completion of the sixth quarter of work in one other foreign language or the third quarter in each of two other foreign languages.

*Requirements for the Major*. Fifteen upper division courses as follows: Linguistics 100, 103, 110, 120A, 120B, 164, and two upper division electives in Linguistics; and French 100A, 100B, 100C, 103, 105, 106, and two elective upper division literature courses.

#### The Major in Linguistics and Italian

*Preparation for the Major*. Linguistics 1, Italian 1-6, Latin 1-3, and completion of the third quarter in another foreign language, or the sixth quarter in Latin; Philosophy 31; and one course in Cultural Anthropology.

*Requirements for the Major*. Fourteen upper division courses as follows: Linguistics 100, 103, 110, 120A, 120B, 164, and two upper division electives in Linguistics; and Italian 102A, 130A, 130B, and three additional upper division electives in Italian.

#### The Major in Linguistics and Oriental Languages

*Preparation for the Major*. Completion of the sixth quarter in either Chinese or Japanese; Linguistics 1; Philosophy 31; one course in Cultural Anthropology; either Oriental Languages 40A or Oriental Languages 40B, as appropriate; and completion of the sixth quarter in another foreign language, or the third in each of two others.

*Requirements for the Major*. Linguistics 100, 103, 110, 120A, 120B, 164, and one upper division elective in Linguistics; and for the classical Japanese track: Oriental Languages 119A, 119B, 129, 137, 175, 179A, 179B; for the modern Japanese track: Oriental Languages 119A, 119B, 119C, 175, and three courses chosen from 134A, 134B, 142A, 142B, 145, 153A, 153B; for the classical Chinese track: Oriental Languages 13A, 13B, 13C, 113A, 113B, and two courses chosen from 152A, 152B, 163A, 163B, 163C; for the modern Chinese track: Oriental Languages 121A, 121B, 121C, and four courses chosen from 122A, 122B, 124A, 124C, 126, 151.

#### The Major in Linguistics and Philosophy

*Preparation for the Major*. Linguistics 1; Philosophy 31 and two out of Philosophy 1, 6, 7, 21; completion of the sixth quarter in each of two foreign languages or the sixth quarter in one language and the third quarter in each of two others.

*Requirements for the Major*. Fourteen upper division courses as follows: Linguistics 100, 103, 120A, 120B, 164, 165B, and two upper division electives in Linguistics; and six upper division courses in Philosophy including at least five from 125-135, 170-174, and 184-188, of which at least two must be from 127A, 127B, and 172.

#### The Major in Linguistics and Psychology

*Preparation for the Major*. Linguistics 1; Mathematics 2, 4A; Psychology 10, 41; and completion of the sixth quarter in a foreign language and the third quarter in a second foreign language. Engineering 10 strongly recommended.

*Requirements for the Major*. Fourteen upper division courses as follows: Linguistics 100, 103, 120A, 120B, 130, 195, and two upper division electives in Linguistics; and Psychology 110, 120, 121, 122 or 123, 130; and the remaining elective to be chosen from 112, 115, 116, 124, 135, 137 (1/2 course). Psychology 115 strongly recommended.

#### The Major in Linguistics and Spanish

*Preparation for the Major*. Linguistics 1; Spanish 1-5, 25, M42, M44; and completion of a sixth quarter of work in one other foreign language, or the third quarter in each of two other foreign languages.

*Requirements for the Major*. Fifteen upper division courses distributed as follows: Linguistics 100, 103, 110, 120A, 120B, 164, and two additional upper division courses in Linguistics, preferably 130 and 170; and Spanish 100, 103, 115 or 118, 119, and three additional upper division courses in Spanish.

#### The Major in African Languages

*Preparation for the Major*. In the lower division, in addition to the general University requirements, the student must complete Linguistics 1 and six courses in African Languages (101-143, 199), not fewer than three in any one language.

*Requirements for the Major*. A minimum of fifteen upper division courses which must include six additional courses in African languages, at least six courses in all being in one language (e.g., three counting as preparation, three further counting as requirements for the major): African Languages 150A, 150B, 190, 192, Linguistics 100, 103; and three courses selected from Anthropology 107A, 107B, English 114, 123, Geography 189, History 125A, 125B, 125C, 126A, 126B, 127A, 127B, 128A, 128B, Linguistics 110, 120A, 120B, 140, M146, 170, Music 143A, 143B, Political Science 166A, 166B, 166C, 166D. Completion of the sixth quarter in one of the following non-African languages is strongly recommended: French, Dutch-Flemish-Afrikaans, German, Portuguese, Arabic. Also recommended: three additional courses in African languages.

#### The Graduate Linguistics Program

The programs leading to the M.A. and Ph.D. degrees in linguistics are open to qualified graduate students who are interested in the theory and methods of structural and historical linguistics. Preparation for graduate study in linguistics should be equivalent in as many respects as possible to the undergraduate curriculum in linguistics.

#### Admission to the Program

In addition to meeting the requirements of the Graduate Division, the applicant should have (1) an A.B. degree in linguistics or in a language or social science field, and (2) must have completed Linguistics 100, 103, 110, 120A-120B, 164, and 165A-165B, or their equivalent. Letters from the applicant's former instructors should be provided and applicants should submit to the Chairman a detailed account of their aims in graduate study of linguistics and their background for it. Scores on the Graduate Record Examination (verbal and quantitative) must be submitted with the application. A sample of the applicant's research should be submitted to the chairman where feasible (e.g., a term paper from some relevant course). Students will be admitted to begin residence in the fall quarter only (i.e., no winter and spring admissions) except by decision of the department chairman. Upon admission to graduate status, students must consult a graduate adviser about the planning of their studies.

#### Requirements for the Master's Degree

*General Requirements*. See those of the Graduate Division.

Courses 103, 110, 120A, 120B, 164, 165A, 165B are considered as undergraduate deficiency courses and are prerequisite to graduate courses in the corresponding areas. With the exception of 165A and 165B, these courses may not be applied toward fulfillment of the nine courses requirement. Course 103 must be passed with a grade of B or better as prerequisite to 210A-210B, and if waived on the basis of training elsewhere the student must pass an examination in practical phonetics at the B level or better in order to take 210A-210B.

A student who enters the program without prior training in linguistics beyond the basic deficiency courses should expect to spend six quarters (two years) in the M.A. program. A student with one to three deficiencies will normally spend seven quarters in the program, and one with more than three deficiencies nine quarters. All students must complete the M.A. within three and one quarter years.

The M.A. degree may be obtained either by the Thesis Plan or by the Comprehensive Examination Plan. Under both the student is required to complete nine courses, with a grade average of B or better. Of the nine, six must be distributed among three areas: syntax-semantics; phonology-phonetics; and language change-variation-typology. Each student must take at least three courses in one area, two in a second, and one in the third. The courses which may be taken to fulfill these requirements are: syntax-semantics: 206, 252A-B; phonology-phonetics: 201, 204, 251A-B; language change-variation-typology: 202, 253A-B, 254A-254B (if subject matter applicable). Any course in the 250 series may be repeated for credit. If only one course is taken in an area it must be one of the basic courses: 201, 202, 206. The additional three courses may be selected in any area of interest. With the exception of 165A and 165B, which may be counted within the nine courses for the M.A., all these courses must be graduate courses. No more than four units of 596A or 596B or no more than eight units of 501 may be applied toward the required nine courses.

*Thesis Plan*. After completing the required courses, the student will submit a thesis based on original research to a Thesis Committee for approval. The Committee, consisting of three faculty members, is to be established at least one quarter prior to the quarter in which the thesis is submitted, and is responsible for its final approval. *All students intending to proceed to the Ph.D. must adopt this plan.*

*Comprehensive Examination Plan*. After completing the required courses, the student will satisfactorily pass a comprehensive

examination administered by a committee of the Linguistics faculty. This will normally be an oral examination, and result in a terminal M.A. degree.

*The Language Requirement*. All candidates for the M.A. must pass a reading examination, administered by a committee of the Department, in one foreign language. Languages other than standard research languages are acceptable only if approved by the committee, upon petition. Speakers of languages other than English are permitted to use English to meet the foreign language requirement, unless English was the language of instruction in their elementary and secondary education. Students should fulfill this requirement as early as possible in their graduate career, but in any case prior to taking the comprehensive examination or submitting the M.A. thesis.

*Transfer Credit*. No more than two courses (with grades of B or above) may be transferred toward the M.A. from institutions outside the University of California, though equivalent training elsewhere provides the basis for determining what courses the student would be well-advised to take.

*Grades and Probationary Status*. An average of 3.00 must be maintained in all course work. Students with grade records fractionally below 3.00 in a given term are considered to be on probation for the following term, during which term their grade record must be brought up to 3.00. Students whose grade records do not meet these minimal standards are subject to dismissal.

#### Requirements for the Doctor's Degree

Admission into the Ph.D. program of a student who has received the M.A. degree in Linguistics at UCLA will be contingent on the quality of the M.A. thesis and the faculty's evaluation of the student's overall work and promise. A student entering the graduate program who has already received an M.A. in Linguistics from another department or institution must fulfill all the requirements expected of entering students. This means the required course work unless work elsewhere is considered equivalent and satisfies the course requirements. A student may submit a Master's thesis written at another institution or department for evaluation after the other requirements are fulfilled. Admission into the doctoral program may be contingent on a revision of the submitted M.A. thesis should the evaluating committee so recommend. A student with an M.A. in Linguistics from another institution who has not written a thesis elsewhere is not required to formally submit a thesis but is required to submit to the evaluation committee a paper equal in depth and scope to a thesis.

Candidates for the Ph.D. are required to take 32 units of graduate course work beyond the M.A. requirements. Eight of these units must be in supervised field work for which 210A-210B may serve, and eight in an area distinct from that of the student's major area of concentration. The 32 units may not include courses 597, 599, or 275 (colloquium). Of the 32 units, no more than twelve units may be in 596A. A maximum of four two-unit seminars may be included in the 32 units. If the field methods or directed linguistic analysis (210A-B, 596B) were taken in fulfillment of the nine M.A. courses, they may not be included in the 32 additional units for the Ph.D. In order to be advanced to candidacy a student is required to present two substantive research papers of publishable quality in different areas of linguistics and to pass an oral qualifying examination in those areas of linguistics primarily relevant to his dissertation.

(The dissertation and the final oral examination are required in accordance with the requirements of the Graduate Division.) Before the dissertation is begun, the subject must be approved by the faculty of the Department, on the basis of a prospectus submitted to the candidate's doctoral committee, with a copy to the Department. Prerequisite to such approval is a presentation by the candidate of the proposal and the preliminary research at a meeting of the Linguistics Colloquium. The Linguistics Colloquium has meetings throughout the year. Advanced graduate students are required to participate.

The Ph.D. candidate must either (1) demonstrate a reading knowledge of two languages by passing examinations administered by a departmental committee (languages other than standard research languages are acceptable only if approved by the committee, upon petition); or (2) demonstrate a reading knowledge of one language at a high level of proficiency, as measured by an examination administered by a departmental committee (if the language does not have a substantial body of linguistic literature, the proficiency must include oral proficiency).

For information on student support in the form of fellowships, research assistantships, and teaching assistantships, consult the Chairman of the Department.

#### Language Sections of the Department

The African Languages section of the Linguistics Department offers instruction in many of the major languages of Africa, relevant comparative-linguistics courses, and courses in African literature. The section on Indigenous Languages of the Americas offers instruction in Quechua and native American languages, such as Navajo, when staffing permits. The section on South Asian Languages offers instruction in Thai, Tagalog and Hindi, when staffing permits.

## General Linguistics

### Lower Division Courses

**1. Introduction to the Study of Language.** A summary, for the general undergraduate, of what is known about human language; the unique nature of human language, its structure, its universality, and its diversity; language in its social and cultural setting; language in relation to other aspects of human inquiry and knowledge. Ms. Fromkin, Mr. Ladefoged, Ms. Thompson

**2. Linguistics and Minority Dialects.** Prerequisite: course 1 or consent of the instructor. A survey of the main features of vocabulary, grammar, and pronunciation which distinguish the usage of Afro-American and Chicano-American speakers of English. Mr. Wald

**4. Introduction to Native American Languages.** This course will survey the native languages of North America, concentrating on languages of California and nearby areas. The characteristics of American Indian languages in general and of particular languages selected by the instructor will be considered, especially in terms of their relationship to Indian culture, both traditional and modern, and to attitudes of Indians and others about these languages. Mr. Bright, Ms. Munro

**5. Language in Africa.** A survey of the languages spoken in Africa and their social and cultural context; languages found on the African continent; history of African language study; literature in African languages; African languages in the mass media; language policy and planning in modern Africa. The Staff

### Upper Division Courses

**100. Introduction to Linguistics.** An introduction to the theory and methods of linguistics: *universal properties of human language*; phonetic, phonological, morphological, syntactic, and semantic structures and analysis; the nature and form of grammar. The Staff

**103. Introduction to General Phonetics.** Prerequisite: course 100 or equivalent (100 may be taken concurrently with 103). The phonetics of a variety of languages and the phonetic phenomena that occur in languages of the world. Extensive practice in the perception and production of such phenomena. A special section emphasizes those languages likely to be of interest to teachers of English as a Second Language. Ms. Fromkin, Mr. Ladefoged, Ms. Moskowitz

**104. Experimental Phonetics.** Prerequisite: course 103. Survey of the principal techniques of experimental phonetics. Use of laboratory equipment for recording and measuring phonetic phenomena. Mr. Anderson, Ms. Fromkin, Mr. Ladefoged

**110. Introduction to Historical Linguistics.** Prerequisite: courses 100 and 103. The methods and theories appropriate to the historical study of language, such as the comparative method and method of internal reconstruction. Sound change, grammatical change, semantic change. Mr. Anttala, Mr. Schuh, Mr. Stockwell

**120A. Linguistic Analysis: Phonology.** Prerequisite: courses 100 and 103. Course 120A is not prerequisite to 120B. Descriptive analysis of phonological structures in natural languages; emphasis on insight into the nature of such structures rather than linguistic formalization. Mr. Anderson, Mr. Bedell, Mr. Bright

**120B. Linguistic Analysis: Grammar.** Prerequisite: course 100; course 120A is not prerequisite to 120B. Descriptive analysis of morphological and syntactic structures in natural languages; emphasis on insight into the nature of such structures rather than linguistic formalization. Mr. Emonds, Mr. Bright, Ms. Thompson

**125. Semantics.** Prerequisite: course 120B. A survey of the most important theoretical and descriptive claims about the nature of meaning. Mr. Keenan, Ms. Thompson

**130. Child Language Acquisition: Introduction.** Prerequisite: courses 100, 120A-120B or consent of instructor. A survey of contemporary research and theoretical perspectives in the acquisition of language. Emphasis on linguistic interpretation of existing data with some attention to relationship with second language learning, cognitive development, and other topics. Includes discussion of acquisition of English and other languages, and universals of linguistic development. Ms. Moskowitz

**131. Child Language Acquisition (for non-majors).** Prerequisite: course 1 strongly recommended. A survey of current knowledge of the acquisition of a first language by children, including some general processes of language learning and some specific cases from several languages. Some attention to animal communication, relation between language learning and teaching. Not open to Linguistics majors or Linguistics graduate students. Ms. Moskowitz, Ms. Thompson

**140. Linguistics in Relation to Language Teaching.** Prerequisite: course 100. Aspects of linguistics in relation to the teaching of language with particular focus on the special problems entailed in the teaching of non-European languages. Mr. Stockwell

\***145. Introduction to Computation in Linguistics.** Prerequisite: courses 100, 120A-120B. Introduction to the uses to which computers are put in linguistics and to such applications as

mechanical translation and information retrieval; development of basic familiarity with programming and programming languages for linguistics purposes. The Staff

**M146. Language in Culture.** (Same as Anthropology M146.) Prerequisite: course 1 or Anthropology 177A-177B. The study of language as an aspect of culture; the relation of habitual thought and behavior to language; the problem of meaning. Mr. Bright, Ms. McClaran

**M150. Introduction to Indo-European Linguistics.** (Same as Indo-European Studies M150.) Prerequisite: one year of college level study (course 3 or better, 8 units minimum) of either Greek or Latin and either German or Russian. A survey of the Indo-European languages from ancient to modern times; their relationships and their chief characteristics. Mr. Anttala

**160. History of Linguistics Through the 19th Century.** Prerequisite: courses 120A-120B. Historical survey of the development of linguistics from Panini through the 19th century, including approaches to grammar, phonology, and language universals. Mr. Anttala, Mr. Bedell, Ms. Fromkin

**164. Modern Theories of Language.** Prerequisites: courses 120A and 120B. A critical and historical survey of some of the central claims and types of supporting evidence put forward by transformational theory and by at least one other influential school of contemporary linguistics. About one-third of the course deals with phonology, the remainder with syntax and semantics. The Staff

**165A. Linguistic Theory: Phonology.** Prerequisite: course 164. The theory of generative phonology; the form of phonological rules, formal and substantive phonological universals. Mr. Anderson, Mr. Bedell, Ms. Fromkin

**165B. Linguistic Theory: Grammar.** Prerequisite: course 164. The form of grammars; word formation and sentence formation; formal and substantive universals in syntax; relation between syntax and semantics. Mr. Emonds, Mr. Schachter, Ms. Thompson

**170. Language and Society: Introduction to Sociolinguistics.** Prerequisite: course 100 or consent of instructor. Study of the patterned covariation of language and society; social dialects and social styles in language; problems of multilingual societies. Mr. Bright, Mr. Wald

**172. African Languages in the Diaspora.** Prerequisite: any one course in Linguistics or African Languages, or consent of instructor. A close look at the major structures of African languages and their influence on Pidgins, Creoles, and Afro-American English. Illustrations will be given from African languages, West African Pidgin English, Krio, Creoles (Jamaican, French, Brazilian, South American), and Afro-American English. Mr. Elimelech

**175. Linguistic Change in English.** Prerequisite: courses 110, 120A, 120B. Principles of linguistic change as exemplified through a detailed study of the history of English pronunciation, lexicon, and syntax. Mr. Stockwell

**180. Mathematical Backgrounds for Linguistics.** Prerequisite: courses 120A, 120B. Introduction to selected topics in set theory, logic and formal systems, modern algebra, and automata theory, with elementary applications to linguistics. In any given quarter one or more of these topics may be emphasized. No previous mathematics assumed. Mr. Emonds, Mr. Keenan

**195. Senior Essay.** Prerequisite: consent of instructor; open only to Linguistics majors in their senior year. An extended piece of writing will be undertaken on a linguistic topic selected by the student to be completed under the supervision of a member of the faculty in Linguistics (either Linguistics Department or, as appropriate, some faculty of other departments). To enroll in this course the student must consult the professor in charge. The Staff

**199. Special Studies in Linguistics. (½ to 1 course)** Prerequisite: courses 120A, 120B, and consent of instructor. May be repeated for credit. The Staff

### Graduate Courses

**201. Phonological Theory.** Prerequisite: courses 120A, 165A. Survey of current issues in phonological theory. Mr. Anderson, Ms. Fromkin

**202. Theory of Language Change.** Prerequisite: course 110. Survey of current issues in language change. Mr. Anttala, Mr. Bright, Mr. Schuh

**204. Experimental Bases of Linguistics.** Prerequisite: course 165A. Theory and practice in experimental research in phonetics and linguistics. Ms. Fromkin, Ms. Moskowitz, Mr. Ladefoged

**206. Syntactic Theory.** Prerequisite: courses 120B, 165B. Survey of current issues in syntactic theory. Mr. Emonds, Ms. Thompson, Mr. Schachter

**210A. Field Methods I.** Prerequisites: 165A, 165B. A language unknown to members of the class to be analyzed from data elicited from a native speaker of the language. The term papers will be relatively full descriptive sketches of the language. May be repeated for credit when a different language is under investigation.

**210B. Field Methods II.** Prerequisite: course 210A in the preceding quarter. Because different languages will be investigated

in different years, 210B can only be taken as a direct continuation of 210A in the same year. When there are multiple sections, continuation must be in the same section. May be repeated for credit when a different language is under investigation. Mr. Bright, Mr. Givón, Ms. Munro

**220. Linguistic Areas.** (Formerly numbered 220A-220H.) Prerequisites: courses 120A, 120B; recommended preparation: courses 165A and 165B. Analysis and classification of languages spoken in a particular area, e.g. Africa, the Balkans, South Asia, Southeast Asia, Australia, Aboriginal North America, Aboriginal Latin America, The Far East, etc. May be repeated for credit, if different language area. The Staff

**225. Linguistic Structures.** (Formerly numbered 225A-225Y.) Prerequisites: courses 120A, 120B; recommended preparation: 165A, 165B. Phonological and grammatical structure of a selected language, and its genetic relationships to others of its family. May be repeated for credit if different language family. The Staff

**M246A. Linguistic Anthropology I.** (Same as Anthropology M201A.) Prerequisite: consent of instructor. Research in verbal interaction, emphasizing the use of conversational structures. Mr. Moerman

**M246B. Linguistic Anthropology II.** (Same as Anthropology M201B.) Prerequisite: consent of instructor. This seminar aims to provide interested students basic information on Black American English, an important minority dialect in the United States. The social implications of minority dialects will be examined from the perspectives of their genesis, maintenance and social functions. The seminar also aims to acquaint students with problems and issues in the field of sociolinguistics through a case study approach. Ms. Mitchell-Kernan

**M246C. Linguistic Anthropology III.** (Same as Anthropology M201C.) Prerequisite: consent of instructor. Problems in the relations of language to culture. The Staff

Proseminars and Seminars (numbered 250 and above) may be repeated for credit, having been approved by the Graduate Council as nonrepetitive in content.

**251A-251B. Topics in Phonetics and Phonology. Proseminar.** Prerequisite: course 165A. Course 251A is prerequisite to 251B. When there are multiple sections, continuation must be in the same section in the same year. Specialized topics in phonetics or phonology. The Staff

**252A-252B. Topics in Syntax and Semantics. Proseminar.** Prerequisite: course 165B. Course 252A is prerequisite to 252B. When there are multiple sections, continuation must be in the same section in the same year. Specialized topics in syntax and semantics. The Staff

**253A-253B. Topics in Language Variation. Proseminar.** Prerequisite: course 110. Course 253A is prerequisite to 253B. When there are multiple sections, continuation must be in the same section in the same year. Specialized topics in language variation. The Staff

**254A-254B. Topics in Linguistics. Proseminar.** Prerequisite: courses 165A, 165B, and consent of instructor. When there are multiple sections, continuation must be in the same section in the same year. Individual proseminars will deal with such topics as child language, sociolinguistics, history of linguistic theory, neurolinguistics, languages of the world, psycholinguistics, etc. The Staff

Seminars may be taken for two units of credit *only* by students who have been formally admitted to the doctoral program. All others must enroll for four units.

**261A-261B-261C. Seminar in Phonology. (½ or 1 course)** Prerequisite: completion of at least twelve units of graduate courses in phonology. 261A, 261B, and 261C may be taken independently of each other. Only Post-M.A. students may enroll for two units; all others must enroll for four. Graded satisfactory/unsatisfactory. The Staff

**262A-262B-262C. Seminar in Syntax and Semantics. (½ or 1 course)** Prerequisite: completion of at least twelve units of graduate courses in syntax and semantics. 262A, 262B, and 262C may be taken independently of each other. Only Post-M.A. students may enroll for two units; all others must enroll for four. Graded satisfactory/unsatisfactory. The Staff

**263A-263B-263C. Seminar in Language Variation. (½ or 1 course)** Prerequisite: completion of at least twelve units of graduate courses in language variation. 263A, 263B, and 263C may be taken independently of each other. Only Post-M.A. students may enroll for two units; all others must enroll for four. Graded satisfactory/unsatisfactory. The Staff

**264A-264B-264C. Seminar in Special Topics in Linguistic Theory. (½ or 1 course)** Prerequisite: consent of instructor. 264A, 264B, and 264C may be taken independently of each other. Special topics may include child language, phonetics, neurolinguistics, psycholinguistics, sociolinguistics, etc. Only Post-M.A. students may enroll for two units; all others must enroll for four. Graded satisfactory/unsatisfactory. The Staff

**275. Linguistics Colloquium.** Prerequisite: fulfillment of the M.A. requirements. Varied linguistic topics, generally presentations of new research by students, faculty, and visiting scholars. Graded satisfactory/unsatisfactory. The Staff

**276. Linguistic Colloquium. (non-credit course)** Prerequisite: fulfillment of the M.A. requirements. Same as course 275, taken



without credit by students not presenting a colloquium. Graded satisfactory/unsatisfactory. The Staff

**501. Cooperative Program.** (½ to 2 courses) Prerequisite: approval of UCLA graduate adviser and graduate dean. Approval of host campus instructor, department chairman, and graduate dean. The course is used to record the enrollment of UCLA students in courses taken under cooperative arrangements with neighboring institutions. Graded satisfactory/unsatisfactory.

#### Seminar

**495. College Teaching of Linguistics.** (½ course) Seminars, workshops, and apprentice teaching. Selected topics including curriculum development, various teaching strategies and their effects, teaching evaluation, and other topics in college teaching. Graded only on satisfactory/unsatisfactory basis. The Staff

#### Individual Study and Research

**596A. Directed Studies.** (¼ to 2 courses) Prerequisite: completion of all undergraduate deficiency courses. May be applied toward fulfillment of M.A. course requirements. Directed individual study or research. May be repeated for credit. Graded satisfactory/unsatisfactory. The Staff

**596B. Directed Linguistic Analysis.** (¼ to 2 courses) Prerequisite: fulfillment of the M.A. requirements. Intensive work with native speakers by students individually. May be repeated for credit. Graded satisfactory/unsatisfactory. The Staff

**597. Preparation for Master's Comprehensive and Doctoral Qualifying Examinations.** (¼ to 2 courses) Prerequisite: at least six graduate courses in linguistics. Can be taken *only* in the quarters in which the student expects to stand for his comprehensive or qualifying examinations. May not be applied toward fulfillment of M.A. course requirements. May be repeated for credit. Graded satisfactory/unsatisfactory. The Staff

**598. Research for Master's Thesis.** (¼ to 2 courses) Prerequisite: consent of chairman of guidance committee. Research and preparation of the M.A. thesis. May not be applied toward fulfillment of M.A. course requirements. May be repeated for credit, for a maximum of 8 units credit. Graded satisfactory/unsatisfactory. The Staff

**599. Research for Dissertation.** (¼ to 4 courses) Prerequisite: advancement to candidacy for the Ph.D. degree. May not be applied toward fulfillment of Ph.D. course requirements. May be repeated for credit. Graded satisfactory/unsatisfactory. The Staff

## African Languages

#### Upper Division Courses

**101A-101B-101C. Elementary Swahili.** Five hours. The major language of East Africa, particularly Tanzania. Mr. Hinnebusch

**102A-102B-102C. Intermediate Swahili.** Five hours. Prerequisite: courses 101A-101B-101C or consent of the instructor. Mr. Hinnebusch

**103A-103B-103C. Advanced Swahili.** Prerequisite: courses 102A-102B-102C or consent of the instructor. Readings in Swahili literature and the contemporary press. Discussions mainly in Swahili. Mr. Hinnebusch

**\*4104A-104B-104C. Elementary Luganda.** Five hours. A major language of Uganda. Mr. Givón

**\*4105A-105B-105C. Elementary Sotho.** Five hours. Southern Sotho, spoken primarily in Basutoland and Orange Free State, mutually intelligible with adjacent Northern Sotho and Tswana. Mr. Kunene

**\*4106A-106B-106C. Intermediate Sotho.** Five hours. Prerequisite: courses 105A-105B-105C or consent of instructor. Mr. Kunene

**107A-107B-107C. Elementary Zulu.** Five hours. The most widely spoken of the Nguni languages of South Africa, mutually intelligible with other members of this group. Mr. Kunene

**108A-108B-108C. Intermediate Zulu.** Five hours. Prerequisite: course 107A-107B-107C or consent of instructor. Mr. Kunene

**\*4109A-109B-109C. Elementary Xhosa.** Five hours. A Major Nguni language of South Africa, mutually intelligible with other members of this group. Mr. Kunene

**\*4110A-110B-110C. Intermediate Xhosa.** Five hours. Prerequisite: courses 109A-109B-109C or consent of the instructor. Mr. Kunene

**111A-111B-111C. Elementary Yoruba.** Five hours. Prerequisite: consent of the instructor. The major language of western Nigeria. The Staff

**112A-112B-112C. Intermediate Yoruba.** Five hours. Prerequisite: courses 111A-111B-111C or consent of the instructor. The Staff

**\*113A-113B-113C. Elementary Igbo.** Five hours. The major language of eastern Nigeria. Mr. Welmers

**\*4114A-114B-114C. Intermediate Igbo.** Five hours. Prerequisite: courses 113A-113B-113C or consent of the instructor. Mr. Welmers

**115A-115B-115C. Elementary Akan.** Five hours. The major language of Ghana. The Staff

**\*4121A-121B-121C. Elementary Fula.** Five hours. The language of the Fulani, spoken in widely scattered areas of West Africa, including major concentrations in Guinea and the Nigeria-Cameroon area. The Staff

**131A-131B-131C. Elementary Bambara.** Five hours. Prerequisite: consent of the instructor. The major language of Mali, also widely spoken in adjacent parts of West Africa; includes Maninka (Malinke), Dyula, and other mutually intelligible dialects. The Staff

**\*4132A-132B-132C. Intermediate Bambara.** Prerequisite: courses 131A-131B-131C or consent of instructor. The Staff

**\*4133A-133B-133C. Advanced Bambara.** Prerequisite: courses 132A-132B-132C or consent of instructor. Readings in Bambara literature and the contemporary press. Discussions mainly in Bambara. The Staff

**141A-141B-141C. Elementary Hausa.** Five hours. The major language of northern Nigeria and adjacent areas. Mr. Schuh

**142A-142B-142C. Intermediate Hausa.** Five hours. Prerequisite: courses 141A-141B-141C or consent of the instructor. Mr. Schuh

**143A-143B-143C. Advanced Hausa.** Prerequisite: courses 142A-142B-142C or consent of the instructor. Readings in Hausa literature and the contemporary press. Discussions mainly in Hausa. Mr. Schuh

**150A-150B-150C. African Literature in English Translation.** Courses 150A and 150B may be taken independently for credit. Narrative and didactic oral prose and poetry of sub-Saharan Africa, and written prose and poetry of South Africa. Mr. Kunene

**190. Survey of African Languages.** An introduction to the languages of Africa, their distribution and classification, and their phonological and grammatical structures; illustrations from several representative languages, with appropriate language laboratory demonstrations and drills. Mr. Welmers

**192. Comparative Studies in African Languages.** Prerequisite: two quarter courses in an African language, or course 190; Linguistics 110 is recommended as a prior or concurrent course. Comparison of structural and lexical features of a group of closely related languages, such as southern Bantu, southwestern Mande, Akan, or Senufo. The Staff

**199. Special Studies in African Languages.** (¼ to 1½ courses) Prerequisite: consent of the instructor. Instruction or supervised research based on the needs of the individual student, in any language or group of languages for which appropriate facilities are available. The Staff

#### Graduate Courses

**\*1201A-201B. Comparative Niger-Congo.** Prerequisite: Linguistics 165A, 165B, 220A; recommended preparation: Linguistics 202; three quarter courses in one language selected from courses 101-132, 199. Investigation of relationships within the Niger-Congo family as a whole, or within selected branches of the family. Mr. Welmers

**\*1202A-202B-202C. Comparative Bantu.** Prerequisite: Linguistics 165A, 165B, 220A; recommended preparation: three quarter courses in one Bantu language selected from African Languages 101-110, 199. Investigation of relationships among the Bantu languages; the extent and external relationships of Bantu. Mr. Givón

**270. Seminar in African Literature.** Mr. Kunene

#### Individual Study and Research

**596. Directed Studies.** (¼ to 2 courses) Directed individual study or research. Up to one full course may be applied toward fulfillment of M.A. course requirements. May be repeated for credit. Graded satisfactory/unsatisfactory. The Staff

## Indigenous Languages of the Americas

#### Upper Division Courses

**118A-118B-118C. Elementary Quechua.** Five hours. The language of the Incas and its present day dialects, as spoken in Andean South America. The Staff

## South Asian Languages

#### Upper Division Courses

**\*151A-151B-151C. Elementary Thai.** Five hours. The major language of Thailand. Mr. Campbell

**\*4152A-152B-152C. Intermediate Thai.** Prerequisite: courses 151A-151B-151C or consent of instructor. Mr. Campbell

**\*4161A-161B-161C. Elementary Tagalog.** Five hours. The national language of the Philippines. Mr. Bowen

**\*171A-171B-171C. Hindi.** Five hours.

Mr. Bright

#### Related Courses in Other Departments

(Other than Language Courses)

**Anthropology 177A.** Fields Methods in Linguistic Anthropology: Practical Phonetics.

**177B.** Field Methods in Linguistic Anthropology: Descriptive Semantics.

**276.** Ethnolinguistics.

**Arabic (Department of Near Eastern Languages) 280.** Structure of Classical Arabic.

**Armenian (Department of Near Eastern Languages) 210.** History of the Armenian Language.

**Czechoslovak (Department of Slavic Languages) 222.** The Structure of Slovak.

**English 121.** The History of the English Language.

**122.** Introduction to the Structure of Present-day English.

**210.** History of the English Language.

**215.** The Structure of Present-Day English.

**218.** Celtic Linguistics.

**240.** Studies in the History of the English Language.

**241.** Studies in the Structure of the English Language.

**250K.** Contrastive Analysis of English and Other Languages Seminar.

**251K.** Bilingual Comparative Studies. Seminar.

**260K.** Psycholinguistics and Language Teaching. Seminar.

**270K.** Language Policy in Developing Countries. Seminar.

**Folklore 217.** Folk Speech.

**French 204A.** Phonology and Morphology from Vulgar Latin to French Classicism.

**204B.** Syntax and Semantics from Vulgar Latin to French Classicism.

**206A.** French Grammatical Theory.

**206B.** Problems in French Syntax.

**Germanic Languages 117.** Language and Linguistics.

**217.** History of the German Language.

**230.** Survey of Germanic Philology.

**251.** Seminar in Syntax and Phonology of German.

**252.** Seminar in Historical and Comparative German Linguistics.

**Hebrew (Department of Near Eastern Languages) 190A-190B.** Survey of Hebrew Grammar.

**210A-210B-210C.** History of the Hebrew Language.

**Indo-European Studies 210.** Indo-European Linguistics. Advanced Course.

**280A-280B.** Seminar in Indo-European Linguistics.

**Iranian (Department of Near Eastern Languages) 210A-210B.** The History of the Persian Language.

**211A-211B.** Modern Iranian Dialects.

**Italian 259A.** History of the Italian Language.

**259B.** The Structure of Modern Italian.

**Latin (Department of Classics) 240.** History of the Latin Language.

**Oriental Languages 175.** The Structure of the Japanese Language.

**223.** History of the Japanese Language.

**Philosophy 127A-127B.** Philosophy of Language.

**172.** Philosophy of Language.

**287.** Seminar: Philosophy of Language.

**Portuguese (Department of Spanish and Portuguese) 100.** Phonology and Pronunciation.

**103.** Syntax.

**M118.** History of the Portuguese and Spanish Languages.

**M203A-203B.** The Development of the Portuguese and Spanish Languages.

**M251.** Studies in Galego-Portuguese and Old Spanish.

**Psychiatry 322.** Language Disorders of Childhood.

**Psychology 122.** Language and Communication.

**123.** Psycholinguistics.

**231.** Seminar in Language and Communication.

**260A.** Psycholinguistics I. Seminar.

**260B.** Psycholinguistics II. Seminar.

**Russian (Department of Slavic Languages) 121.** Russian Phonology.

**122.** Russian Morphology.

**123.** Historical Commentary to Modern Russian.

204. Introduction to the History of the Russian Literary Language.
241. Russian Phonology.
242. Russian Morphology.
- 243A-243B. Historical Phonology and Morphology of Russian.
263. Russian Dialectology.
264. The Evolution of Literary Russian.
265. Russian Syntax.
266. Russian Lexicology.
- Scandinavian Languages (Department of Germanic Languages)** 210. History and Description of the Scandinavian Languages.
- Semitics (Department of Near Eastern Languages)** 209A-209B-209C. Comparative Study of the Ethiopian Languages.
- 280A-280B-280C. Seminar in Comparative Semitics.
- 290A-290B-290C. Comparative Morphology of the Semitic Languages.
- Slavic Languages** 202. Introduction to Comparative Slavic Linguistics.
242. Comparative Slavic Linguistics.
251. Introduction to Baltic Linguistics.
- 262A-262B. Western Slavic Linguistics.
- 263A-263B. Southern Slavic Linguistics.
281. Seminar in Slavic Linguistics.
282. Seminar in Structural Analysis.
- Sociology** 144. Conversational Structures.
266. Selected Problems in the Analysis of Conversation.
267. Selected Problems in Communication.
- Spanish (Department of Spanish and Portuguese)** 100. Phonology and Pronunciation.
103. Syntax.
115. Applied Linguistics.
- M118. History of the Portuguese and Spanish Languages.
- M203A-203B. The Development of the Portuguese and Spanish Languages.
- 204A-204B. Transformational Grammar.
206. Linguistics.
209. Dialectology.
- M251. Studies in Galegan-Portuguese and Old Spanish.
- 256A-256B. Studies in Linguistics and Dialectology.
- Turkic Languages (Department of Near Eastern Languages)** 230A-230B-230C. A Historical and Comparative Survey of the Turkic Languages.

## MANAGEMENT

(Department Office, 3250 Graduate School of Management)

- Robert B. Andrews, Ph.D., *Professor of Management.*
- John W. Buckley, Ph.D., *Professor of Accounting and Information Systems.*
- Elwood S. Buffa, Ph.D., *Professor of Operations Management and Management Science.*
- Leland S. Burns, Ph.D., *Professor of Urban Planning.*
- Joseph D. Carrabino, Ph.D., P.E., *Professor of Management.*
- Fred E. Case, D.B.A., *Professor of Urban Land Economics.*
- Samuel A. Culbert, Ph.D., *Professor of Human Systems Development.*
- Louis E. Davis, M.S., *Professor of Organizational Sciences and Research Socio-Technical Scientist.*
- David K. Eiteman, Ph.D., *Professor of Finance.*
- Walter A. Fogel, Ph.D., *Professor of Industrial Relations, and Research Economist, Institute of Industrial Relations.*
- Arthur M. Geoffrion, Ph.D., *Professor of Management Science.*
- Glenn W. Graves, Ph.D., *Professor of Quantitative Methods.*
- Edward K. Hamilton, B.A., *Adjunct Professor of Management.*
- James N. Hodgson, A.B., *Adjunct Professor of Management.*
- Alfred E. Hofflander, Ph.D., *Professor of Finance and Insurance.*
- John E. Hutchinson, Ph.D., *Professor of Industrial Relations.*
- James R. Jackson, Ph.D., *Professor of Management.*
- Harold H. Kassarjian, Ph.D., *Professor of Management.*
- Paul Kircher, Ph.D., C.P.A., *Professor of Accounting and Information Systems.*
- Archie Kleingartner, Ph.D., *Professor of Industrial Relations.*
- J. Clayburn LaForce Jr., Ph.D., *Professor of Economics.*
- Steven A. Lippman, Ph.D., *Professor of Quantitative Methods.*
- James B. MacQueen, Ph.D., *Professor of Management.*
- Robert Hal Mason, Ph.D., *Professor of International Business and Business Policy.*
- Fred Massarik, Ph.D., *Professor of Behavioral Science and Industrial Relations, and Research Behavioral Scientist, Institute of Industrial Relations.*
- Frederic Meyers, Ph.D., *Professor of Industrial Relations.*
- Daniel J.B. Mitchell, Ph.D., *Professor of Industrial Relations.*

- Frank G. Mittelbach, M.A., *Professor of Management and Planning and Research Economist.*
- Rosser T. Nelson, Ph.D., *Professor of Management.*
- Alfred Nicols, Ph.D., *Professor of Managerial Economics.*
- Anthony P. Raia, Ph.D., *Professor of Management.*
- Barry M. Richman, Ph.D., *Professor of Management and International Business.*
- Richard W. Roll, Ph.D., *Professor of Finance.*
- John P. Shelton, Ph.D., *Professor of Finance.*
- Keith V. Smith, Ph.D., *Professor of Finance and Business Economics.*
- R. Clay Sprouis, Ph.D., *Professor of Computers and Information Systems.*
- George A. Steiner, Ph.D., Litt.D., *Professor of Management and Public Policy.*
- Robert Tannenbaum, Ph.D., *Professor of the Development of Human Systems.*
- J. Fred Weston, Ph.D., *Professor of Managerial Economics and Finance.*
- Harold M. Williams, J.D., *Professor of Management.*
- Robert M. Williams, Ph.D., *Professor of Business Economics and Statistics.*
- Ralph M. Barnes, Ph.D., *Emeritus Professor of Engineering and Production Management.*
- William F. Brown, Ph.D., *Emeritus Professor of Marketing.*
- A. B. Carson, Ph.D., C.P.A., *Emeritus Professor of Accounting.*
- John C. Clendenin, Ph.D., *Emeritus Professor of Finance.*
- Ira N. Frisbee, M.B.A., C.P.A., LL.D., *Emeritus Professor of Accounting.*
- Leo Grebler, Ph.D., *Emeritus Professor of Urban Land Economics.*
- Ralph C. Hoeber, J.D., Ph.D., *Emeritus Professor of Business Law.*
- Neil H. Jacoby, Ph.D., LL.D., *Emeritus Armand Hammer Professor of Business Economics and Policy.*
- Raymond J. Jessen, Ph.D., *Emeritus Professor of Business Statistics and Emeritus Professor of Public Health.*
- Erwin M. Keithley, Ed.D., *Emeritus Professor of Management.*
- Harold Koonitz, Ph.D., *Emeritus Mead Johnson Professor of Management.*
- Wayne L. McNaughton, Ph.D., *Emeritus Professor of Management.*
- George W. Robbins, M.B.A., *Emeritus Professor of Marketing.*
- Harry Simons, M.A., C.P.A., *Emeritus Professor of Accounting.*
- Ichak Adizes, Ph.D., *Associate Professor of Managerial Studies.*
- Theodore A. Andersen, Ph.D., *Associate Professor of Business Economics and Finance.*
- James R. Bettman, Ph.D., *Associate Professor of Management.*
- Noel Capon, Ph.D., *Associate Professor of Management.*
- Lee G. Cooper, Ph.D., *Associate Professor of Management in the Arts and Human Systems Development.*
- John R. Dominguez, Ph.D., *Associate Professor of Business Economics.*
- James S. Dyer, Ph.D., *Associate Professor of Management Science.*
- Donald Erlenkotter, Ph.D., *Associate Professor of Planning and Decision Sciences.*
- Eric Flamholtz, Ph.D., *Associate Professor of Accounting and Information Systems.*
- Richard A. Goodman, D.B.A., *Associate Professor of Management.*
- Michael E. Granfield, Ph.D., *Associate Professor of Urban Land Economics.*
- J. Morgan Jones, Ph.D., *Associate Professor of Management Science.*
- Larry J. Kimbrell, Ph.D., *Associate Professor of Managerial Economics.*
- Clement Krouse, Ph.D., *Associate Professor of Business Economics.*
- Bennet P. Lientz, Ph.D., *Associate Professor of Computers and Information Systems.*
- Richard J. Lutz, Ph.D., *Associate Professor of Marketing.*
- Richard O. Mason, Ph.D., *Associate Professor of Information Systems.*
- Marvin May, Ph.D., *Adjunct Associate Professor of Management.*
- David Mayers, Ph.D., *Associate Professor of Finance.*
- John J. McDonough, D.B.A., *Associate Professor of Accounting and Information Systems.*
- Bill McKelvey, Ph.D., *Associate Professor of Management and Organization Design.*
- Ephraim R. McLean, Ph.D., *Associate Professor of Information Systems.*
- John J. Morse, Ph.D., *Associate Professor of Organizational Behavior.*
- Frank E. Norton, Ph.D., *Associate Professor of Business Economics.*
- Hans Schöhlhammer, D.B.A., *Associate Professor of Management Theory and International Business.*
- John C. Anderson, Ph.D., *Assistant Professor of Organizational Behavior.*
- Shahid L. Ansari, Ph.D., *Assistant Professor of Accounting and Information Systems.*
- Jerry L. Arnold, Ph.D., *Assistant Professor of Accounting and Information Systems.*
- John M. Clapp, Ph.D., *Assistant Professor of Management.*
- Thomas E. Copeland, Ph.D., *Assistant Professor of Finance.*
- Robert Geske, Ph.D., *Assistant Professor of Finance.*
- Dominique M. Hanssens, Ph.D., *Assistant Professor of Marketing.*
- Anne S. Huff, Ph.D., *Assistant Professor of Management.*
- Vinay V. Marathe, Ph.D., *Assistant Professor of Finance.*
- Ronald W. Masulis, Ph.D., *Assistant Professor of Managerial Economics and Finance.*
- Lauren K. Newton, Ph.D., *Assistant Professor of Accounting and Information Systems.*
- Charles A. O'Reilly III, Ph.D., *Assistant Professor of Public Sector Management.*
- Alfred E. Osborne, Jr., Ph.D., *Assistant Professor of Management.*
- Richard P. Rumelt, D.B.A., *Assistant Professor of Business Policy and Management.*
- Carol Ann Scott, Ph.D., *Assistant Professor of Marketing.*
- E. Burton Swanson, Ph.D., *Assistant Professor of Management.*
- James Taylor, Ph.D., *Assistant Professor of Socio-Technical Systems.*
- Barton A. Weitz, Ph.D., *Assistant Professor of Marketing.*

- William T. Bailey, M.P.A., *Lecturer in Accounting and Information Systems.*

- David M. Boje, M.B.A., *Acting Assistant Professor of Organizational Behavior.*
- William H. Broesamle, M.B.A., *Lecturer in Management.*
- Robert L. Carmichael, Ph.D., *Lecturer in Computers and Information Systems.*
- Peter Pin-Shan Chen, Ph.D., *Acting Associate Professor of Computers and Information Systems.*
- Patricia O'Mara Katsky, Ph.D., *Lecturer in Management.*
- Carol Kovach, Ph.D., *Lecturer in Management.*
- Joan K. Lasko, Ph.D., *Lecturer in Behavioral Science.*
- James G. Manegold, M.B.A., *Lecturer in Accounting and Information Systems.*
- Paul Prasow, Ph.D., *Senior Lecturer in Industrial Relations, and Research Economist, Institute of Industrial Relations.*
- Warren H. Schmidt, Ph.D., *Emeritus Senior Lecturer in Behavioral Science.*
- Edward V. Sedgwick, Ph.D., *Lecturer in Management.*
- William M. Zumeta, M.P.P., *Acting Assistant Professor of Public Sector Management.*

### Lower Division Courses

**1A-1B. Elementary Accounting.** Prerequisite: sophomore standing. Course 1A is prerequisite to course 1B. An introduction to accounting theory and practice. The first quarter presents the recording, analyzing and summarizing procedures used in preparing balance sheets and income statements. The second quarter includes payroll and tax accounting, partnership and corporation accounts, manufacturing and cost accounting and supplementary statements. The Staff

**13G. Computer Programming for Graduate Students.** Designed to provide the graduate student with a programming skill in a particular computer language. (e.g., APL, FORTRAN, COBOL, JCL). The selection of the language to be taught in any given quarter will depend upon demand and available resources. May be repeated. Mr. McLean in charge

### Upper Division Courses

Upper division courses in management are open to all University students who have completed the necessary prerequisites.

**100. Business Economics.** Prerequisite: Mathematics 2, 4A-4B, course 115 (may be taken concurrently). Effort of the enterprise to secure profits, nature of demand for its products. Costs and production. Allocation of resources through competition. Forms of market competition. Relation of size to efficiency. Markets for productive factors. Incentives and growth, capital budgeting. Mr. Granfield, Mr. Krouse, Mr. Nicols

**101. Business Fluctuations and Forecasting.** Prerequisite: courses 100, 115, and Economics 160 (may be taken concurrently). How the enterprise reacts to general economic fluctuations and how its decisions, in turn, affect them. Important forces in past fluctuations. Behavior of indexes of business activity. Appraisal of forecasting techniques. Entrepreneurial and public policies to mitigate business fluctuations. Mr. Granfield, Mr. Norton, Mr. R. Williams

**108. Legal Analysis for Business Managers.** Significance and growth of the law; the law in its relationship to business, with special emphasis on current problems; coverage of the law of contracts, agency sales, property, negotiable instruments, business organizations including the functions of inside and outside counsel and trade regulations. The Staff

**109. Business Communications.** The development of information, skills, and attitudes as they relate to the types of communication required in the management of enterprises. The Staff

**111. Introduction to Operations Research.** Prerequisite: Mathematics 2, 4A-4B, course 115, or equivalent. Survey of operations research from an applied rather than theoretical viewpoint. Emphasis on the formulation of mathematical models and the most basic techniques for obtaining useful results. Problem types discussed: allocation, competition, inventories, networks, project management, waiting lines, replacement, sequencing, transportation. Mr. Bettman, Mr. Dyer, Mr. Nelson

**113A. Computer Data Processing.** An introduction to computer data processing for students with little or no previous experience with computing. Computer hardware, software, and programming concepts are discussed, as well as the application of computers to management problems. Computer programming problems are assigned. Mr. Carmichael and the Staff

**113B. Computer Programming Methods.** Prerequisites: Engineering 10, course 113A or 404, or equivalent experience with some general purpose programming language. Use of PL/C and PL/1 for programming management applications. Sequential and nonsequential file processing. Data considerations. Report generation. Computational algorithms. Considerations of program structure. Extensive programming assignments. Mr. Carmichael and the Staff

**115. Business Statistics.** Prerequisite: Mathematics 2, 4A-4B, or the equivalent. Elements of probability, probability distributions, estimation and confidence intervals, tests of significance and of hypotheses, linear regression and correlation, time series analysis and principles of index numbers. Applications to the analysis of and the decision-making aspects of everyday business problems. Mr. Jessen and the Staff

**116A. Statistical Methods: Decision.** Prerequisite: course 115 or graduate status. Statistical decision under uncertainty; statistical decision rules and their evaluation; Bayesian inference; applications to business problems. Mr. Jones, Mr. Lippman, Mr. Nelson

**116B. Statistical Methods: Analysis.** Prerequisite: course 115 or equivalent. Analysis of variance; design and analysis of statistical experiments and surveys; multiple regression and correlation, curvilinear regression; analysis of enumeration data; nonparametric methods. Mr. Jessen

**120. Intermediate Accounting.** Prerequisite: courses 1A-1B or consent of instructor. The preparation of the principal accounting statements. Recording, valuation, and presentation of cash, temporary investments, receivables, inventories, investments, plant and equipment, intangibles, current obligations, long-term debt, paid-in capital and retained earnings. Statement analysis. Statement of application of funds. The Staff

**120M. Management Accounting.** Prerequisite: course 120 or consent of instructor. Not open to students who have credit for course 403. Management Accounting theory and methods; formulation and analysis of management reports; internal control; planning and budgeting; cost-volumes-profit analysis; elements of cost accounting; price-level accounting; learning curves and capital budgeting. The Staff

**122. Cost Accounting.** Prerequisite: course 120 or consent of instructor. The nature, objectives, and procedures of cost accounting and control; job costing and process costing; accounting for manufacturing overhead; cost budgeting; cost reports; joint-product costing; distribution cost; standard costs; differential cost analysis; profit-volume relationships and break-even analysis. The Staff

**124. Advanced Accounting.** Prerequisite: courses 120, 122, or consent of instructor. Partnerships and joint ventures; installment sales and consignment sales, home office and branch relationships; corporate combinations; the preparation of consolidated statements; foreign branches and subsidiaries; receiverships; estates and trusts, governmental units; actuarial science. Mr. Bailey and the Staff

**130. Business Finance.** A study of the forms and sources of financing business firms large and small, corporate and noncorporate. The emphasis is on financial planning and developing judgment in formulating decisions on financial problems. Financial problems are also considered in their social, legal and economic effects. Mr. Andersen, Mr. Dominguez, Mr. May

**133. Investment Principles and Policies.** Principles underlying investment analysis and policy; salient characteristics of governmental and corporate securities; policies of investment companies and investing institutions; relation of investment policy to money markets and business fluctuations; security price-making forces; construction of personal investment programs. Mr. Eiteman, Mr. Shelton, Mr. Smith

**135. Principles of Insurance.** Basic principles of risk and insurance and their applications to business management and personal affairs. Analysis of concepts and methods of handling risks; insurance carriers, contracts and underwriting; loss prevention and settlement; government insurance programs; economic functions of insurance. Mr. Hofflander

**140. Elements of Production and Operations Research.** Prerequisite: course 111 or equivalent. Principles and decision analysis related to the effective utilization of the factors of production in manufacturing and nonmanufacturing activities for both intermittent and continuous systems. The study of production organizations, analytical models and methods, facilities design, and the design of control systems for production operations. The Staff

**150. Elements of Industrial Relations.** Principles and methods of effectively utilizing human resources in organizations. The relationship between social, economic, and other environmental factors and current problems in industrial relations. Mr. Fogel, Mr. Hutchinson, Mr. Mitchell

**160. Elements of Marketing.** A survey of the major marketing methods, institutions, and practices. The subjects of retailing, wholesaling, distribution channels, marketing legislation, advertising, cooperative marketing, pricing, marketing research, and marketing costs are treated from the standpoint of consumers, middlemen, and manufacturers. Mr. Kassarijan

**163. Advertising Principles and Policies.** Prerequisite: course 160. The preparation, use, and administration of advertising, emphasizing the use of research to direct and measure the effectiveness of each stage in the operation. The economic and social implications of advertising also are evaluated. Mr. Kassarijan

**175. Elements of Real Estate and Urban Land Economics.** An examination of business decision making as related to logical forces shaping cities and influencing real estate market functions and land uses. Emphasis is placed on decision making as it relates to appraising, building, financing, managing, marketing and using urban property. Mr. Case, Mr. Clapp, Mr. Mittelbach

**180. Behavioral Science Foundations.** An introduction to selected concepts in behavioral science, their integration and application to management. Organization, group, cultural, individual behavior in relation to managerial environment and functional fields of business administration. Simulations and demonstrations of

behavioral science principles.

Ms. Lasko, Mr. McKelvey, Mr. Morse

**182. Leadership Principles and Practice.** Knowledge and skills leading to effectiveness in interpersonal relations. Understanding oneself as a leader, and others as individuals and as members of working groups. Understanding of group process, including group leadership. Lectures and "sensitivity training" laboratory. Mr. Culbert, Ms. Lasko, Mr. Massarik

**190. Management Theory and Policy.** Prerequisite: consent of instructor. A study of the basic concepts and theory of management. Emphasis is on an operational analysis of the manager's role in all types of organizations. The course deals with management issues in the areas of planning, organizing, staffing, directing and controlling. Mr. Carrabino and the Staff

**191. Judgment of Systems and Systems of Judgment.** Prerequisite: upper-division standing; well qualified lower-division students may be admitted with consent of instructor. Action-oriented decision making, from the "systems" viewpoint, with attention focused on the crucial issue of "asking the right questions." Emphasizes complex social/political/economic/professional problems where pertinent facts, goals, and action alternatives are largely matters of judgment. Mr. Jackson

**197. Special Topics in Management.** Topics of special interest to undergraduate students. Specific subjects to be covered may change each quarter depending on particular interest of instructors or students. May be repeated for credit. The Staff

**199. Special Studies in Management. (¼ to 2 courses)** Prerequisite: senior standing and consent of instructor and the dean by special petition available in the Student Affairs Office. The Staff

### Graduate Courses

**200A. Techniques of Business Economics Analysis: Marginalist Models.** Prerequisite: course 405 and Economics 145 or consent of instructor. Contemporary business economic principles of resource allocation and the price system are developed. Classical optimization and comparative static techniques are set forth and applied to the models of consumer choice and firm and general production-exchange equilibrium models. Mr. Granfield, Mr. Krouse, Mr. Osborne

**200B. Techniques of Business Economic Analysis: Econometrics.** Prerequisite: consent of instructor. Standard topics in applied econometric modeling are developed. The assumptions underlying the classical normal linear regression model, special problems in application, and interpretation of results are stressed. Practical applications are extensively developed in student projects. Mr. Kimbell, Mr. Krouse, Mr. Mayers

**201A. Business Forecasting.** Prerequisite: courses 100, 101, or 405, 406 and 115 or 402. The role of business forecasting in managerial planning. Principles and methods of forecasting. Evaluation of the reliability of existing forecasting techniques. Covers both short-term and long-term forecasting of industry, regional, and national business trends. Mr. Kimbell, Mr. Norton, Mr. R. Williams

**201B. Industry Forecasting.** Prerequisite: course 201A. Evaluation of various methodologies found useful in preparing industry forecasts; differences between short- and long-range forecasting techniques, etc. Mr. Andersen, Mr. Kimbell

**201C. Regional Economic Forecasting.** Prerequisite: course 201A. Forecasting of economic activity in a region; emphasizing special problems such as population and industry migration; the effects of external forces on the regional economy. Mr. Granfield, Mr. Kimbell, Mr. R. Williams

**201D. Economic Policy and Business Environment.** Prerequisite: consent of instructor. Analysis of economic policies shaping the business policy: stabilizing policy instruments; structural policies for efficiency and progress; policy needs for the future. Treats policy formation and administration as well as design. Mr. Granfield, Mr. Jacoby, Mr. Nicols

**202A. Economic Theories of Business Behavior: Marginal, Managerial, and Behavioral.** Prerequisite: course 200A. The economic behavior of the firm and firm groups is considered. Theories extending from those which retain marginal analysis to treat alternative corporate objectives to those viewing the firm as an adaptive mechanism with limited cognitive and information processing capabilities. Mr. Krouse, Mr. Nicols, Mr. Weston

**202B. Principles of Industrial Organization.** Prerequisite: course 200A. The course develops analysis principles necessary for understanding the economic structure and behavior of industries. Topics range from substitutability criteria for industry definition and a comparison of alternative classification schemes to the relationships among industry structure, conduct and performance. Mr. Granfield, Mr. Krouse, Mr. Weston

**202C. Empirical Studies in Industrial Organization.** Prerequisite: course 202B. Analyses of factors influencing the size of industries, their size distribution, and the conditions of entry and exit are investigated. Implications of such industry characteristics are derived for decisions having to do with firm output, prices, advertising, and research/development. Mr. Krouse, Mr. Nicols, Mr. Weston

**202D. The Organization of Industry and Business Policy.** Prerequisite: consent of instructor. Analysis of economic aspects of

long-range planning of firms with respect to horizontal expansion, vertical integration, and diversification, especially the review of statutory and legal decisions affecting internal and external expansion policies. Mr. Granfield, Mr. Nicols, Mr. Weston

**M203A. Economics of Decision.** (Same as Economics M203A.) Prerequisite: rudiments of economic theory, calculus, and probabilities of statistics (e.g., course 116A). Norms and facts of decision making in household, business, and government. Consistent behavior in terms of personal utilities and probabilities. Departures from consistency: stochastic theories of behavior and resulting econometric models. Mr. Dyer, Mr. Erlenkotter

**M203B. Economics of Information.** (Same as Economics M203B.) Prerequisite: rudiments of economic theory of the firm, and of calculus and probabilities or statistics (e.g., course 116A); course M203A, or consent of instructor. Optimal decision and information rules. Amount, cost, and value of information. The Staff

**M203C. Economics of Organization.** (Same as Economics M203C.) Prerequisite: course 203A-203B. Rational models of teams. Relation to the theory of games. The Staff

**205A. International Business Economics.** Prerequisite: courses 405, 406, or consent of instructor. The international business environment, international economic institutions, national and regional trade policies and developments, trends in foreign markets, international monetary problems are studied for their influence on the organization and operation of the international corporation. Mr. R. H. Mason, Mr. Mitchell, Mr. Schöllhammer

**205B. Comparative Market Structure and Competition.** Prerequisite: course 205A or consent of instructor. A comparative study of public policies toward competition, market structures, and competitive practices in key industries in selected countries. Mr. Nicols, Mr. Osborne, Mr. R. Williams

**205C. Business Forecasting for Foreign Economies.** Prerequisite: course 201A or consent of instructor. Forecasting changes in business activity, population, industrial structure, productivity, Gross National Product and its components for selected countries. Mr. Osborne, Mr. R. Williams

**207A. Resource Administration of Nonmarket Activities.** Prerequisite: courses 405 and 406, or consent of instructor. Examination of the proper economic role of nonmarket institutions, and of the allocation of societal resources between the public and private sectors via market and nonmarket mechanisms. Definition and application of economic efficiency to resource allocations. Mr. Granfield, Mr. Nicols

**207B. Public Services and Private Functions.** Prerequisite: courses 405 and 406, or consent of instructor. Sources and uses of federal, state, and local revenues and their impacts on public and private resource allocations. Examination of the proper roles of government and the private sector in the financing and provision of public goods and services. Mr. Granfield, Mr. Osborne

**208. Selected Topics in Business Economics.** Prerequisite: consent of instructor. Special topics in business economics. Current development in theory or practice in business economics. May be repeated for credit. The Staff

**210A. Mathematical Programming.** Prerequisite: Mathematics 31C. A comprehensive development of the theory and computational methods of linear programming, with applications to business and related disciplinary areas. Mr. Geoffrion, Mr. Graves

**210B. Applied Stochastic Processes.** Prerequisite: Mathematics 150A or Engineering 120A. Sequential stochastic (usually Markovian) decision processes in discrete and continuous time, emphasis is on problem formulation and the characterization and computation of optimal policies, often via dynamic programming; application to inventory, queueing, maintenance, reliability, and replacement problems. Mr. Lippman

**210C. Network Flows and Combinatorial Programming.** Prerequisite: course 210A. Theory and techniques of discrete models in Operations Research. Integer programming, combinatorial programming, and network flows. Applications to various allocation, coordination, scheduling, and sequencing problems. Mr. Geoffrion, Mr. Graves

**211A. Nonlinear Mathematical Programming.** Prerequisite: Mathematics 32A. Theory, methods, and application of the optimization of nonlinear systems. Review of classical optimization methods; optimality and duality theory for convex programs; main computational approaches to convex programming; survey of current computer codes and computational experience. Mr. Geoffrion, Mr. Graves

**211B. Large-Scale Mathematical Programming.** Prerequisite: two quarters of previous work in linear and nonlinear programming. Theory and computational methods for optimizing large-scale linear and nonlinear programs. Exploitation of special structures with combinatorial, dynamic, multidivisional, and stochastic aspects to obtain practical solution procedures in spite of large numbers of variables and/or constraints. Mr. Geoffrion, Mr. Graves

**213A. Intermediate Probability and Statistics.** Prerequisite: previous course work in statistics and mathematics. An introduction to probability theory and hypothesis testing as applied to management. Mr. Jones, Mr. Lippman, Mr. Roll

**213B. Statistical Methods in Management.** Prerequisite: course 213A or consent of instructor. An introduction to parameter and

interval estimation, simple and multiple linear regression and correlation, fixed, random, and mixed effects analysis of variance models and non parametric statistics, all as they apply to management studies. Mr. Cooper, Mr. Jones, Mr. Lippman

**213C. Introduction to Multivariate Analysis.** Prerequisite: course 213B or consent of instructor. Introduction to multivariate technology used in research in socio-technical systems, marketing, psychology, education, and sociology. This course will provide a basic understanding of multiple regression, analysis of covariance, multivariate analysis of variance, discriminant analysis, canonical correlation, and factor analysis. Mr. Cooper

**214B. Behavioral Science Models.** Prerequisite: consent of instructor. Formulation, analysis, and interpretation of mathematical models in the behavioral sciences. Emphasis is on stochastic process models for aspects of individual and group behavior such as learning, problem solving, classification, communication, bargaining, and social exchange systems. Mr. MacQueen

**215D. Time Series Analysis.** Prerequisite: course 116B or consent of instructor. Econometric models and advanced time series analysis in measuring trends and fluctuations in business series, electronic computers in the analysis of business series; input-output analysis; the learning curve. Mr. Granfield and the Staff

**215E. Statistical Design of Surveys.** Prerequisite: course 116B or equivalent. Mathematical theory and practices of statistical survey design and analysis. Mr. Jessen

**M215F. Statistical Design of Experiments.** (Same as Engineering M275A.) Prerequisite: course 116B and Mathematics 31C. Matrix treatment of linear hypotheses in statistical experimentation. Statistical estimation, tests of hypotheses, analysis of variance, regression models. Randomized blocks, factorial. Latin square, multiple factor and level experiments. Principles of orthogonality, confounding, fractional replication, incomplete block designs with applications. Mr. Coleman

**217A. Statistical Decision Theory.** Prerequisite: course 116A or equivalent; Mathematics 152A recommended. Relationships among statistical decision theory, game theory, and classical statistical inference, with emphasis on sequential analysis and dynamic decision processes; axiomatic foundations, Bayes' and minimax solutions, applications to selected models of dynamic decision problems in business. Mr. Lippman, Mr. MacQueen

**217B. Game Theory.** Prerequisite: course 116A; Mathematics 152A recommended. Nature of models for rational behavior in presence of conflicts of interests, zero-sum and non-zero-sum games, two-person and many-person games, state of the art, philosophical and computational limitations, relations with individual and group decision making. Mr. Jackson, Mr. MacQueen

**218A. Selected Topics in Operations Research.** (¼ to 1 course) Prerequisite: consent of instructor. Newly developing topics and viewpoints. Topics have included reliability and optimal maintenance theory, large-scale distribution/inventory systems, and Markovian decision processes under uncertainty. May be repeated for credit. The Staff

**218C. Selected Topics in Business Statistics.** (¼ to 1 course) Prerequisite: consent of instructor. Special topics in statistical methods. Current developments in statistical theory and practice. Analysis of recent literature. Topics and instructors will be announced when they become known. May be repeated for credit. The Staff

**218D. Current Problems in Operations Research.** (¼ to 1 course) Current research on a variety of topics in the general area of operations research, presented by invited university and outside speakers. May be repeated for credit. The Staff

**218XYZ. Current Issues in Operations Research.** (¼ to 1 course) Current issues and research on a variety of topics in the general area of operations research. May be repeated for credit. The Staff

**220A. Technical Foundations in Accounting.** Prerequisite: course 403 or consent of instructor. The role of accounting in the internal management of enterprises is emphasized. Topics include accounting information in production, marketing, and human resources management; investment analysis, cost accounting systems; role of accounting in tax planning, forecasting, budgeting, financial and operational auditing. Mr. Arnold, Mr. Buckley, Mr. Manegold

**220B. Financial Accounting I.** Prerequisite: consent of instructor. The course deals with concepts and principles of financial accounting with emphasis upon the pronouncements of the AICPA. Current practice in the recording, valuation, and presentation of financial statements is reviewed. Application of these principles to contemporary problems is stressed. Mr. Arnold, Mr. Bailey, Mr. Manegold

**220C. Financial Accounting II.** Prerequisite: consent of instructor. In addition to providing a continuation of 220B, this course gives special attention to a range of topics which include accounting for partnerships, mergers, combinations, and parent-subsidiary relationships. Litigation procedures are reviewed including reorganizations, receiverships, and bankruptcy. Mr. Bailey

**221. Current Issues in Accounting Information Systems.** Prerequisite: consent of instructor. Using a colloquium format, the

course provides a forum for the discussion of contemporary issues in accounting and information systems. Drawing on prominent speakers in the field, the course requires the student to formulate a position paper on each topic presented. The Staff

**222. Cost Accounting.** Prerequisite: course 220A or consent of instructor. The nature, objectives, and procedure of cost accounting and control; job costing and process costing; joint product costing, standard costs; theories of cost allocation and absorption; uses of cost accounting data for management decision making. Mr. Ansari, Mr. Bailey, Mr. McDonough

**223. Verification of Financial Statements.** Problems of examination, verification, and presentation of financial statements from the standpoint of the independent public accountant. Legal and professional responsibilities of public accountants; professional ethics. Operational and management auditing. Mr. Arnold, Mr. Kircher

**224A. Computer Systems.** Prerequisite: course 113B or 404 or consent of instructor. The specification and configuration of computer-based systems for management applications. Methods for costing system hardware and software and for assessing computer performance. Trade-off analysis of comparative computer configurations. Case materials and/or actual examples are used. Mr. Lientz

**224B. Management of Computer-Based Information Systems.** Prerequisite: course 224A or consent of instructor. An in-depth coverage of the problems in managing computer-based information systems. Focuses on the definition, evaluation, installation, and continuing management of EDP systems. Issues of planning and control, as well as the organizational impact of computer systems, are stressed. Mr. McLean

**224C. Systems Analysis for Computer-Based Information Systems.** Prerequisite: courses 224A and 225A or consent of instructor. The detailed design and specification of computer-based management information systems. Includes studies of existing systems, economic and organizational analyses of alternatives, and tools for determining user requirements. Case materials and/or actual examples are used. Mr. Lientz, Mr. Sprowls

**224D. Generalized Data Base Management Systems.** Prerequisite: course 113B or consent of instructor. Examines the features and capabilities of generalized data base management systems. Includes system classification, comparison of software features, and evaluation of specific systems. Emphasis is upon management uses of such systems. A field study project may be required. Mr. Sprowls

**224E. Computer Simulation for Management.** Prerequisite: Engineering 20 or course 113B or 404 or consent of instructor. Introduction to computer simulation and to general purpose simulation languages (e.g., GPSS, SIMSCRIPT, DYNAMO). Emphasis upon the managerial use of simulation and the development of computer-based models for problem solving and policy analysis. Programming assignments are included. Mr. Lientz, Mr. McLean

**224F. Telecommunications and Computer Networks.** Prerequisite: graduate status. Distributed processing. Networked minicomputer systems. Data communication technology. Data security in computer networks. Cost/benefit analysis for the design, configuration, and implementation of computer networks. Applications to computer utilities; command and control systems; and commercial, medical, and government networks. Mr. Lientz

**224G. Special Topics in Computing.** Prerequisite: consent of instructor. An examination in depth of issues or problems concerned with the theory and practice of computing and the management use of EDP systems. Course may have a single theme or may deal with a number of topics. May be repeated for credit. The Staff

**225A. Introduction to Information Systems.** Basic concepts and uses of information systems in organizations. Fundamental design considerations. The role of data processing. Examples of information systems in profit and not-for-profit organizations. Mr. Sprowls, Mr. Swanson

**225B. Information Systems for Planning and Control.** Prerequisites: course 113A, 225A, or consent of instructor. Design of systems to produce information for planning and control. Survey of approaches and techniques employed at the strategic, managerial, and operational levels. Special consideration of accounting and budgeting methods. Impact of planning and control information on human behavior. Mr. Flammholtz, Mr. McDonough, Mr. Swanson

**225C. Measurement in Information Systems.** Prerequisite: familiarity with basic statistics, probability theory, set theory, and accounting, or consent of instructor. A study of the role of measurement in accounting and information systems, from the standpoint of mathematical, economic, behavioral, and organizational consideration. Mr. Swanson and the Staff

**225D. Special Topics in Information Systems.** Prerequisite: open primarily to Ph.D. candidates or with consent of the instructor. An examination in depth of problems or issues of current concern in information systems. Emphasis on recent contributions to theory, research, and methodology. Of special interest to advanced doctoral candidates, the academic staff, or distinguished visiting faculty. May be repeated for credit. The Staff

**226. International Accounting.** Prerequisite: graduate status. Comparative analysis of accounting concepts and practices in other countries; study of contrasts between various systems; problems of accounting for international corporations including transfers of funds and income measurement; and accounting influences on economic development. Mr. Buckley, Mr. Kircher

**227A. Tax Accounting.** Prerequisite: course 220A or consent of instructor. A study of the fundamentals of income taxation with emphasis on problems in federal and state income, franchise, gift, and estate taxes; study of source material and research methods for ascertaining current rulings and trends in laws and regulations. The Staff

**227B. Taxation and Business Policy.** Tax systems, tax shifting and burden theory. Impact of taxation law and theory on business decisions. Corporate tax planning. The businessman and tax reform. The Staff

**229A. Accounting Theory.** Prerequisite: consent of instructor. A survey of accounting literature, with emphasis on the development of basic accounting concepts. An attempt is made to explain contemporary practice as it has evolved in accordance with basic theory and expanding demands for accounting information. Mr. Ansari

**229B. Research Methodology in Accounting.** Prerequisite: course 229A or consent of instructor. Design of empirical and theoretical research in accounting. Sources of research problems. Research conduct and methodology in accounting and other fields as they relate to accounting. Mr. Buckley, Mr. Flammholtz, Mr. Manegold

**229C. Special Topics in Accounting.** Prerequisite: open primarily to Ph.D. candidates or with consent of instructor. An examination in depth of problems or issues of current concern in accounting. Emphasis on recent contributions to theory, research, and methodology. Of special interest to advanced doctoral candidates, the academic staff, or distinguished visiting faculty. May be repeated for credit. The Staff

**230. Theory of Finance.** (Formerly numbered 231B.) Prerequisite: course 408. Concerned with decision making under uncertainty, the theory of asset prices, and the efficiency of capital markets. Develops the most recent theoretical constructs and applies them to fundamental issues in corporate financial management such as capital budgeting, capital structure, and dividend policy. Mr. Copeland, Mr. Geske, Mr. Marathe

**231A. Profit Sector Financial Policy.** Prerequisite: course 230. Identifying and solving financial problems through the use of cases. Stresses the application of financial theory and financial techniques to business problems, using written reports and classroom discussion. Mr. May, Mr. Mayers, Mr. Weston

**231B. Nonprofit Sector Financial Policy.** Prerequisite: course 408. Identifying and solving financial problems for all types of nonprofit organizations through use of cases. Stresses possible application of financial theory for profit-oriented firms. Particular attention to unique problems of resource allocation when market valuation cannot be used as a criterion. Mr. Copeland, Mr. Smith

**231C. Working Capital Management.** Prerequisite: courses 230 and 231A. More detailed and advanced coverage of the short-range problems of financial management. Coverage of current assets, current liabilities, and their interrelationships. Mr. Eiteman, Mr. Smith

**231D. Applications of Quantitative Methods in Finance.** Prerequisite: course 230 and other 230 level seminars. Applications of multiple regression, mathematical programming, and stochastic processes to more complex problems of financial decision making. Comparison of solutions from alternative quantitative methods. Mr. Marathe, Mr. Mayers, Mr. Smith

**232A. Security Analysis.** Prerequisite: course 230. Primarily a course in stock market investing, but approach is applicable to all investment assets. Includes techniques of security analysis and security valuation based on financial statements of the organization. Mr. Eiteman, Mr. Shelton

**232B. Portfolio Management.** Prerequisite: course 230. Focus on entire portfolios rather than individual assets. Review portfolio theory as applied to portfolio decision making and the evaluation of achieved portfolio performance. Case studies of portfolio construction. Mr. Geske, Mr. Marathe, Mr. Smith

**232C. Investment Theory.** Prerequisite: courses 232A and 232B or consent of instructor. Review of theoretical literature on investment analysis, valuation, and management. Topics include mathematical techniques for valuation of growth securities, competitive returns on alternative investments, the investment decision process, computers in investment decision making, and functioning of securities markets in the U.S. and abroad. Mr. Krouse, Mr. Shelton, Mr. Smith

**233A. Money and Capital Markets.** (Formerly numbered 230A.) Prerequisite: course 230. Application of interest theory and flow funds analysis to the price determination process in the markets for bonds, mortgages, stocks, and other financial instruments. Study of funds flow from credit markets. Analysis of costs of capital in individual industries. Mr. Andersen, Mr. Dominguez, Mr. Roll

**233B. Financial Institutions.** (Formerly numbered 230B.) Prerequisite: courses 230 and 233A. Study of the financial policies and practices of commercial banks, savings and loan associations,

pension funds, insurance companies, and other major financial institutions. Review of current major problems facing senior managers of these financial institutions.

Mr. Andersen, Mr. Roll, Mr. Shelton

**233C. Speculative Markets.** Prerequisite: course 230. Study of the theory and evidence of capital market efficiency including the stock market, the bond market, commodity future markets, the options market, money markets, and foreign exchange markets.

Mr. Copeland, Mr. Masulis, Mr. Roll

**234A. Multinational Business Finance.** (Formerly numbered 233A.) Prerequisite: courses 205A and 408; in addition, course 230 is recommended for Finance majors. Financial problems in the management of multinational businesses. Included are the international financial environment, problems surrounding the decision to commit long-term capital to an international venture, and financial techniques for the daily operation of a multinational firm.

Mr. Dominguez, Mr. Eitman, Mr. Weston

**234B. Advanced Studies in International Finance.** Prerequisite: courses 230 and 234A. Study of current and important issues of international financial management. Major focus on the interrelation of advanced theoretical concepts and their implications for the business firm in its international financial management decisions.

Mr. Eitman, Mr. Weston

**235A. Problems in Insurance Management.** Prerequisite: course 135 or consent of instructor. Advanced consideration of the problems of insurance management. Treats the actuarial, underwriting, investment, marketing, and regulatory problems relating to insurance activities.

Mr. Hofflander

**235B. Risk and Risk Bearing.** Prerequisite: course 135 or consent of instructor. Advanced consideration of the theory of risk and risk bearing. The analysis of alternative ways of meeting risk and uncertainty, the scope and limits of insurance, and the economics of insurance.

Mr. Hofflander

**238. Special Topics in Finance.** Prerequisite: course 230 and consent of instructor. Course intended for master's students. Selected topics in finance theory, empirical studies, and financial policy. May be repeated for credit under different Finance faculty members.

The Staff

**239A. Theory of Exchanges under Uncertainty.** Prerequisite: course 230 and consent of instructor. Foundations of the theory of exchange are developed as an introduction to theoretical literature on the pricing of capital assets. Course is primarily intended for doctoral students, but well-prepared master's students may find the course useful in their career preparation.

Mr. Geske, Mr. Krouse, Mr. Roll

**239B. Theory of Investment under Uncertainty.** Prerequisite: courses 230 and 239A or consent of instructor. Foundations of theory of firm capitalization and investment decisions are developed with special attention to questions of exchange and allocative efficiency. Course primarily intended for doctoral students, but well-prepared master's students may find the course useful in their career preparation.

Mr. Copeland, Mr. Masulis, Mr. Mayers

**239C. Empirical Research in Finance.** Prerequisite: course 230, training in econometrics, and consent of instructor. In-depth study of empirical research in field of finance with emphasis on market efficiency, capital asset pricing, and option pricing. Course is primarily intended for doctoral students, but well-prepared master's students may find the course useful in their career preparation.

Mr. Marathe, Mr. Roll

**239D. Doctoral Seminar in Finance.** Prerequisite: course 230 and courses in the 239 series. Course intended for doctoral students. Advanced topics in finance theory and empirical research. May be repeated for credit under different Finance faculty members.

The Staff

**240A. Linear Models of Operational Systems.** Prerequisite: Mathematics 31C or equivalent. The use of linear models and their extensions for the analysis of operational systems. Formulation and application of linear, network, and integer models in illustrative examples and case studies. Fundamentals of solution methods and their use in analysis.

Mr. Dyer, Mr. Erlenkotter, Mr. Geoffrion

**240B. Nonlinear and Dynamic Models of Operational Systems.** Prerequisites: Mathematics 32A, course 240A or equivalent. The use of nonlinear and dynamic models for the analysis of operational systems. Examples of actual and potential applications to problems of managerial concern. A survey of nonlinear and dynamic programming solution techniques.

Mr. Dyer, Mr. Erlenkotter, Mr. Geoffrion

**240C. Stochastic Models of Operational Systems.** Prerequisite: courses 116A, 240A, and 240B. Analytic techniques for stochastic operational systems. Formulation and application of stochastic programming, probabilistic dynamic programming, Markovian, waiting line and information models.

Mr. Dyer, Mr. Erlenkotter, Mr. Jones

**240E. Synthesis of Operational Systems.** Prerequisite: courses 402 and 407. Examination of the design process, alternative design methodologies, value systems and search techniques. Special emphasis on broad aspects of the synthesizing processes underlying the creation of operational systems.

Mr. Andrews, Mr. Dyer, Mr. Erlenkotter

**241A. Simulation of Operational Systems.** Prerequisite: courses 113B, 402, or equivalent background in batch computing (APL is not suitable) and statistics. Computer simulation methodology

including design, validation, operating procedures, and analysis of results of simulation experiments. Applications of simulation to management problems.

Mr. Nelson

**241B. Advanced Computer Simulation.** Prerequisite: course 241A. Advanced use of computer simulation techniques. Major term projects will be undertaken, either singly or in groups, with the object of developing in students the ability to accomplish all phases of the design and execution of computer simulation.

Mr. Nelson

**242A. Planning for Facilities Systems.** Prerequisite: course 240A or equivalent. Planning of location, expansion and replacement for interdependent systems of facilities. Examination of spatial and dynamic economic considerations. Applications in selected industries and public systems.

Mr. Erlenkotter

**242B. Planning for Processes and Facilities.** Prerequisite: course 240A or equivalent. Planning and design for individual processes or facilities to transform inputs into desired products or services. Examination of process selection, materials flow, relative location of facilities, and line balancing.

The Staff

**243A. Operations Planning and Control.** Prerequisite: course 407. Planning and control models and methods applicable in continuous, intermittent, and one-time systems for both manufacturing and nonmanufacturing situations. Forecasting, the role of inventories, aggregate planning, and scheduling.

Mr. Buffa

**243B. Inventory Theory.** Prerequisite: course 210B or consent of instructor. General discussion of inventory models with emphasis upon characterizing the form of optimal policies and efficient computational methods. Both deterministic and stochastic and discrete and continuous time models are considered.

Mr. Lippman

**243C. Scheduling Theory: Models for Operations Management.** Prerequisite: course 407. Scheduling models and results for single machine, flow shop, job shop, and resource-constrained project networks. Approaches studied include classical models, recent heuristic approaches, current research in coordinated interaction of computer models, and man-machine interaction.

Mr. Nelson

**243D. Integrated Operational Systems.** Prerequisite: courses 243A, 243B. Design and analysis of models of integrated operational systems. Business games and applications of simulation techniques.

Mr. Nelson

**244A. Research and Development Policy.** Examination of research and development as a process and as an element of a goal oriented organization. Factors affecting invention and innovation; transfer of technology; organizational and behavioral considerations; coupling of science, technology, and organizational goals; assessing and forecasting technological futures.

Mr. Goodman

**244B. Project Management.** Prerequisite: course 407 or equivalent. Management of development projects. Decision-making environment, economic analysis, network analysis, scheduling and control of development projects. Sequential and aggregate development decisions.

Mr. Dyer

**246. Management of Operations.** Prerequisite: second year status. Case analyses centering on the operations phases of enterprises. Cases selected are at the policy level and are drawn from service, nonmanufacturing, and manufacturing industries.

Mr. Buffa

**247A-247B. Survey of Operations Management.** Prerequisite: enrollment in the master's or the doctoral programs. Survey of the research literature in operations management. Seminar reports dealing with special topics.

The Staff

**248. Special Topics in Operations Management.** Studies of advanced subjects of current interest in operational management. Emphasis is on recent developments and the application of specialized knowledge to operational problems. Topics change each offering and, in the absence of significant duplication, the course may be repeated.

The Staff

**250A. Human Resource Management.** Prerequisite: consent of instructor. First part of a two-course sequence focusing upon the processes and problems of managing human resources. Topics include people as resources; nature of human resource management; human resource planning; designing and organizing tasks and roles; and acquiring and allocating people.

Mr. Anderson, Mr. Fogel, Mr. Massarik

**250B. Human Resource Management.** Prerequisite: course 250A. Topics include development and training; human resources accounting; behavioral foundations of participating management; motivation, productivity, and satisfaction; designing reward systems; and evaluation of organization effectiveness. Emphasis on understanding, predicting, and influencing human behavior in organizations.

Mr. Kleingartner, Mr. Massarik, Mr. O'Reilly

**250C. Systems of Employee-Management Participation.** Prerequisite: consent of instructor. Course designed to provide understanding of systems of employee-management participation around the world (apart from traditional collective bargaining systems). Specific concepts such as worker participation in decision making, industrial democracy, joint consultation, workers' councils, profit sharing will be covered.

Mr. Adizes, Mr. Meyers, Mr. Taylor

**251. The Management of Labor Relations.** Consideration, at an advanced level, of the collective bargaining process, the labor-management agreement, the administration of the contract, and the

impact of public policy on the management of industrial relations. Case studies, field trips, and visiting lecturers will be part of the seminar curriculum.

Mr. Hutchinson, Mr. Meyers

**252. Law and Governmental Policy in Industrial Relations.** Prerequisite: course 409. Governmental policies on employer-employee relations; historical background; constitutional and common law principles; application of Taft-Hartley, Labor Reform, Antitrust, Anti-Injunction, Fair Labor Standards, Workmen's Compensation and other acts; trends and proposed legislation on labor-management affairs.

Mr. Fogel, Mr. Meyers, Mr. Mitchell

**253A. Negotiation and Conflict in Organizations.** Prerequisite: graduate status. The occurrence and management of differences throughout the organization. Furnishes a multidisciplinary understanding of conflict phenomena in general, plus an appreciation of critical parameters shaping conflict in specific organizational arenas. Also reviews the arsenal of conflict-management techniques.

Mr. Anderson, Ms. Kovach

**253B. Conflict Resolution in Labor-Management Relations.** Prerequisite: graduate status. Analysis of conflict in the employment relationship. Theoretical and empirical findings are examined. Principles and philosophies that underlie resolution of labor-management impasses are considered with emphasis on grievance procedures, arbitration, mediation, and factfinding.

Mr. Prasow

**254. Analysis of Labor Markets.** Prerequisite: consent of instructor. Problems of verifying hypotheses concerning labor market behavior and the application of data to managerial problems. Problems of operationally defining labor market concepts. Critical evaluation of available labor market data. Case studies applying these data to managerial problems.

Mr. Fogel, Mr. Mitchell

**255. Comparative Industrial Relations.** Prerequisite: course 409 or an elementary knowledge of labor economics. At national and international level historical and contemporary analytical comparison of industrial relations systems within their political, social, and economic environments. Included are: the institutions, philosophies and ideologies of labor, management and government and the interaction of their power relationships; the substance and manner of determination of "web of rules" governing the rights and obligations of the parties, and the resolution of conflicts.

Mr. Hutchinson, Mr. Meyers

**256. Technological Bases of Jobs and Organizations.** Prerequisite: consent of instructor. Technological determinants of operating systems and jobs; productive system design models; behavioral models underlying operating system design, technology and social system design; operating system variability, control, and measurement.

Mr. Davis

**257. Labor-Management Relations in Public and Nonprofit Sectors.** Prerequisite: graduate status. Analysis of labor-management relations in government, including public education, and in nonprofit institutions (i.e., artistic, cultural, recreational, and health care). Emphasis is on negotiations and group relationships rather than on public personnel administration.

Mr. Faine, Mr. Prasow, and the Staff

**258. Selected Topics in Industrial Relations.** (¼ to 1 course) Prerequisite: open primarily to Ph.D. candidates, but also to others with consent of instructor. An examination in depth of problems or issues of current concern in industrial relations. Emphasis on recent contributions to theory, research, and methodology of special interest to advanced doctoral candidates, the academic staff, or distinguished visiting faculty. May be repeated for credit.

The Staff

**259A. Manpower Planning and Evaluation.** Prerequisite: course 254 recommended. The developments of programs and practices to meet manpower goals of individual labor force participants, business firms, and communities. Examination of techniques for the evaluation of such programs.

Mr. Fogel, Mr. Mitchell

**259B. Utilization of Minority Manpower.** Prerequisite: course 254 recommended. Examination of the experience of minority groups — blacks, Chicanos, women, teenagers — in labor markets and employing institutions (business firms, governments, unions). Consideration of equal employment opportunity programs in firms and of societal antidiscrimination programs. Guest speakers as appropriate.

Mr. Fogel

**260A. Advanced Marketing Management.** Prerequisite: course 411 or consent of instructor. A decision oriented course concerned with the solution of product, price, promotion, and distribution channel problems. Extensive use will be made of case studies.

Mr. Capon, Mr. Weitz

**260B. Marketing Strategy and Planning.** Prerequisite: course 260A or consent of instructor. A framework for strategic marketing planning is developed. The cornerstones are the analysis of a few, yet powerful, conceptual frameworks which have broad application. Within the framework of the strategic marketing plan, key elements in the annual marketing planning process will be developed.

Mr. Capon, Mr. Weitz

**261A. Management in the Distribution Channel.** Prerequisite: course 260A or consent of instructor. An examination of decisions in the distribution channel. Issues of power in the distribution channel and the tradeoffs between alternative channel systems are discussed.

Mr. Brown

**261B. International Marketing Management.** Prerequisite: course 260A or consent of instructor. Opportunities, distinctive

characteristics, and emerging trends in foreign markets are analyzed. Including an exploration of alternative methods and strategies, organizational planning and control, impact of social, cultural, economic, and political differences, and problems of adapting American marketing concepts and methods.

Mr. Capon, Mr. Hanssens, Mr. Weitz

**262. Price Policies.** Prerequisite: course 260A or consent of instructor. Consideration of such concepts as product classification, demand, competition, and costs, as they apply to price making. The theory of price leadership, geographical pricing, price discrimination, price warfare, and leader pricing are also studied in relation to the price-making process. In addition, some attention is given to the price policies of individual firms in which these concepts are applicable.

Mr. Brown, Mr. Nicols

**263A. Consumer Behavior.** Prerequisite: course 411 or consent of instructor. A study of the nature and determinants of consumer behavior. Attention will be focused on the influence of socio-psychological factors such as personality, small groups, demographic variables, social class, and culture on the formation of consumers' attitudes, consumption and purchasing behavior.

Mr. Bettman, Mr. Kassarian, Mr. Lutz

**263B. Theory of Marketing Stimulation.** Prerequisite: course 263A. Analysis of factors influencing consumer demand. Techniques for stimulating demand are evaluated in relation to specific marketing objectives. Material is drawn from economics, psychology, sociology, anthropology, and marketing research.

Mr. Kassarian, Mr. Lutz

**264A. Marketing Research: Design and Evaluation.** Prerequisite: course 411 or consent of instructor. Methods of measuring and predicting the forces affecting marketing, including quantitative aspects of demand, consumer reaction to product characteristics, effectiveness of advertising and other promotional devices, influence of rewards and organizational systems on sales efficiency, and effectiveness of competitors' strategies.

Mr. Hanssens, Mr. Kassarian, Mr. Lutz

**264B. Mathematical Models in Marketing.** Prerequisite: course 260A, or equivalent, or consent of instructor. A study of the utilization of models for the solution of marketing problems. Discussion will be focused on models concerned with such problems as brand switching, media selection, pricing, competitive strategy, scheduling, allocation problems, and waiting time.

Mr. Bettman, Mr. Hanssens, Mr. Jones

**264C. Seminar in Multidimensional Scaling.** Prerequisite: consent of instructor. A seminar providing for the study of recent developments in metric and nonmetric multidimensional scaling.

Mr. Cooper

**265A. Marketing and the Law.** Prerequisite: course 260A or consent of instructor. A detailed study of the legislative enactments (federal, state, or local) which influence the operation of institutions engaged in marketing activities, together with an analysis of the judicial decisions which have interpreted these laws.

Mr. Brown

**265B. Social Issues in Marketing.** Prerequisite: course 260A or consent of instructor. Environmental impact of marketing in society; study of theories, methods, and relationships for evaluating transaction behavior in a scientific and humanistic context; macroanalytic perspectives in marketing.

The Staff

**266A. Product Management.** Prerequisite: course 260A. This course develops a framework for identifying and appraising alternative growth strategies of the firm. Product addition, modification, and deletion decisions are examined and the processes by which these decisions can be made in an optimal manner are discussed.

Mr. Brown, Mr. Capon

**266B. Advertising Policy.** Prerequisite: courses 260A, 263A, or consent of instructor. A study of the formulation of advertising policies, involving an analysis of cases dealing with: the role of advertising in marketing, the definition of advertising objectives, strategy, appropriation policy, media selection, evaluating advertising results, and the organization of the advertising function.

Mr. Capon, Mr. Lutz

**266C. Sales Force Management.** Prerequisite: course 411 or consent of instructor. This course develops a logical framework for the solution of problems in sales force management. It covers the role of selling in the marketing mix, the selling interaction and key problems in planning, organizing, evaluating, and controlling the sales force.

Mr. Capon, Mr. Weitz

**267. Macromethodological Issues in Research on People.** Prerequisite: consent of instructor. This course provides a systematic approach to the special issues concerning research on people; criteria for evaluating macromethodologies; development of scientific concepts, models, theories, and law; the problem of private report, and the question of data language.

Mr. Cooper

**268. Selected Topics in Marketing.** (¼ to 1½ courses) Prerequisite: course 260A or consent of instructor. A study of selected areas of marketing knowledge and thought. Specific subjects discussed to be changed each quarter depending on the particular interests of the instructor and students. Individual projects and reports. May be repeated for credit.

The Staff

**270. Environment of the Art World.** Prerequisite: consent of instructor. Consideration and analysis of the political, social, economic, and environmental forces in American society as they affect the existence and development of arts institutions in the U.S.

The aim is to explore present policies and trends and potential future developments.

Mr. Faine

**271. Law and the Arts.** Prerequisite: consent of instructor. Exploration of the way in which law and the arts relate, the role of the lawyer vis-a-vis artist and arts manager, policy underpinnings of the law and effects on the arts, and unsolved problems and issues in areas of interaction.

The Staff

**272A. The Role of Management in Artistic Decision Making.** Prerequisite: consent of instructor. A descriptive study of the criteria for decision making in artistic institutions including the role of the institution in society, the economic environment of the arts, and the artistic value systems of arts organizations.

The Staff

**272B. Programming and Planning Policies in Arts Organization.** Prerequisite: consent of instructor. An analysis of the social, artistic and economic roles of the arts as reflected in programming policy. An examination of the social goals pursued in establishing relationships between the arts and their environment.

The Staff

**274. Current Issues in Arts Management.** Prerequisite: consent of instructor. The seminar of the final quarter is viewed as the major vehicle integrating the academic program and current issues in the management of artistic institutions. Relevant combinations of lectures, discussions, case studies, and team research projects are employed.

Mr. Cooper, Mr. Faine, Ms. Huff

**275A. Urban Issues and Problems.** Prerequisite: course 175 or consent of instructor. Study of urban problems and issues including demand for and supply of private and public goods, environmental pollution, transportation, recreational facilities, poverty, housing the poor, city size and efficiency, urban sprawl, taxation, new towns, real estate and building industries.

Mr. Clapp and the Staff

**275B. Urban Land Economics.** Prerequisite: course 175, 405, or consent of instructor. Introduction to development and use of economics and management principles in identifying and analyzing the determinants of urban land use and land values, public policies affecting the urban land market, and the private sector's role in shaping the urban environment.

Mr. Clapp, Mr. Mittelbach

**275C. Alternative Urban Futures.** Prerequisite: consent of instructor. The use of economic tools and business techniques for planning and forecasting alternative urban futures. Urban and World Dynamics models are used to analyze future urban life under various assumptions about the shape, structure, and functions of future cities.

Mr. Case, Mr. Mittelbach

**276A. Theory of Urban Property Valuation.** Prerequisite: course 408 or equivalent. Systematic analysis of the elements of real property values and of the allocation of land uses over urban space. Students may use APL programs to investigate and critically evaluate methods of valuation and allocation.

Mr. Case, Mr. Clapp, Mr. Mittelbach

**276B. Comparative and International Urban Land Studies.** Analysis of private and public decision making shaping urban development and redevelopment in selected countries. Emphasis on the economic, social, and institutional factors which determine urban growth, structure, and patterns on the land in developed and underdeveloped nations.

Mr. Case, Mr. Mittelbach

**276C. Urban Dynamics: Degeneration and Regeneration.** Prerequisite: consent of instructor. Seminar which identifies, analyzes and evaluates problems and solutions concerning urban blight, rehabilitation, redevelopment, new towns, inner-city revitalization, and inter-governmental relations in the American city, with particular emphasis on the role of private enterprise in dealing with these problems.

Mr. Mittelbach

**277A. Housing Economics.** Prerequisite: consent of instructor. Consideration of determinants of private and public demand for housing. Housing programs and relationships between construction and economic trends are examined in detail.

Mr. Case, Mr. Granfield, Mr. Mittelbach

**277B. Housing Policy.** Prerequisite: consent of instructor. U.S. and foreign housing programs. Housing low-income groups, new town legislation, improving environment, urban renewal and development and related topics. Criteria for assessing public policy, policy implementation, policy and stages of national economic development, the role of private enterprise.

Mr. Case, Mr. Mittelbach

**278A. Urban Real Estate Financing and Investing.** Prerequisite: consent of instructor. Theoretical and pragmatic analyses are used to determine the differences between real property and other investments. Real estate investment opportunities are evaluated for their effectiveness in balancing personal and business investment objectives and public land use goals.

Mr. Case, Mr. Clapp, Mr. Mittelbach

**278B. Sources, Uses, and Flows of Real Estate Capital.** Identification and analysis of sources and uses of real estate credit and equity funds. Policies and programs of lenders are related to real estate construction and market trends, and governmental economic and housing policies and programs.

Mr. Case, Mr. Clapp, Mr. Mittelbach

**279A. Special Studies in Urban Land Economics.** Open to master's or doctoral candidates working on thesis or dissertation related research. May be repeated for credit.

The Staff

**279B. Selected Topics in Urban Land Economics.** Open to all graduate students who wish to pursue a particular topic in housing, real estate, or urban land economics in depth on an individual or cooperative basis. May be repeated for credit.

The Staff

**279X-279Y-279Z. Urban Research and Development.** (¼ to 1 course) Prerequisite: consent of instructor, graduate status. Exploration of urbania and its problems; prospects and prescriptions for the delivery of a quality life. The exploration will be both macroscopic and microscopic as related to problems of a selected urban area.

The Staff

**280A. Important Studies in Human Systems.** Prerequisite: enrollment in Ph.D. program or consent of instructor. Surveys seminal studies of human systems. Summarizes and critiques literature focal to the evolution and current status of the field. Reviews such topics as personality, motivation, group and intergroup behavior, systems theory, and organizational design and development.

Mr. McKelvey, Mr. Morse

**280B. Survey of Research Philosophies and Methods.** Prerequisite: enrollment in Ph.D. program or consent of instructor. Offers a broad introduction to objectivist and subjectivist philosophies of science, and the psychology and sociology of science. Critiques laboratory and field experiments; field studies, analytical and descriptive methods; interview, participant observation, questionnaire and unobtrusive methods of data collection.

Mr. Cooper, Mr. Massarik

**280C. Personal and Professional Development.** Prerequisite: enrollment in Ph.D. program or consent of instructor. Provides a setting where students may explore their own professional values in the process of testing and learning the values and standards important in the Human Systems Ph.D. program and held by the broader community of system researchers and interveners.

Mr. Culbert, Ms. Lasko

**280D. Research Design for Human Systems Studies.** Prerequisite: course 280A, 280C, or consent of instructor. Acquaints students with temporal and logical sequences in the process of designing studies of human systems, including optimizing the fit of research topic, observation and data collection methods, and data analysis techniques. Actively involves students in the preparation of research proposals.

Mr. Cooper, Mr. Taylor

**280E. Tutorial in Human Systems Research.** Prerequisite: course 280D or consent of instructor. Provides an opportunity for students to offer and receive constructive comment on the design, data analysis, and writing of their doctoral research paper.

Mr. McKelvey

**280F. Human Systems Research Seminar.** Prerequisite: course 280D or consent of instructor. Exploration of various research methods and problems encountered in applying them. Students are actively involved in seminar reports and in class critique of course members' dissertation research designs. May be repeated for credit.

Ms. Huff, Ms. Lasko

**281A. Socio-Technical Systems.** Prerequisite: graduate status. Introduces systems concepts and views work organizations as interacting social and technical systems open to forces from the surrounding environment. Focus is on developing the socio-technical systems analytic approach and understanding the advantages of this approach for designing and managing organizations.

Mr. McKelvey, Mr. Taylor

**281B. People in Organizations.** Prerequisite: graduate status. Introduces different philosophical perspectives for understanding human behavior. Theories and concepts important for understanding human behavior in organizations are presented as well as managerial implications of individual, group, and social behavior. Special attention given to knowledge about satisfaction motivation and productivity in organizations.

Mr. Anderson, Mr. Cooper, Mr. Massarik

**281C. Situational Factors in Management.** Prerequisite: graduate status. Applies a situational, contingency, or "it all depends" perspective to important managerial issues such as personality, motivation, leadership, conflict management, and design of jobs and organizations. Develops a diagnostic way of thinking that is fundamental to managerial effectiveness in diverse organizational situations.

Mr. McKelvey, Mr. Morse

**282. Task Group Processes.** Prerequisite: courses 281A, 281B, or consent of instructor. Focuses on the structures, processes and interrelations of work groups in socio-technical systems. Emphasizes an understanding of how group activities interrelate with the physical/technical environment. Imparts a practical knowledge of task group functioning through class exercises and field observations.

Mr. Culbert, Mr. Taylor

**283A. Environmental Settings of Socio-Technical Systems.** Prerequisite: course 281A or consent of instructor. Focuses on the complexity and uncertainty of organizational environments. Analyzes environments along socio-cultural, political and economic dimensions, their interrelationships and their relations to technology. Diagnoses organizational responses to various environments.

Mr. Davis, Ms. Huff

**284A. Organization Design.** Prerequisite: course 281A or consent of instructor. Survey of organizational design theories and methods, including bureaucratic, participative and cognitive models. Develops specific methods ranging from the micro-design of jobs to the macro-design of total organizational structures. Special emphasis on socio-technical and differentiation/integration models.

Mr. Davis, Mr. Morse

**284B. Organization Development.** Prerequisite: course 281B or consent of instructor. Analyzes effects of managerial practices on individual self-fulfillment and organizational effectiveness. Presents theories of organization change and the action-research methods of organization development practitioners. Merges theory with practice through seminar discussions of field observations.

Mr. Massarik, Mr. Raja

**285A. Leadership, Motivation, and Power.** Prerequisite: course 281B or consent of instructor. Studies theoretical and practical approaches to influencing and motivating people. Explores the relative effectiveness of various leadership styles, different motivation theories and power tactics from a managerial point of view. Uses experience based learning methods to aid diagnosis and understanding of one's own influence styles.

Mr. Anderson, Mr. Culbert, Mr. Massarik

**285B. Managerial Interpersonal Communication.** Prerequisite: course 281B or consent of instructor. Focuses on organizational, interpersonal, and personality factors affecting managerial communications. Analyzes styles and modes of communication in one-to-one, group, and indirect communication settings. Offers opportunities to deepen understanding of one's own communication styles and skills.

Ms. Kovach, Ms. Lasko

**287. Sensitivity Training Groups and Their Facilitation.** Prerequisite: consent of instructor through prior application in Department. Develops cognitive and experiential understanding of the dynamics of sensitivity training groups and their facilitation. Analyzes relevant theory, research findings, and case studies; stresses translating these inputs into practice.

Ms. Lasko, Mr. Massarik

**288A. Special Studies in Managing Organization Behavior.** Prerequisite: open primarily to MBA students but also to others with consent of instructor. An examination, in depth, of problems or issues of current concern in managing organizational behavior. Emphasis on recent theories, research findings, and professional applications of special interest to MBA students and the faculty. May be repeated for credit.

The Staff

**288B. Selected Topics in Behavioral Science.** Prerequisite: enrollment in Ph.D. program or consent of instructor. Focuses on philosophies and theories of human behavior fundamental to the study of individual, group, organizational, and cultural behavior. Explores in depth selected theoretic positions, extending and consolidating behavioral science knowledge and applications. May be repeated for credit.

The Staff

**288C. Current Issues in Socio-Technical Systems and Organization Design.** Prerequisite: enrollment in Ph.D. program or consent of instructor. Covers current topics in the analysis and design of organizations as socio-technical systems engaged with various technologies and environments, emphasizing design approaches emanating primarily from Europe and the United States. Includes in depth comparisons of selected job and organizational design approaches. May be repeated for credit.

The Staff

**288D. Current Issues in Human Systems Change and Development through Consulting.** Prerequisite: enrollment in Ph.D. program or consent of instructor. Current topics in philosophy, art, and technology of improving organizations and increasing managerial effectiveness through consulting interventions. In depth treatment of consultant entry and leaving, diagnosing, process consultation, consciousness raising, team building, values, etc., depending on student and faculty preferences. May be repeated for credit.

The Staff

**288E. Selected Topics in Organization Theory.** Prerequisite: enrollment in Ph.D. program or consent of instructor. In depth treatment of organizations as units of analysis. Emphasizes recent theoretical and empirical development, methodological issues in organizational research, and concepts of organization structure, process, and effectiveness. May be repeated for credit.

The Staff

**288F. Selected Topics in Organizational Behavior.** Prerequisite: enrollment in Ph.D. program or consent of instructor. Explores psychological and social psychological aspects of human behavior and performance in organizations. Covers theoretical models, empirical findings, and applications of such topics as attitudes and values, cognitive and perceptual processes, behavioral conflict and individual change processes. May be repeated for credit.

The Staff

**288G. Current Issues in Human Systems Studies.** Prerequisite: enrollment in Ph.D. program or consent of instructor. In depth study of theory and research pertaining to a particular subject matter or such topics as cross-cultural, organization change, action, and multivariate research, depending on student and faculty interest. May be repeated for credit.

The Staff

**290. Organization Theory.** Prerequisite: course 423 or consent of instructor. Analysis of the theory and practice of the managerial function of organizing through study of the literature, case analyses, and seminar discussion. Individual projects and reports.

Mr. Koontz, Mr. McKevey, Mr. Sedgwick

**291. Planning and Control.** Prerequisite: course 423 or consent of instructor. Analysis of the theory and practice of the managerial function of planning and control. The implementation of objectives through policy formulation, decision making, and control. Individual projects and reports.

Mr. Carrabino, Mr. Steiner

**292B. Models of Organization Behavior.** Prerequisite: consent of instructor. Theoretical frameworks for developing explanatory and

predictive models of complex organizations. Exercises in constructing formal models, usually in mathematical or stochastic form and, where appropriate, using materials from field studies to develop empirical tests. These models may be used to discover implications for the systems changes recommended in the socio-technical field study.

The Staff

**292C. Comprehensive Planning in the Public Sector.** Prerequisite: consent of instructor. Evolving modes of planning under complexity with particular emphasis on the public sector. Development of policy through standard setting, bargaining, and regulating governing relationships; reality and value judgments; social and technical dimensions of alternatives; and social and technological forecasting.

Mr. Andrews, Mr. Dyer

**292D. Management in the Not-for-Profit Sector.** Prerequisite: graduate status. A study of the not-for-profit sector, the institutions within it, and its relationship to the governmental and business sectors. Special emphasis on management problems peculiar to the not-for-profit sector.

Mr. Case, Ms. Kovach, Mr. O'Reilly

**293. Business and Society.** Prerequisite: consent of instructor. A study of the business enterprise as a social institution, with emphasis on the changing purposes of social action. Adjustments of the firm to changes in the social environment. Ethical problems in management. Social responsibilities of the business manager.

Mr. Steiner

**294A. Strategy Formulation and Implementation.** Prerequisite: consent of instructor. Case course dealing with strategy decisions and their implementation, executive action, and administrative behavior involved in managing total enterprises. The student is confronted with complex company situations to develop ideas essential to overall managerial direction.

Ms. Huff, Mr. Steiner

**294B. Environmental Impacts on Management.** Prerequisite: consent of instructor. Examination of ways in which business, government, labor and consumer organizational managers might respond to external environmental problems. Methods are studied for developing and evaluating alternative managerial solutions which permit organizations to assist in improving current and future environmental quality.

Mr. Case, Mr. Rumelt, Mr. Steiner

**295A. Entrepreneurship and Venture Initiation.** Prerequisite: consent of instructor. An exploration in entrepreneurship particularly concerned with the formation and operation of new business ventures. Significant and crucial aspects of exploring new business opportunities and starting a business.

Mr. Schöllhammer and the Staff

**295B. Small Business Management.** Prerequisite: consent of instructor. Exploration of crucial aspects in managing small business enterprises. Emphasis is placed on the identification and analysis of characteristic operating problems of small firms and the application of appropriate methods or techniques for their solution.

Mr. Schöllhammer and the Staff

**296A. International Business Management.** Prerequisite: course 205A or consent of instructor. Identification, analysis, and resolution of managerial issues of policy and action within the context of an international corporation, with emphasis on problems of adaptation to different sociological, cultural, legal, political, and economic environmental characteristics.

Mr. R. H. Mason, Mr. Richman, Mr. Schöllhammer

**296B. International Business Economics and Management.** Prerequisite: consent of instructor. Study of economic and business problems in international context with emphasis upon application of economic theory to various international economics and managerial issues affecting multinational enterprises. Analysis of concepts of international trade, investments, monetary relations; management of multinational business firms.

Mr. Dominguez, Mr. R. H. Mason, Mr. Schöllhammer

**297A. Comparative and International Management.** Prerequisite: course 412 or consent of instructor. A comparative study of the practice of management in selected foreign countries, as affected by their social environments and the development of management theory.

Mr. Richman, Mr. Schöllhammer

**297B. International Business Policy.** Prerequisite: course 205A and consent of instructor. Analysis of key managerial problems encountered in a multinational corporation. Concepts and theories acquired in other courses in International Business and Comparative Management will be applied to a series of complex cases and simulations of international business operation.

Mr. Richman, Mr. Schöllhammer and the Staff

**297C. International Business Law.** Prerequisite: courses 205A and 296A. Legal environments in which international business operates: overseas business relationships and organizations; antitrust, taxation, transfer of capital and technology regulations; patent, trademark, and copyright safeguards; arbitration of international business disputes; expropriation of foreign investments; international business and government relations.

The Staff

**298A. Special Topics in Management Theory.** Prerequisite: open primarily to Ph.D. candidates or with consent of instructor. An examination in depth of problems or issues of current concern in management theory. Emphasis on recent contribution to theory, research, and methodology. Of special interest to advanced doctoral candidates, the academic staff, or distinguished visiting faculty. May be repeated for credit.

The Staff

**298B. Special Topics in International and Comparative Management.** Prerequisite: open primarily to Ph.D. candidates or with consent of the instructor. An examination in depth of problems or issues of current concern in international and comparative management. Emphasis on recent contributions to theory, research, and methodology. Of special interest to advanced doctoral candidates, the academic staff, or distinguished visiting faculty. May be repeated for credit.

The Staff

**298C. Special Topics in Socio-Technical Systems.** Prerequisite: open primarily to Ph.D. candidates or with consent of instructor. An examination in depth of problems or issues of current concern in socio-technical systems. Emphasis on recent contributions to theory, research, and methodology. Of special interest to advanced doctoral candidates, the academic staff, or distinguished visiting faculty. May be repeated for credit.

The Staff

**298D. Special Topics in Management.** Prerequisite: open primarily to Ph.D. candidates or with consent of instructor. An examination in depth of problems or issues of current concern in management. Emphasis on recent contributions to theory, research, and methodology. Of special interest to advanced doctoral candidates, the academic staff, or distinguished visiting faculty. May be repeated for credit.

The Staff

**299R. Research Methods in Management.** Prerequisite: Ph.D. candidate. Provides feedback and evaluation of papers prepared for the research requirement. Quarterly meetings will be held to discuss expectations of the research committee and the Doctoral Office. Students must enroll the quarter in which they are submitting their research paper. May be repeated for credit.

The Staff

### Professional Courses

**400. Mathematics for Management.** Prerequisite: graduate status. Fundamental mathematics for business, including topics from matrix algebra, probability, and calculus, with applications to model building and decision making in business firms. S/U only.

The Staff

**\*401. Managerial Economics.** Prerequisite: graduate status. Introduction to the measurement and determination of economic activity in the aggregate and to the role of prices in the decision making of the organization. National Income Accounting, Basic Economic Policy, Markets and Prices, Competition and Monopoly, Applications.

**402. Data Analysis, Statistics, and Decision Making.** Prerequisite: graduate status. An introduction to statistics for graduate students who have had no previous course in which emphasis is upon application to business problems.

The Staff

**403. Managerial Accounting.** Prerequisite: graduate status. An introduction to fundamental systems and procedures in financial and managerial accounting, with an emphasis on income measurement, marginal analysis, standard and direct costing.

The Staff

**404. Managerial Computing.** Prerequisite: graduate status. An introduction to the use of computers for management applications. Computer hardware, software, and programming concepts are discussed. Programming problems are assigned, using both batch-type (PL/C) and interactive (APL) languages.

The Staff

**405. Managerial Economics: The Organization.** Analysis of decision making in the firm, competitive policies and market structure, revenue and cost behavior.

The Staff

**406. Managerial Economics: Forecasting.** Prerequisite: graduate status. Sales, costs, and profit forecasting. General business forecasting and cyclical mechanisms.

The Staff

**407. Managerial Model Building.** Prerequisite: courses 400, 402, or equivalent. A survey of the uses of formal modeling approaches in managerial decision making. Emphasis is on model types and formulations, and use of solutions obtained from computer routines. Application areas examined include finance, marketing, production, and public systems.

The Staff

**408. Managerial Finance.** Prerequisite: course 403. Analysis of main decision areas of managerial financial management. Aimed at principles generally applicable to all types of organizations. Emphasis on financial planning and control, sources of funds, developing objectives and standards which lead to effective allocation and use of the organization's resources.

The Staff

**409. Personnel Management and Labor Relations.** Prerequisite: graduate status. Human resources evaluation. Compensation practices. Collective bargaining impacts. Governmental policy impacts on public/private sectors regarding labor-management relations, affirmative action, occupational safety, pension reform. Concepts of labor markets and manpower planning. Innovations such as employee participation and flexitime.

The Staff

**410. Operations Management.** Prerequisite: course 111 or 407 or equivalent. Principles and decision analysis related to the effective utilization of the factors of production in manufacturing and nonmanufacturing activities for both intermittent and continuous systems. The study of production organizations, analytical models and methods, facilities design, and the design of control systems for production operations.

The Staff

**411. Elements of Marketing.** A study of institutions and functions as they relate to the distribution of goods and services, emphasizing the viewpoint of management in the planning, execution, and measurement of marketing activities and strategies,

and the viewpoint of society in the analysis of cost, impact, and results.  
Mr. Kassarian, Mr. Lutz, Mr. Weitz

**412. Management of Organizations.** Prerequisite: completion of two quarters of work towards the MBA degree. Integrative approach to theory and practice of management in complex organizations, emphasizing managerial roles in designing organizational structures, creating/maintaining planning, control, information, incentive systems, different patterns of human interaction such structures and systems tend to produce.  
The Staff

**420. Management Policy.** Prerequisite: course 412. Evaluation and formulation of organization's overall policies and strategies. Economic, heuristic, and social process approaches to policy formulation, environmental analysis, and organizational appraisal. Senior management's role in managing the policy process.  
The Staff

**423. Advanced Management Theory.** Advanced study of management theory in formally organized enterprise through significant readings; discussing advanced approaches and techniques developed from applying theory; using theory to integrate methods and findings of quantitative and behavioral sciences; lectures on sophisticated application of management theory in practice.  
Mr. Koontz, Mr. McKelvey, Mr. Raia

**430. Introduction to Managerial Statistics.** (½ course) Prerequisite: graduate status. An introduction to probability theory and classical statistics. Statistical description of data. Basic concepts of probability theory. The use of sampling for decision making. Interpretation of tests of hypotheses. Overview in managerial terms of more advanced statistical methods.  
The Staff

**431A. Introduction to Model Building.** (½ course) Prerequisite: graduate status. An introduction to formal model building. Use of mathematical models as system descriptors. Characteristics of the major "classes" of models. Formulation of problems in terms of mathematical models. Interpretation of solutions provided by the computer.  
The Staff

**433. Computing Laboratory.** (½ course) Prerequisite: graduate status. Use of the computer as an aid in solving management-related problems; interactive, time-shared processing utilizing remote terminals; and the APL computer language.  
The Staff

**434. Managerial Accounting and Finance.** Prerequisite: graduate status. An introduction to the fundamentals of accounting and finance with emphasis on the preparation of basic financial statements and the techniques of financial analysis.  
The Staff

**435. Organizational Behavior and Management Processes.** Prerequisite: graduate status. A system approach to the theory and practice of management in complex organizations. Provides an integrated view of human behavior and managerial processes in a dynamic organizational society.  
The Staff

**436. Policy and Organizational Environment.** Prerequisite: course 441. Environmental settings of organizations; interrelationships among and roles of various sectors of society with special emphasis on business; issues facing managers and management-related specialists; and formulation of organizational strategies and policies.  
The Staff

**440. Managerial Problem Solving: Individual.** Prerequisite: graduate status. Study and practice of individual decision making and problem solving including the impacts of personality, motivation, interpersonal communication, and various decision-making techniques. The relationships among the individual, managerial roles, and complex organizations as they influence the managerial process are studied.  
The Staff

**441. Managerial Problem Solving: Complex Systems.** Prerequisite: course 440. Study of organizational and interorganizational problem solving including identification, formulation, data collection, forecasting, assumption testing, solution methods, implementation, evaluation, control, and dealing with conflict and ambiguity. Organization of projects in which problem solving is experienced at various levels of complexity.  
The Staff

**444A-444B. Management Field Study.** Must be taken in two consecutive quarters in second year. Supervised study of an organization including establishment of client organization/student consultant relationship, identification of problem, design of study, collection and analysis of data, development and reporting of implementable recommendations. This course is offered on an In Progress basis, which requires students to complete the full two-quarter sequence, at the end of which time a grade is given for both quarters of work.  
The Staff

**450. Field Work in Behavioral Science Management Development.** (1 or 2 courses) Prerequisite: course 287 and consent of the instructor. Supervised practical work in all phases of laboratory education for management development, such as sensitivity training laboratories, creativity and personal growth laboratories, simulated managerial behavior laboratories, etc.  
Mr. Culbert, Ms. Lasko, Mr. Massarik

**451. Field Work in Organizational Development.** (½ to 3 courses) Prerequisite: courses 282B, 283 and/or consent of instructor. Supervised practical field work in organizational development consultation in interpersonal, group, intergroup, total organization, and interorganizational settings.  
The Staff

**452. Field Work in Technical Assistance for Minority Business Enterprises.** (¼ to 1 course) Prerequisite: completion of first year of master's program or consent of instructor. Supervised field experience in business consulting and other forms of technical assistance for business firms and management in ethnic communities; seminars and other shared learning experiences in transmitting business administration technology to the urban ghetto.  
The Staff

**453. Field Work in Arts Management.** (1 to 3 courses) Prerequisite: consent of instructor. Supervised field experience and practical work in all phases of an arts organization (pictorial, performing, or community), concentrating on its managerial problems and its relationship to the community and society in general.  
The Staff

#### Individual Study and Research

**501. Cooperative Program.** (½ to 2 courses) Prerequisite: approval of UCLA School of Management Graduate Adviser and Assistant Dean. Approval of host campus instructor, Department Chairman and Graduate Dean. The course is used to record the enrollment of UCLA students in courses taken under cooperative arrangements with neighboring institutions. To be graded S/U.

**596A-596N. Research in Management.** (¼ to 2 courses) Prerequisite: consent of Director of Master's Program or Director of Doctoral Program by special petition. Directed individual study or research.  
The Staff

**597. Preparation for Qualifying Examinations.** (1 or 2 courses) Prerequisite: consent of Director of Master's Program or Director of Doctoral Program by special petition. Preparation for comprehensive examination for the master's degree or the qualifying examination for the Ph.D. degree.  
The Staff

**598. Thesis Research in Management.** (1 or 2 courses) Prerequisite: consent of Director of Master's Program by special petition. Research for and preparation of the master's thesis.  
The Staff

**599. Dissertation Research in Management.** (1 or 2 courses) Prerequisite: consent of Director of Doctoral Program by special petition. Research for and preparation of the doctoral dissertation.  
The Staff

## MATHEMATICS

(Department Office, 6364 Mathematical Sciences Building)

Richard F. Arens, Ph.D., *Professor of Mathematics*  
Donald G. Babbitt, Ph.D., *Professor of Mathematics*  
Kirby A. Baker, Ph.D., *Professor of Mathematics*  
A.V. Balakrishnan, Ph.D., *Professor of Mathematics and Engineering and Applied Science*

Robert J. Blattner, Ph.D., *Professor of Mathematics (Vice Chairman of the Department)*

<sup>14</sup>Robert F. Brown, Ph.D., *Professor of Mathematics*  
<sup>8</sup>David G. Cantor, Ph.D., *Professor of Mathematics and Engineering and Applied Science*

C.C. Chang, Ph.D., *Professor of Mathematics*  
Alonzo Church, Ph.D., *Professor of Mathematics and Philosophy in Residence*

Earl A. Coddington, Ph.D., *Professor of Mathematics*  
Julian D. Cole, Ph.D., *Professor of Mathematics and Engineering and Applied Science*

Philip C. Curtis, Jr., Ph.D., *Professor of Mathematics*  
Henry A. Dye, Ph.D., *Professor of Mathematics*  
Hector Fattorini, Ph.D., *Professor of Mathematics and Engineering and Applied Science*

Thomas S. Ferguson, Ph.D., *Professor of Mathematics*  
Theodore Gamelin, Ph.D., *Professor of Mathematics*  
John Garnett, Ph.D., *Professor of Mathematics*

Basil Gordon, Ph.D., *Professor of Mathematics*  
<sup>8</sup>John W. Green, Ph.D., *Professor of Mathematics*  
<sup>14</sup>Robert E. Greene, Ph.D., *Professor of Mathematics*

Nathaniel Grossman, Ph.D., *Professor of Mathematics*  
Alfred Hales, Ph.D., *Professor of Mathematics*  
Alfred Horn, Ph.D., *Professor of Mathematics*

S.T. Hu, Ph.D., D.Sc., *Professor of Mathematics*  
Robert I. Jennrich, Ph.D., *Professor of Mathematics and Biomathematics*  
Paul B. Johnson, Ph.D., *Professor of Mathematics*

Paul J. Koosis, Ph.D., *Professor of Mathematics*  
Thomas M. Liggett, Ph.D., *Professor of Mathematics*  
D. Anthony Martin, *Professor of Mathematics*

Ronald Miech, Ph.D., *Professor of Mathematics*  
Yiannis N. Moschovakis, Ph.D., *Professor of Mathematics*  
Barrett O'Neill, Ph.D., *Professor of Mathematics*

Stanley J. Osher, Ph.D., *Professor of Mathematics*  
<sup>14</sup>Lowell J. Paige, Ph.D., *Professor of Mathematics*  
Sidney Port, Ph.D., *Professor of Mathematics*

<sup>14</sup>James V. Raiston, Jr., Ph.D., *Professor of Mathematics*  
Raymond M. Redheffer, Ph.D., *Professor of Mathematics*  
Bruce L. Rothschild, Ph.D., *Professor of Mathematics*

<sup>14</sup>David Sanchez, Ph.D., *Professor of Mathematics*  
<sup>14</sup>Leo Sario, Ph.D., *Professor of Mathematics*  
Murray Schacher, Ph.D., *Professor of Mathematics*

<sup>8</sup>Robert H. Sorgenfrey, Ph.D., *Professor of Mathematics*  
Robert Steinberg, Ph.D., *Professor of Mathematics*

Charles J. Stone, Ph.D., *Professor of Mathematics and Biomathematics*

Ernst G. Straus, Ph.D., *Professor of Mathematics*  
<sup>14</sup>Masamichi Takesaki, Ph.D., *Professor of Mathematics*

<sup>6</sup>V.S. Varadarajan, Ph.D., *Professor of Mathematics*  
N. Donald Yivisaker, Ph.D., *Professor of Mathematics*  
E.F. Beckenbach, Ph.D., *Emeritus Professor of Mathematics*

M.R. Hestenes, Ph.D., *Emeritus Professor of Mathematics*  
Paul G. Hoel, Ph.D., *Emeritus Professor of Mathematics*  
William T. Puckett, Ph.D., *Emeritus Professor of Mathematics*

Angus E. Taylor, Ph.D., *Emeritus Professor of Mathematics*  
Frederick A. Valentine, Ph.D., *Emeritus Professor of Mathematics*  
Rodolfo De Sapio, Ph.D., *Associate Professor of Mathematics*

<sup>8</sup>Robert Edwards, Ph.D., *Associate Professor of Mathematics*  
Richard S. Elman, Ph.D., *Associate Professor of Mathematics*  
<sup>8</sup>David Gieseker, Ph.D., *Associate Professor of Mathematics*

<sup>8</sup>David Gillman, Ph.D., *Associate Professor of Mathematics*  
<sup>8</sup>Mark Green, Ph.D., *Associate Professor of Mathematics*  
Charles G. Lange, Ph.D., *Associate Professor of Mathematics*

<sup>14</sup>Andrew Majda, Ph.D., *Associate Professor of Mathematics*  
James White, Ph.D., *Associate Professor of Mathematics*  
Pamela Cook-Ioannidis, Ph.D., *Assistant Professor of Mathematics*

Ron Y. Donagi, Ph.D., *Hedrick Assistant Professor of Mathematics*  
Richard T. Durrett, Ph.D., *Assistant Professor of Mathematics*  
Björn Engquist, Ph.D., *Assistant Professor of Mathematics*

<sup>8</sup>Moshe Goldberg, Ph.D., *Assistant Professor of Mathematics*  
<sup>8</sup>Allen E. Hatcher, Ph.D., *Assistant Professor of Mathematics*  
John Jacob, Ph.D., *Adjunct Assistant Professor of Mathematics*

John Kolk, Ph.D., *Hedrick Assistant Professor of Mathematics*  
Steven Krantz, Ph.D., *Assistant Professor of Mathematics*  
John R. Steel, Ph.D., *Assistant Professor of Mathematics*  
Peter C. Trombi, Ph.D., *Assistant Professor of Mathematics*

David Cohen, M.A., *Lecturer in Mathematics*  
Herbert Enderton, Ph.D., *Lecturer in Mathematics*  
John McGhee, M.A., *Lecturer in Mathematics*

#### Undergraduate Programs

Students who wish advice or current information on any of the undergraduate mathematics programs should inquire at the Undergraduate Mathematics Office, MS 6356.

Courses taken to fulfill any of the requirements for any of the Mathematics Department's majors must be taken for a letter grade and not on a Pass/Not Pass basis.

#### Preparation for the Major

Courses 31A-31B-31C, 32A-32B-32C or the corresponding courses in the honors sequence. These courses must be completed with an average grade of C or higher. Prospective majors who qualify are strongly urged to take the honors sequence Mathematics 31AH-31BH-31CH, 32AH-32BH-32CH, Engineering 10C (Engineering 10F may be substituted for Engineering 10C) and three courses in physical sciences chosen from Chemistry 11 or 13 sequences (formerly Chemistry 1 or 3), Physics 6, 8 or 8H sequences, Astronomy 101, Atmospheric Sciences 10, 40A, 40B, or approved upper division courses in Chemistry, Atmospheric Sciences, Geophysics and Space Sciences, and Physics. Recommended: courses in physics. Students may apply physical science courses from the former (1973-1974) list if the courses were completed prior to Fall 1974.

#### Transfer Students

Transfer students, and UCLA students wishing to change their major to mathematics, with 60 or more quarter units of credit must have completed one year of calculus and have a C average or better in all college level mathematics courses completed. Transfer students should consult with a departmental adviser at their earliest opportunity. Particular areas where evaluation and direction may be necessary are linear algebra and differential equations.

#### The Major

Courses 110A, 115, 120A, 131A, 131B, and at least five additional courses numbered between 105 and 199. Highly recommended for students who may wish to obtain a graduate degree: courses 110B-110C. A reading knowledge of French, Russian or German is strongly recommended for students intending to pursue graduate work.

#### Honors Calculus Sequence

The first and second year honors sequence, Mathematics 31AH-31BH-31CH-32AH-32BH-32CH, is intended for students (not necessarily mathematics majors) who have a strong interest in mathematics and desire a broader and more comprehensive and demanding introduction to university-level topics. On occasion, the courses may range beyond the stated topics of calculus, linear algebra, and differential equations. Admission to the sequence is by permission of the instructor, and satisfactory performance on the preliminary examination in mathematics. Students who have done unusually well in the standard sequence are welcome to apply for transfer to the honors sequence. (The honors sequence is not connected with the Undergraduate Honors Program described below.)

#### Undergraduate Honors Program

A student majoring in mathematics and wishing to graduate with Honors in Mathematics should apply for admission to the Honors Program. This may be done any time after the fourth undergraduate quarter. Minimum entrance requirements for fifth quarter students are the completion of courses 31A-31B-31C and 32A with three A's



and one B. Applications from students past the fifth quarter and from transfer students will be judged on prospects for successful completion of the program. Honors will be granted to students in the program who in addition to the usual course requirements: (a) complete courses 110B-110C or approved graduate substitutes; (b) complete course 190, Honors Mathematics Seminar; (c) earn a grade-point average of at least 3.6 in approved upper division and graduate mathematics courses. Students who demonstrate exceptional achievement will be awarded Highest Honors.

#### Departmental Scholar Program in Mathematics

This program allows exceptionally promising undergraduates to enroll in graduate courses and begin work towards the Master's degree in mathematics. See Departmental Scholar Program.

#### The Major in the Teaching of Mathematics

Courses 101A-101B-101C, 102A-102B, 152A, 370 and at least three other courses in the 100 series beyond 105. Highly recommended are courses 106, 111A-111B-111C, 115, 120A-120B, 131A-131B, 132, 140A, 142, 144, 152B. A knowledge of Spanish is recommended for students who intend to teach in the Southwest.

#### Teaching Credentials

Students interested in teaching mathematics in the schools should inquire at the Undergraduate Mathematics Office, MS 6356, about teaching credentials.

#### The Major in Mathematics-Applied Science

This is a program designed for students with a substantial interest both in mathematics and its applications to related fields.

*Preparation for the Major.* Mathematics 31A-31B-31C, 32A-32B-32C with an average grade of "C" or better.

*The Major.* Seven courses in Mathematics in the 100 series chosen from those numbered 110 and above, with an average grade of "C" or better. Seven upper division courses chosen from not more than two related departments approved by the Mathematics-Applied Science Curriculum Committee of the Mathematics Department.

Students contemplating this major should apply during their sophomore year. An adviser in the Mathematics Department will be appointed and a proposed program of study drawn up. Upon approval of the program by the Mathematics-Applied Science Curriculum Committee, the student will be accepted into the program.

#### The Major in Mathematics-Computer Science

The major, the minimum standards for progress, and the Honors Program in the major are described under the College of Letters and Science.

#### Departmental Scholar Program in Mathematics-Computer Science

This program allows exceptionally promising Mathematics-Computer Science undergraduates to enroll in graduate courses and begin work towards the Master's degree in Computer Science. See Departmental Scholar Program.

#### The Major in Mathematics-System Science

This is described under the College of Letters and Science.

#### Course Repetition

A student may not take a mathematics course for credit if he has credit for a more advanced course which has the first course as a prerequisite.

#### Conflicts or Duplication of Calculus Sequences

Since each of the sequences 3A-3B-3C, 4A-4B, 31A-31B-31C-32A-32B-32C (and the previous 11A-11B-11C-12A-12B-12C, 11A-11B-11C-13A-13B-13C) has been designed in accordance with the requirements of majors in a particular group of departments, it will be difficult for students to transfer from one sequence to another. Good students who wish to pursue advanced mathematics should be able to enter 31C after completing 3C. Students wishing to continue in mathematics after completing 4B (formerly 2C) should take 3C, followed by 31C. Credit will be given for at most one course in each of the following groups: 1. 11A, 11AH, 31A, 31AH, 4A, 3A, 2B; 2. 11B, 11BH, 31B, 31BH, 4B, 3B, 2C; 3. 11C, 11CH, 31C, 31CH; 4. 12A, 12AH, 31C, 31CH; 5. 12B, 12BH, 13B, 32A, 32AH; 6. 12C, 12CH, 13C, 32B, 32BH; 7. 13A, 130A, 32C, 32CH.

Other changes should be made only with the concurrence of a departmental adviser who will determine the total allowable credit. Similar caution applies to transfer students entering with incomplete calculus sequences. Such students should be prepared to supply complete information as to texts used and chapters covered in their previous work. If necessary, a placement examination may be required.

#### Advanced Placement in Calculus

Students with transfer credit in calculus or Advanced Placement credit in calculus are exempt from the preliminary examination in mathematics. These students must consult the mathematics department counselor in MS 6356 for appropriate advanced placement in the calculus sequences.

Students who have had a calculus course in high school but who do not have Advanced Placement credit are not exempt from the

preliminary examination. Such students who wish advanced placement in the calculus sequences must consult the mathematics department counselor.

Students wishing placement in the 31AH honors calculus sequence must demonstrate satisfactory performance on the preliminary examination in mathematics. Students wishing placement in the 32AH honors calculus sequence may need to pass a placement examination in mathematics. Enrollment in 31AH and 32AH is by consent of the instructor.

**Advanced Placement Calculus AB and BC Tests:** Students who pass the AB Examination with a score of 3, 4, or 5 receive 5 units of credit and Mathematics 31A equivalency. Students who score 3, 4, or 5 on the BC Examination receive 10 units of credit and Mathematics 31AB equivalency. Students who take both examinations will receive at most 10 units of credit.

#### Preliminary Examination in Mathematics

All students planning to enroll in Mathematics 3A or Mathematics 31A are required to take the mathematics section of the Chemistry/Mathematics Preliminary Examination during the enrollment period for the quarter in which they intend to enroll in these courses. This examination is designed to test the student's mastery of algebra and precalculus mathematics. During 1978-1979 this preliminary examination is scheduled on September 18, 1978 for the Fall Quarter, January 3, 1979 for the Winter Quarter, and March 28, 1979 for the Spring Quarter. These dates may be changed. The time and location of the examination will be posted outside the Undergraduate Mathematics Office, MS 6356.

#### Graduate Programs

All mathematics graduate programs are administered by the Graduate Mathematics Office, MS 6375.

#### Requirements for the Master's Degree

Candidates for the degree of Master of Arts in mathematics must qualify under the Comprehensive Examination Plan. For the general requirements, see Master's Degrees. Eleven quarter courses must be offered. One alternative is to offer eight or more courses in the graduate list; the remainder may be approved upper division courses. The other alternative involves the preparation of a report under the direction of some member of the Department. This is a project designed to train the student in independent study of mathematical literature and the reduction to orderly form of the knowledge thus gained. This alternative requires six or more graduate courses and the remainder approved undergraduate courses; the preparation of the report may be given credit as one of the graduate courses. The candidate must pass a set of qualifying written examinations, one in basic analysis and one in basic algebra.

#### Requirements for the Master of Arts in Teaching (M.A.T.) Degree

The Mathematics Department also offers a program leading to the M.A.T. degree. Eleven courses are required of which seven must be in mathematics. This includes the five core graduate courses plus Mathematics 596 which leads to the preparation of a Master's essay. Students interested in the Single Subject Instruction Credential must consult the Graduate School of Education for information. Up to four of the courses required for this credential may also be used to satisfy the requirements for the M.A.T. degree. Comprehensive examinations cover both the subject matter of the mathematics courses and the content and philosophy of school mathematics. A variation of this program is available for those interested in a junior college credential.

#### Requirements for the Doctor's Degree

The requirements are, in general, in accordance with those listed under general requirements for the doctor's degree. At present, the qualifying examinations which must be taken within the Department before the student is advanced to candidacy consist of an examination divided into four parts. The parts consist of (1) algebra, (2) real analysis, (3) complex analysis, and (4) mathematical electives. These written examinations are given twice each year; the student normally should take them during his second year of graduate study. There are two additional requirements for the Ph.D. Students must pass satisfactorily at least twelve mathematics courses numbered 205 through 285 but excluding 210A-210B, 245A-245B, 246A-246B; and furthermore, students are required to participate actively in at least two seminars during their graduate study. Exceptions to these requirements may be granted in special cases. A student pursuing the Ph.D. degree can obtain a Master's degree by fulfilling the eleven course requirement, and by passing the Ph.D. algebra qualifying examination and one of the other Ph.D. qualifying examinations.

#### Applied Mathematics

An interdisciplinary program in applied mathematics is offered leading to the M.A. and Ph.D. degrees in mathematics. The candidate for the M.A. degree must pass a set of written qualifying examinations, one in basic analysis and one chosen from applied mathematics, numerical analysis, or probability and statistics. Four qualifying examinations are required before a Ph.D. student is advanced to candidacy. The student must pass one written examination in applied real and complex analysis, and two chosen from applied differential equations, numerical analysis, and mathematical statistics. A fourth written or oral examination tests the student's competence at a research level in a specialized "outside" field. Examples of these "outside" fields may be found in

"Information for Students in Applied Mathematics" available in the Graduate Mathematics Office. In addition to the qualifying examinations, students must pass satisfactorily at least eighteen approved graduate courses, including at least twelve mathematics courses numbered from 205 to 285.

#### Foreign Language

No foreign language is required for the M.A. degree. For the Ph.D. degree, two foreign languages are required. Preferred languages are French, German, and Russian. Students in the Applied Mathematics program may petition to substitute Computer Programming for the second foreign language.

#### Lower Division Courses

**1A. Intermediate Algebra. (½ course)** Prerequisites: Mathematics 1A and 1AN are the same course. Both displace 4 units on the student's study list but Mathematics 1A yields 2 units credit towards the degree while 1AN yields no credit. Enrollment in Mathematics 1A is limited to students with not more than two and one-half years of high school level mathematics. Restrictions: Mathematics 1A may not be used to satisfy College breadth requirements. Not open for credit to students with three years or more of high school level mathematics (students with three years of high school level mathematics see Mathematics 1AN). Not open for credit to students who have credit for other mathematics courses. Arithmetical operations on the real numbers, algebraic notation, polynomials, rational exponents, linear and quadratic equations and inequalities, coordinate geometry. Intended for students requiring a review of elementary and intermediate algebra.

**1AN. Intermediate Algebra. (No credit)** Prerequisites: Mathematics 1A and 1AN are the same course. Both displace 4 units on the student's study list, but Mathematics 1A yields 2 units credit towards the degree while 1AN yields no credit. Enrollment in Mathematics 1A is limited to students with not more than two and one-half years of high school level mathematics. Restrictions: Mathematics 1AN is only offered on a P/NP basis and may not be used to satisfy College breadth requirements. May not be taken by students who have credit for other mathematics courses. Arithmetical operations on the real numbers, algebraic notation, polynomials, rational exponents, linear and quadratic equations and inequalities, coordinate geometry. Intended for students requiring a review of elementary and intermediate algebra but who have taken three or more years of high school mathematics.

**1B. Precalculus.** Prerequisite: course 1A or two and one half years of high school mathematics or satisfactory performance on a placement examination given the first class meeting. Not open for credit to students who have credit for other mathematics courses except 38A-38B and 100. The function concept. Linear and polynomial functions and their graphs, zeroes of polynomials. Inverse, exponential and logarithmic functions. Trigonometric functions.

**2. Finite Mathematics for Social Science Students.** (Formerly Mathematics 2A) Prerequisite: three years of high school mathematics or course 1B. Finite mathematics consisting of elementary logic, sets, combinatorics, probability, vectors and matrices.

**3A-3B-3C. Calculus for Life Science Students.** Lecture, three hours; discussion, two hours. Prerequisite: three years of high school mathematics (including trigonometry) or course 1B. Course 3A is not open for credit to students with credit in another calculus sequence. 3A: techniques and applications of the differential calculus. 3B: techniques and applications of the integral calculus. 3C: may be taken after course 4B. Functions of several variables, vectors, partial differentiation, and multiple integration.

**4A-4B. Calculus for Social Science Students.** (Formerly Mathematics 2B-2C) Prerequisite: three years of high school mathematics (including trigonometry) or course 1B. 4A: functions, graphs, differentiation and integration with applications. 4B: further applications of the calculus, differential equations, functions of several variables.

**15. Lower Division Seminars.** Prerequisite: consent of the instructor. Each quarter the Department will offer a limited number of seminars in various branches of mathematics. The method of teaching will involve substantial student participation and enrollment will be limited to 15 students. Course may be repeated for credit.

**31A-31B-31C. Calculus and Analytic Geometry.** Prerequisites: At least three years of high school mathematics including some coordinate geometry and trigonometry, or passing of preliminary examination in mathematics. 31A: Introduction to differentiation and integration with applications. 31B: Transcendental functions, extremal problems, techniques and applications of integration. 31C: Infinite series; introduction to matrix theory.

**31AH-31BH-31CH. Calculus and Analytic Geometry, Honors Sequence.** Prerequisites: Satisfactory performance on the preliminary examination in mathematics and consent of the instructor. An honors course parallel to 31A-31B-31C.

**32A-32B. Introduction to Calculus of Several Variables.** Prerequisites: course 31C or 31CH or consent of the instructor. 32A: Introduction to differential calculus of several variables. 32B: Introduction to integral calculus of several variables.

**32AH-32BH. Introduction to Calculus of Several Variables, Honors Sequence.** Prerequisites: course 31CH or 31C with grade A or consent of instructor. An honors course parallel to 32A-32B.

**32C. Introduction to Differential Equations.** Prerequisites: course 31C or consent of instructor. An introduction to the theory of differential equations: separation of variables, linear equations, variation of parameters, partial differential equations, Fourier series.

**32CH. Introduction to Differential Equations, Honors Sequence.** Prerequisites: course 32BH or consent of the instructor. An honors course parallel to 32C.

**38A-38B. Fundamentals of Arithmetic.** Lecture three hours, laboratory two hours. Prerequisite: sophomore standing; two years of high school mathematics. Designed for prospective elementary teachers (See also Mathematics 104). The real number system, its origins, development, structure, and use. Emphasis is on understanding of arithmetic procedures. The laboratory includes experience with aids and models. **38A:** May not be used to fulfill Letters and Science breadth requirement. Counting numbers and other subsystems of the rational numbers; sets; operations; relations; algorithms; measurement and approximation; applications. **38B:** prerequisite: course 38A. May not be used to fulfill Letters and Science breadth requirement. The real numbers, functions, elementary ideas of number theory, probability, and statistics. Other topics appropriate for the elementary classroom.

**50A-50B. Elementary Statistics.** Prerequisite to course 50A: three years of high school mathematics or course 1B or consent of the instructor. Prerequisite to course 50B: course 50A. **50A:** Descriptive statistics, elementary probability, random variables, binomial and normal distributions. Large and small sample inference concerning means. **50B:** Linear regression and correlation, chi-square tests, design of experiments, analysis of variance, nonparametric statistics, computerized statistical analysis via pre-packaged routines.

**60. Introduction to Mathematical Methods of System Science.** Prerequisites: course 31C or consent of the instructor. Selected introductory topics pertinent to the analysis of automata, information transmission, signals, networks. Intended for students in the Mathematics-System Science major, and for other mathematics and science majors.

**99. Individual Projects in Programming. (1/8 course)** Prerequisites: Mathematics 31A-31B-31C, Engineering 10C, 10F, and consent of instructor. Limited to majors in Mathematics, Teaching of Mathematics, Mathematics/Applied Science, Mathematics/Computer Science, Mathematics/System Science. Course may only be taken on a pass-fail basis and may be taken up to eight times. This is an unstructured course in computer programming. Students submit proposals for their own programming projects and, after approval, proceed to carry them out, either independently or in small groups. To pass this course students must submit a final report indicating what they have actually done, and evidence that they have successfully run computer programs.

## Upper Division Courses

### GENERAL AND TEACHER TRAINING

**100. The Nature of Mathematics.** Prerequisite: junior standing. Not open to students majoring in mathematics, engineering, or physical science. A course designed to acquaint students in the arts, humanities, and social sciences with the nature of modern mathematics and the mathematical method.

**101A-101B-101C. Topics in Algebra.** Prerequisite: course 31C or consent of the instructor. 101A is not open to students having credit for course 110A. A sequence intended primarily for prospective secondary teachers. Group theory, numbers and number systems, relations and equivalence, topics from elementary number theory, the rational numbers, integral domains, rings and fields, the real numbers, cardinals, complex numbers, polynomials, vector spaces, nonconstructibility, nonsolvability.

**102A-102B. Topics in Geometry.** Prerequisite: course 31C or consent of the instructor. A sequence intended primarily for prospective secondary teachers. Axiomatic methods, advanced topics in Euclidean geometry, hyperbolic and other geometries, constructions, symmetries, isometry and related topics, projective geometry, map coloring, Jordan curve theorem.

**104. Fundamental Concepts of Geometry.** Lecture three hours, laboratory two hours. Prerequisite: two years of high school mathematics including geometry. Designed for prospective elementary teachers (See also Mathematics 38A-38B). Plane and solid Euclidean geometry; axioms, parallels, congruence, similarity, area and volume, geometric constructions; non-Euclidean geometry.

**106. History of Mathematics.** Prerequisite: course 31C or consent of the instructor. Topics in the history of mathematics with emphasis on the development of modern mathematics.

### ALGEBRA, NUMBER THEORY AND LOGIC

**110A-110B-110C. Algebra.** Prerequisite: course 115 or consent of the instructor. Course 110A is not open for credit to students with credit for Mathematics 101A or 101B. **110A:** the ring of integers, integral domains, fields, polynomial domains, unique fac-

torization. **110B:** groups, structure of finite groups. **110C:** further topics in rings and modules; field extensions, Galois Theory, applications to geometric constructions and solvability by radicals.

**111A-111B-111C. Theory of Numbers.** Prerequisite: course 115 or consent of the instructor. Divisibility, congruences, Diophantine analysis, selected topics in the theory of primes, algebraic number theory, Diophantine equations.

**112A-112B-112C. Set Theory and Logic.** Prerequisite: courses 32A-32B-32C or consent of the instructor. Course 112A deals with informal axiomatic set theory presented as a foundation for modern mathematics. 112B and 112C cover predicate logic, formalized theories. Gödel's completeness and incompleteness theorems.

**113. Combinatorics.** Prerequisite: course 32A or consent of the instructor. Permutations and combinations, counting principles, recurrence relations and generating functions, combinatorial designs, graphs and trees, with applications including games of complete information. Combinatorial existence theorems, Ramsey's theorem.

**114. Theory of Computability.** Prerequisite: course 31C or consent of the instructor. Machines and recursive functions. Church's thesis. Gödel numbers, enumeration theorem, universal machines. Unsolvable problems. Relative recursiveness. Further topics selected from: word problems, arithmetical relations, subrecursive hierarchies, primitive recursive functions, computational complexity.

**115. Linear Algebra.** Prerequisite: course 31C or consent of the instructor. Abstract vector spaces; linear transformations and matrices; determinants; similarity; eigenvalues and eigenvectors; Jordan form; inner product spaces; quadratic forms.

### GEOMETRY AND TOPOLOGY

**120A-120B. Differential Geometry.** Prerequisite: course 32B or consent of the instructor. Curves in 3-space, Frenet formulas, surfaces in 3-space, normal curvature. Gaussian curvature. Congruence of curves and of surfaces. Intrinsic geometry of surfaces, isometrics, geodesics, Gauss-Bonnet theorem.

**121. Introduction to Topology.** Prerequisite: course 131A. Metric and topological spaces, topological properties, completeness, mappings and homeomorphisms, the metrization problem.

**122. Projective Geometry.** Prerequisite: course 115. Projective spaces, especially lines and planes; homogeneous coordinates; the principles of duality; projectivities, the fundamental theorem, and the theorems of Desargues, Pappus, Steiner and Pascal.

### ANALYSIS

**131A-131B. Analysis.** Prerequisite: 131A: course 32B or consent of the instructor. 131B: courses 131A and 115 or consent of the instructor. **131A:** real numbers, point set topology in  $\mathbb{R}^n$  and in metric spaces, limits, continuity, derivatives, infinite sequences and series. **131B:** functions of bounded variation, Riemann-Stieltjes integral, sequences and series of functions, multivariable differential calculus, implicit and inverse function theorems, extremum problems.

**132. Introduction to Complex Analysis.** Prerequisite: course 32B or consent of the instructor. Complex numbers, functions, differentiability, series, extensions of elementary functions, integrals, calculus of residues, conformal maps and mapping functions with applications.

**133. Integration on Manifolds.** Prerequisite: course 131B. Integration theory for functions of several variables, multilinear algebra, differential forms, Stokes' Theorem on manifolds.

**134. Measure and Integration.** Prerequisite: course 131B or consent of the instructor. An introduction to Lebesgue measure and integration.

**135A-135B-135C. Differential Equations.** Prerequisite to 135A: 32C (or the discontinued 13A or 130A). Course 135A is not open for credit to students having the former 130B. Prerequisite to 135B: 135A (previously called 130B). Course 135B is not open for credit to students having the former 130C. Prerequisite to 135C: 135B (previously called 130C). Systems of differential equations, linear systems, existence theory, stability of linear and almost linear systems, Lyapunov's Second Method, Sturm-Liouville problems, applications, linear partial differential equations, the wave equation, the heat equation and Laplace's equation.

### APPLIED MATHEMATICS

**140A-140B-140C. Numerical Analysis.** Prerequisite: courses 31A-31B-31C, 32A-32B-32C, 115, and Engineering 10C, or 10F, or consent of the instructor. **140A:** Computational methods for linear algebra; solving systems of linear equations; computing eigenvalues and eigenvectors; nonlinear equations. **140B:** Interpolation and approximation; numerical differentiation and integration; Richardson extrapolation. **140C:** Elements of numerical solutions for scalar ordinary differential equations: initial value problems.

**142. Introduction to Applied Mathematics.** Prerequisite: courses 32A-32B-32C or consent of the instructor. An introduction to the fundamental principles and the spirit of applied mathematics. Emphasis is placed on the manner in which mathematical models are constructed for physical problems. Illustrations are drawn from many fields of endeavor (e.g. physical science, biology, economics, traffic dynamics, etc.).

**143. Analytic Mechanics.** Prerequisite: courses 32A-32B-32C or consent of the instructor. Foundations of Newtonian mechanics, kinematics and dynamics of a rigid body, variational principles and Lagrange's equations; calculus of variations, variable mass; related topics in applied mathematics.

**144. Theory of Games and Linear Programming.** Prerequisite: course 115 or consent of the instructor. The basic theorems of two person zero-sum matrix games including the minimax theorem; applications to games of chance and strategy; principles of linear programming, the duality theorem, and simplex methods; applications to industrial and business problems.

**145A-145B. Methods of Applied Mathematics.** Prerequisites: course 32A-32B-32C or consent of the instructor. Calculus of variations, linear integral equations (Volterra and Fredholm) and applications to differential equations, Fourier series and integrals, elements of tensor calculus, special topics as time permits.

### PROBABILITY AND STATISTICS

The 150 and 152 sequences are parallel courses and transferring between them is not permitted.

**150A-150B-150C. Probability and Statistics.** Prerequisite: course 32B or consent of the instructor. 150A and the first half of 150B constitute an introduction to probability theory. The second half of 150B and 150C constitute an introduction to statistics. These courses emphasize both theory and applications.

**M151. Stochastic Processes. (Same as Engineering M120C.)** Prerequisite: Engineering 120A or courses 150A-150B, or 152A and consent of the instructor. An introduction to the theory and application of stochastic models, emphasizing Markov chains and pure jump processes; illustrations from queueing systems, point processes, birth and death processes, renewal theory, Poisson processes, Brownian motion.

**152A-152B. Applied Mathematical Statistics.** Prerequisite: course 32B or consent of the instructor. A basic introductory course in the theory and application of statistical methods. This course condenses 150A-150B-150C into two quarters mainly by devoting less time to the underlying theory.

**M153. Introduction to Computational Statistics. (Same as Biomathematics M153.)** Prerequisite: Mathematics 150C or Mathematics 152B or the equivalent. Statistical analysis of data by means of package programs. Regression, analysis of variance, discriminant analysis, and analysis of categorical data. Emphasis will be on understanding the connection between statistical theory, numerical results, and analysis of real data.

**190. Honors Mathematics Seminar.** Prerequisite: admission to Mathematics honors program and consent of the instructor. A participating seminar on advanced topics in mathematics.

**191. Upper Division Seminars. (½ to 1 course)** Prerequisite: courses 32A-32B-32C or consent of the instructor. Each quarter the Department will offer a limited number of seminars in various branches of mathematics. The method of teaching will involve substantial student participation and enrollment will be limited to 15 students. Course may be repeated for credit.

**199. Special Studies in Mathematics. (¼ to 1 course)** Prerequisite: approval of the chairman and consent of the instructor. At the discretion of the chairman and subject to the availability of staff, individuals or groups may study topics suitable for undergraduate course credit but not specifically offered as separate courses. Course may be repeated for credit, but no more than one 199 course may be counted towards the ten upper division courses required for the major.

### Graduate Courses

#### TEACHER PREPARATION

**201A-201B-201C. Topics in Algebra and Analysis.** Prerequisite: B.A. degree with mathematics major or equivalent. A course for students in the mathematics-education program. Students may not receive credit toward the M.A. degree in Mathematics for this course. Important ideas of algebra, geometry and calculus leading effectively from elementary to modern mathematics. Approaches to the number system, point sets, geometric interpretations of algebra and analysis, integration, differentiation, series and analytic functions.

**202A-202B. Mathematical Models and Applications.** Prerequisite: B.A. degree with mathematics major or equivalent. A course designed for students in the mathematics-education program. Students may not receive credit toward the M.A. degree in Mathematics for this course. A development of mathematical theories describing various empirical situations. Basic characterizing postulates are discussed and a logical structure of theorems developed. Modern topics such as operations research, linear programming, game theory, learning models, models in social and life sciences.

#### NUMBER THEORY

**205A-205B-205C. Number Theory.** Prerequisite: courses 246A and 210A or consent of the instructor. Topics from analytic algebraic and geometric number theory, including distribution of primes and factorization in algebraic number fields. Also selected topics from additive number theory, Diophantine approximation, partitions, class-field theory, lattice point problems, valuation theory, etc.

**206A-206B. Combinatorial Theory.** Prerequisites: consent of the instructor. Generating functions. Probabilistic methods. Pólya's theory. Enumerative graph theory. Partition theory. Number theoretical applications. Structure of graphs, matching theory, duality theorems. Packings, pavings, coverings, statistical designs, difference sets, triple systems, finite planes. Configurations, polyhedra. Ramsey theory, finite and transfinite, and applications.

#### ALGEBRA

**210A-210B-210C. Algebra.** Prerequisite: courses 110A-110B-110C or consent of the instructor. Students may not receive credit toward the Master's degree for both 210B and 110B and/or 210C and 110C. Group theory including the theorems of Sylow and Jordan-Hölder-Schreier; rings and ideals, factorization theory in integral domains, modules over principle ideal rings, Galois theory of fields, multilinear algebra, structure of algebras.

**211. Structure of Rings.** Prerequisite: course 210A or consent of the instructor. The radical, irreducible modules and primitive rings, rings and algebras with minimum condition.

**212. Homological Algebra.** Prerequisite: course 210A or consent of the instructor. Modules over a ring, homomorphisms and tensor products of modules, functors and derived functors, homological dimension of rings and modules.

**213A-213B. Theory of Groups.** Prerequisite: course 210A or consent of the instructor. Topics chosen from representation theory, transfer theory, infinite Abelian groups, free products and presentations of groups, solvable and nilpotent groups, classical groups, algebraic groups.

**214A-214B. Algebraic Geometry.** Prerequisite: course 210A or consent of the instructor. Preliminaries from the theory of commutative rings and algebras. Theory of algebraic varieties. Topics chosen from plane curves, resolution of singularities, invariant theory, intersection theory, divisors and linear systems.

**215A-215B. Commutative Algebra.** Prerequisite: course 210A or consent of the instructor. Topics from commutative ring theory, including techniques of localization, prime ideal structure in commutative Noetherian rings, the principal ideal theorem, Dedekind rings, modules, projective modules, the Serre conjecture, regular local rings.

#### LOGIC AND FOUNDATIONS

**220A-220B-220C. Mathematical Logic and Set Theory.** Prerequisites: courses 112A-112B-112C or equivalent. Model theory: compactness theorem; Löwenheim-Skolem theorems; definability; ultrapowers; preservation theorems; interpolation theorems. Recursion function theory: Church's thesis; recursively enumerable sets; hierarchies; degrees. Formal proofs: completeness and incompleteness theorems; decidable and undecidable theories; quantifier elimination. Set theory: Zermelo-Fraenkel and von Neumann-Gödel axioms; cardinal and ordinal numbers; continuum hypothesis; constructible sets; independence results and forcing.

**222A-222B. Lattice Theory.** Prerequisites: course 210A and some knowledge of topology, or consent of instructor. Partially ordered sets, lattices, distributivity, modularity, completeness, ideal theory, representation theory. Interaction with algebra, combinatorics, topology and logic.

**223A. Model Theory.** Prerequisites: courses 220A-220B-220C. Topics will be chosen from ultraproducts, preservation theorems, interpolation theorems, saturated models, omitting types, categoricity, two cardinal theorems, enriched languages, soft model theory, and applied model theory.

**223B. Set Theory.** Prerequisites: courses 220A-220B-220C. Topics will be chosen from constructibility theory, Cohen extensions, large cardinals, and combinatorial set theory.

**223C. Recursion Theory.** Prerequisites: courses 220A-220B-220C. Topics will be chosen from degrees of unsolvability, recursively enumerable sets, undecidable theories, inductive definitions, admissible sets and ordinals, and recursion in higher types.

**223D. Descriptive Set Theory.** Prerequisites: courses 220A-220B-220C. Classical descriptive set theory: Borel and projective sets. Effective descriptive set theory. Consequences of strong set-theoretic hypotheses.

#### GEOMETRY

**226A-226B-226C. Differential Geometry.** Prerequisite: course 210A or consent of the instructor. Manifold theory; connections, curvature, torsion, and parallelism. Riemannian manifolds; completeness, sub-manifolds, constant curvature. Geodesics; conjugate points, variational methods, Myers theorem, nonpositive curvature. Further topics such as: pinched manifolds, integral geometry, Kahler manifolds, symmetric spaces.

**228. Convex Sets.** (Formerly numbered 228A-228B.) Prerequisite: course 121 or 245A or consent of the instructor. Basic concepts for convex sets in topological linear spaces; separation theorems and support functions; local convexity; convex functions; Helly type theorems; duality.

**229A-229B-229C. Lie Groups and Lie Algebras.** Prerequisites: Knowledge of basic theory of topological groups and knowledge of differentiable manifolds. Lie groups, Lie algebras, subgroups, subalgebras. Exponential map. Universal enveloping algebra. Campbell-Hausdorff formula. Nilpotent and solvable Lie algebras.

Cohomology of Lie algebras. Theorems of Weyl, Levi-Mal'cev. Semisimple Lie algebras. Classification of simple Lie algebras. Representations. Compact groups. Weyl's character formula.

#### TOPOLOGY

**230. General Topology.** Prerequisite: courses 131A-131B or consent of the instructor. Students may not receive credit toward the Master's degree for both 230 and 121. Topological spaces and maps, products, quotient spaces, connectedness and compactness, separation properties, local properties, completeness. Homotopy and the fundamental group.

**231A. Differentiable Manifolds.** (Formerly numbered 231A-231B.) Prerequisites: courses 131A-131B, and 121 or 230, or consent of instructor. Manifolds, differentiable manifolds, tangent and cotangent spaces, vector bundles. Differential forms, exterior differentiation, de Rham's theorem.

**231B. Introduction to Algebraic Topology.** Prerequisites: course 231A, or consent of instructor. The fundamental group, covering spaces, singular homology theory: homotopy invariance, exact homology sequence, excision, Mayer-Vietoris sequence, applications to spheres, fixed point theorems. Simplicial homology and cohomology. De Rham cohomology. Euler characteristic. Index of vector fields. Duality theorems.

**232A-232B-232C. Algebraic Topology.** Prerequisite: course 121 or 230 or consent of instructor. Fundamental group; homology theory, singular theory, cellular theory, computation of homology groups; cohomology theory, cup and cap products, duality; homotopy theory, fibrations, Hurewicz theorem, obstruction theory.

**236. Advanced Topics in Geometric Topology.** Prerequisite: courses 231A, 231B or consent of the instructor. Handlebody theory, transversality; PL topology; surgery; topic varies from year to year.

**237. Advanced Topics in Algebraic Topology.** Prerequisite: courses 232A-232B-232C or consent of the instructor. K-theory; fixed point theory; extraordinary cohomology theories; topic varies from year to year.

#### ANALYSIS AND DIFFERENTIAL EQUATIONS

**240. Methods of Set Theory.** Prerequisites: course 131A-131B, 110A-110B. (Also Math 121 or its equivalent.) Naive, axiomatic set theory, the axiom of choice and its equivalents, wellorderings, transfinite induction, ordinal and cardinal arithmetic. Applications to algebra; Hamel bases, the Stone representation theorem. Applications to analysis and topology; the Cantor-Bendixson theorem, counterexamples in measure theory, Borel and analytic sets, Choquet's theorem.

**245A-245B-245C. Real Analysis.** Prerequisites: courses 131A-131B and course 121 or the equivalent. (e.g. 230 can be taken concurrently). Students cannot receive credit toward the Master's degree for both 245A and 134. Basic measure theory. Measure theory on locally compact spaces. Fubini theorem. Elementary aspects of Banach and Hilbert spaces and linear operators. Function spaces. Radon-Nikodym theorem. Fourier transform and Plancherel on  $\mathbb{R}^n$  and  $T^n$ .

**246A-246B-246C. Complex Analysis.** Prerequisite: courses 131A-131B. Students may not receive credit toward the Master's degree for both 246A and 132. Cauchy-Riemann equations. Cauchy's theorem. Cauchy's integral formula and the residue calculus. Power series. Normal families. Harmonic functions. Linear fractional transformations. Conformal mappings. Analytic continuation. Examples of Riemann surfaces. Infinite products. Partial fractions. The classical transcendental functions. Elliptic functions.

**247A-247B. Classical Fourier Analysis.** Prerequisite: course 245 and 1 quarter of course 246. Distribution on  $\mathbb{R}^n$  and  $T^n$ . Principal values; other examples. Distributions with submanifolds as supports. Kernel theorem. Convolution; examples of singular integrals. Tempered distributions and Fourier transform theory on  $\mathbb{R}^n$ . Distributions with compact or one-sided supports and their complex Fourier transforms.

**249A-249B-249C. Calculus of Variations and Optimal Control Theory.** Prerequisite: course 246A or consent of the instructor. Conditions for minima or maxima of functionals. The problems of Lagrange, Bolza, and Mayer, with or without inequality constraints. Mathematical aspects of optimal control theory. Multiple integral problems. The theory of quadratic forms in Hilbert space with applications to elliptic partial differential equations. Existence theorems.

**250A. Ordinary Differential Equations.** Prerequisite: course 246A or consent of the instructor. Basic theory of ordinary differential equations. Existence and uniqueness of solutions. Continuity with respect to initial conditions and parameters. Linear systems and n-th order equations. Analytic systems with isolated singularities. Self-adjoint boundary value problems on finite intervals.

**250B. Nonlinear Ordinary Differential Equations.** Prerequisite: course 250A. Asymptotic behavior of nonlinear systems. Stability. Existence of periodic solutions. Perturbation theory of two-dimensional real autonomous systems. The Poincaré-Bendixson theory.

**250C. Advanced Topics in Ordinary Differential Equations.** Prerequisite: course 250A-250B. Selected topics, such as spectral theory or ordinary differential operators, nonlinear boundary value

problems, celestial mechanics, approximation of solutions, and Volterra equations.

**251A. Introductory Partial Differential Equations.** Prerequisite: consent of the instructor. Classical theory of heat, wave and potential equations; fundamental solutions, characteristics and Huygens principle, properties of harmonic functions. Classification of second order differential operators. Maximum principles, energy methods, uniqueness theorems. Additional topics as time permits.

**251B-251C. Topics in Partial Differential Equations.** Prerequisite: consent of the instructor. An in depth introduction to topics of current interest in partial differential equations or their applications.

**252A-252B-252C. Advanced Topics in Complex Analysis.** Prerequisites: courses 245A-245B-245C and 246A-246B-246C, or consent of instructor. Potential theory, subharmonic functions, harmonic measure; Hardy spaces; entire functions; univalent functions; Riemann surfaces; extremal length, variational methods, quasiconformal mappings; topics vary from year to year.

**253A-253B. Several Complex Variables.** Prerequisites: courses 245A-245B-245C and courses 246A-246B-246C, or consent of the instructor. Introduction to analytic functions of several complex variables. The  $\bar{\partial}$  problems, Cousin problems, domains of holomorphy, complex manifolds.

**254A-254B. Trigonometrical Series.** Prerequisite: course 246A or 245A, taken previously or concurrently; or consent of the instructor. Selected topics in Fourier series, power series, orthogonal polynomials, almost periodic functions, and completeness of sets of functions.

#### FUNCTIONAL ANALYSIS

**255A. Functional Analysis.** Prerequisites: courses 246A, 245A-245B, or 246A, 265A-265B, or consent of the instructor. Banach spaces, basic principles. Weak topologies. Compact operators. Fredholm operators. Special spaces including Hilbert spaces and  $C(X)$ .

**255B-255C. Topics in Functional Analysis.** Prerequisites: course 255A. Topics chosen from Banach algebras, operators on Banach spaces and Hilbert space, semigroups of operators, linear topological vector spaces, and other related areas.

**256A-256B-256C. Topological Groups and Their Representations.** Prerequisite: course 255 or consent of the instructor. Topological groups and their basic properties. Haar measure. Compact groups and their representations. Duality and Fourier Analysis on locally compact abelian groups. Induced representations, Frobenius reciprocity. Representations of special groups (Lorentz, Galilean, etc.). Projective representations. Representations of totally disconnected groups.

**258A-258B. Commutative Banach Algebras.** Prerequisite: course 246 and courses 255A and 255B. The Gelfand theory of commutative Banach algebras. Applications to harmonic analysis on locally compact abelian groups. Algebras of holomorphic functions. Special topics.

**259A-259B. Operator Algebras in Hilbert Space.** Prerequisite: courses 255A-255B-255C. Selected topics from the theories of  $C^*$  and von Neumann algebras. Applications.

#### APPLIED MATHEMATICS

**260. Introduction to Applied Mathematics.** Prerequisite: course 142 or consent of the instructor. This course represents a continuation of course 142. It is concerned with the construction, analysis and interpretation of mathematical models of problems which arise outside of mathematics.

**M263. Hydrodynamic Instabilities and Turbulence.** (Same as Earth and Space Sciences M211.) An introduction to the theories of hydrodynamic instability and the non-statistical description of turbulence; stability bounds by the energy method; linear theory of instability; finite amplitude theories of post-instability flows; bounds on properties of turbulent flows by variational techniques.

**264. Applied Complex Analysis.** Prerequisite: course 246A or consent of the instructor. Topics chosen from contour integration conformal mapping, differential equations in the complex plane, special functions, asymptotic series, Fourier and Laplace transforms, singular integral equations.

**265A-265B. Real Analysis for Applications.** (Formerly numbered 265A-265B-265C.) Prerequisite: course 131A-131B or consent of the instructor. This course is not open for credit to students with credit in 245A-245B-245C. Lebesgue measure and integration on the real line, absolutely continuous functions, functions of bounded variation,  $L^2$  and  $L^p$  spaces, Fourier series. General measure and integrations, Fubini and Radon-Nikodym theorems, representation of functionals, Fourier integrals.

**266A. Applied Ordinary Differential Equations.** Prerequisites: courses 131A-131B, 132, and 135A-135B; or courses 132, 145A-145B. Spectral theory of regular boundary value problems and examples of singular Sturm-Liouville problems, related integral equations, phase-plane analysis of nonlinear equations.

**266B-266C. Applied Partial Differential Equations.** Prerequisites: course 266A or consent of the instructor. Classification of equations, classical potential theory, Dirichlet and Neumann problems. Green's functions, spectral theory of Laplace's equation in bounded domains, first order equations, wave equations, Cauchy problem, energy conservation, heat equation.

fundamental solution, equations of fluid mechanics and magneto-hydrodynamics.

**267A-267B. Applied Algebra.** Prerequisite: course 110A or the equivalent. Students may not receive credit toward the master's degree for 267A and 210A. Linear algebra, eigenvalues and quadratic forms; linear inequalities, finite fields and combinatorial analysis. Group theory, with emphasis on representations. Application to physical problems.

**268B-268C. Topics in Applied Functional Analysis.** Prerequisites: course 255A. Topics include spectral theory with applications to ordinary differential operators, eigenvalue problems for differential equations, generalized functions and partial differential equations.

**269A-269B-269C. Advanced Numerical Analysis.** Prerequisites: courses 115, 135A, 140A-140B-140C or consent of instructor. Numerical solution for systems of ordinary differential equations; initial and boundary value problems. Numerical solution for elliptic, parabolic, and hyperbolic partial differential equations. Topics in computational linear algebra.

**271A. Tensor Analysis.** Prerequisite: course 131A or consent of the instructor. Algebra and calculus of tensors on  $n$ -dimensional manifolds. Curvilinear coordinates, and coordinate-free methods. Covariant differentiation. Green-Stokes theorem for differential forms. Applications to topics such as continuum and particle mechanics.

**271B. Analytical Mechanics.** Prerequisite: course 271A and some knowledge of mechanics. Newtonian and Lagrangian equations. Hamilton's principle. Principle of least action. Holonomic and nonholonomic systems. Hamilton's canonical equations, contact transformations, applications.

**271C. Introduction to Relativity.** Prerequisite: course 271A and some knowledge of mechanics. Restricted theory of relativity. Extensions to general theory. The relativistic theory of gravitation.

**272. Advanced Topics in Continuum Mechanics.** Prerequisite: courses 142 and 251A or the equivalent. Mathematical aspects of solid and/or fluid mechanics. Instability, wave propagation, nonlinear and stochastic phenomena.

**273. Wave Mechanics.** Prerequisite: consent of the instructor. General concepts of mechanical systems (states, space-time, "logics," etc.). Classical and quantum examples. Correspondence principle. Spinors.

**M274A. Asymptotic and Perturbation Methods I.** (Same as Mechanics and Structures M292A.) Prerequisites: Engineering 192A or equivalent; Mathematics 132 or equivalent. The fundamental mathematics of asymptotic analysis, asymptotic expansions of Fourier integrals, method of stationary phase. Watson's lemma, method of steepest descent, uniform asymptotic expansions, elementary perturbation problems.

**M274B. Asymptotic and Perturbation Methods II.** (Same as Mechanics and Structures M292B.) Prerequisites: Engineering course 192A or equivalent or Mathematics 132 or equivalent. The fundamental mathematics of asymptotic analysis, limit process expansions, regular and singular perturbation problems, matching of asymptotic expansions, multiple scale methods, application to partial differential equations, near and far fields.

#### PROBABILITY AND STATISTICS

**275A-275B. Probability Theory.** Prerequisite: course 245A or 265A. Connection between probability theory and real analysis. Weak and strong laws of large numbers, central limit theorem, conditioning, ergodic theory, martingale theory.

**275C. Stochastic Processes.** Prerequisite: courses 275A-275B. Selected topics such as Brownian motion and potential theory. Markov processes, infinite particle systems, Gaussian processes. Content varies from year to year and the course may be repeated for credit.

**276A-276B. Mathematical Statistics.** (Formerly numbered 276C.) Prerequisites: courses 150A-150B-150C or 152A-152B and courses 131A-131B. 276A. Bayes, admissible and minimax decision rules; sufficiency and completeness; uniformly most powerful tests. 276B. Fisher information; Cramer-Rao inequality; asymptotic properties of tests and estimators; maximum likelihood estimators; likelihood ratio and chi-square tests of hypotheses.

**276C. Statistical Decision Theory.** (Formerly numbered 276A-276B.) Prerequisite: course 276A. Invariant estimates and tests; best unbiased and locally best tests; multiple decision problems; application to the general linear model; other topics.

**277. Sequential Analysis.** Prerequisite: courses 276A-276B. Bayes sequential decision rules, stopping rule problems, optimality of the sequential probability ratio test, Wald's fundamental identity.

**278. Nonparametric and Robust Statistics.** Prerequisite: course 276C. Nonparametric and robust procedures are developed for hypothesis testing, estimation in one and two sample problems, linear and nonlinear regression, multiple classification, density estimation.

**M279A-279B-279C. Linear Statistical Models.** (Same as Public Health M241A-241B-241C.) Prerequisites: Mathematics 152B or 150C and Public Health Course 160C or equivalent. Topics include linear algebra, applied to linear statistical models, distribution of

quadratic forms, the Gauss-Markov theorem, fixed and random component models, balances and unbalanced designs.

**M280. Computational Statistics.** (Same as Biomathematics M280 and Public Health M244C.) Prerequisite: Mathematics 150A-150B-150C and 115 or the equivalent. An introduction to the theory and design of statistical programs: pivoting and other technologies used in stepwise regression, nonlinear regression algorithms, algorithms for balanced and unbalanced analysis of variance including the mixed model, iterative rescaling and other methods for log-linear models.

**M282. Probability Theory for Applications.** (Same as System Science M273B.) Prerequisites: Mathematics 131A; and either Engineering 120A or Mathematics 150A-150B or Mathematics 152A-152B; or consent of instructor. This course is not open for credit to students with credit in Mathematics 275A. This course is designed to prepare students for graduate courses in statistics and applied stochastic processes. Summary of measure and integration as applicable to probability theory, distribution and characteristic functions, conditioning, independence, convergence of random variables, limit theorems.

**285. Seminars. (1 course each)** Prerequisite: consent of instructor. No more than two 285 courses can be applied toward the Master's degree course requirement, except by prior permission of the Vice-Chairman for Graduate Studies. Topics in various branches of mathematics and their applications by means of lecturers and informal conferences with members of the staff.

285A. Seminar in the History and Development of Mathematics.

285B. Seminar in Number Theory.

285C. Seminar in Algebra.

285D. Seminar in Logic.

285E. Seminar in Geometry.

285F. Seminar in Topology.

285G. Seminar in Analysis.

285H. Seminar in Differential Equations.

285I. Seminar in Functional Analysis.

285J. Seminar in Applied Mathematics.

285K. Seminar in Probability.

285L. Seminar in Statistics.

**286A-286M. Participating Seminars.** Prerequisite: consent of the instructor. Seminars and discussion by staff and students. No course credit will be given, but these may be used to satisfy the participating seminar requirement for the Ph.D.

286A. Participating Seminar in the History and Development of Mathematics.

286B. Participating Seminar in Number Theory.

286C. Participating Seminar in Algebra.

286D. Participating Seminar in Logic.

286E. Participating Seminar in Geometry.

286F. Participating Seminar in Topology.

286G. Participating Seminar in Analysis.

286H. Participating Seminar in Differential Equations.

286I. Participating Seminar in Functional Analysis.

286J. Participating Seminar in Applied Mathematics.

286K. Participating Seminar in Probability.

286L. Participating Seminar in Statistics.

286M. Participating Seminar in Mathematics.

**290. Seminar in Current Literature.** A seminar for Ph.D. candidates. Readings and presentations of papers in mathematical literature under the supervision of a staff member.

#### Professional Course in Method

**370. The Teaching of Mathematics.** Prerequisite: course 31B, 3B, or 4B and senior standing. A critical inquiry into present-day tendencies in the teaching of mathematics.

#### Individual Study and Research

**596. Directed Individual Study or Research. (1/2 to 1 course)** Supervised individual reading and study on a project approved by a faculty member, which may be preparation for the master's essay. May be repeated for credit, but only two such courses may be applied toward the master's degree unless departmental approval is obtained.

**599. Research in Mathematics. (1/2 to 2 courses)** Study and research for the Ph.D. dissertation. May be repeated for credit.

## MEDICAL HISTORY

See Department of Anatomy.

## METEOROLOGY

See Department of Atmospheric Sciences.

## MICROBIOLOGY

### Graduate Study

The M.A. and Ph.D. degrees in Microbiology are offered in the Department of Bacteriology, College of Letters and Science. More detailed information regarding admission requirements and opportunities for graduate studies in this program may be obtained by writing to the graduate adviser F.A. Eisinger, Department of Bacteriology, 5304 Life Sciences Building.

## MICROBIOLOGY AND IMMUNOLOGY

(Department Office, 43-239 Center for the Health Sciences; Graduate Student Affairs Office, 43-312 Center for Health Sciences)

John L. Fahey, M.D., *Professor of Microbiology and Immunology/Immunology and Oncology, and Professor of Medicine (Chairman of the Department).*

William H. Hildemann, Ph.D., *Professor of Microbiology and Immunology/Immunology and Immunogenetics.*

Dexter H. Howard, Ph.D., *Professor of Microbiology and Immunology/Mycology, (Vice Chairman of the Department).*

David T. Imagawa, Ph.D., *Professor of Pediatrics and Microbiology and Immunology.*

William J. Martin, Ph.D., *Professor of Microbiology and Immunology in Residence.*

James N. Miller, Ph.D., *Professor of Microbiology and Immunology/Immunology and Bacteriology.*

Debi P. Nayak, D.V.Sc., Ph.D., *Professor of Microbiology and Immunology/Virology and Oncology.*

A.F. Rasmussen, Jr., M.D., Ph.D., *Professor of Microbiology and Immunology/Virology.*

Jack G. Stevens, D.V.M., Ph.D., *Professor of Microbiology and Immunology/Virology, Professor of Bacteriology, and Professor of Neurology.*

Marietta Voge, Ph.D., *Professor of Microbiology and Immunology/Parasitology.*

Felix O. Wettstein, Ph.D., *Professor of Microbiology and Immunology/Molecular Biology (Vice Chairman of the Department).*

Telford H. Work, M.D., M.Ph.H., D.T.M.&H., *Professor of Microbiology and Immunology, Professor of Infectious and Tropical Diseases, and Professor of Preventive and Social Medicine.*

Ruth A. Boak, M.D., Ph.D., *Emeritus Professor of Microbiology and Immunology/Bacteriology, Emeritus Professor of Public Health, and Emeritus Professor of Pediatrics.*

John F. Kessel, Ph.D., *Emeritus Professor of Microbiology and Immunology/Infectious Diseases.*

Margret I. Sellers, Ph.D., *Emeritus Professor of Microbiology and Immunology/Virology.*

Stephen Zamenhof, Ph.D., *Emeritus Professor of Microbiology and Immunology/Microbial Genetics.*

George Fareed, M.D., *Associate Professor of Microbiology and Immunology/Virology.*

Sidney H. Golub, Ph.D., *Associate Professor of Microbiology and Immunology/Immunology in Residence, and Associate Professor of Surgery/Oncology.*

Jerrold A. Turner, M.D., *Associate Professor of Microbiology and Immunology in Residence, and Professor of Medicine.*

David McVickar, M.D., Ph.D., *Emeritus Associate Professor of Microbiology and Immunology.*

Henry E. Weimer, Ph.D., *Emeritus Associate Professor of Microbiology and Immunology/Immunology and Immunochimistry.*

Robert F. Ashman, M.D., *Assistant Professor of Microbiology and Immunology/Immunology, and Assistant Professor of Medicine.*

Benjamin Bonavida, Ph.D., *Assistant Professor of Microbiology and Immunology/Immunology.*

Ronald H. Stevens, Ph.D., *Assistant Professor of Microbiology and Immunology/Molecular Immunology.*

Michael Vasil, Ph.D., *Assistant Professor of Microbiology and Immunology/Bacteriology.*

Randolph Wall, Ph.D., *Assistant Professor of Microbiology and Immunology/Molecular Biology.*

Jacob Zigelboim, M.D., *Assistant Professor of Microbiology and Immunology/Immuno-Oncology, and Assistant Professor of Medicine.*

Ruth Arnon, Ph.D., *Visiting Professor of Microbiology and Immunology/Neuroimmunology.*

Seymour Froman, Ph.D., *Associate Clinical Professor of Microbiology and Immunology.*

Margery L. Cook, Ph.D., *Associate Research Virologist.*

Nina Dabrowsa, Ph.D., *Assistant Research Mycologist.*

Ruth Gallily, Ph.D., *Visiting Associate Professor of Microbiology and Immunology/Cellular Immunology.*

Yoko S. Mullen, M.D., Ph.D., *Assistant Research Immunologist.*

Maurice L. White, Ph.D., *Lecturer in Microbiology and Immunology.*

The Department of Microbiology and Immunology in the School of Medicine offers the Ph.D. degree in microbiology and immunology. Graduate study may be in the fields of bacteriology, immunology, immunogenetics, microbial genetics, mycology, parasitology, virology, viral oncology, tumor biology, molecular biology, or cell biology. The graduate program is primarily designed for students

seeking advanced training leading to the Ph.D. degree in any one of these special fields, or for students with a broader interest in the biology of infectious agents, immunology and host-parasite relationships who may elect to combine two or more fields.

#### Admission to Graduate Status

For admission to the graduate program, a student must meet the requirements of the Graduate Division, and must hold an approved bachelor's degree with a major in either the biological or physical sciences. Candidates are selected on the basis of an evaluation of the applicant's potential for graduate work as determined by:

1. Undergraduate, and where applicable, graduate scholastic record.
2. An interview with members of the Department, when needed.
3. Letters of recommendation.
4. Graduate Record Examination.

#### Requirements for the Doctor's Degree

1. The general Graduate Division requirements (see Graduate Division). (Proficiency in a foreign language is not required.)

2. Course Requirements:

a. Microbiology and Immunology 202 survey course or equivalent.

b. Seminar in Microbiology and Immunology 251 — participation in the departmental seminar during the first quarter.

c. Directed Individual Study or Research 596 — participation in the laboratory rotation program.

d. Three courses in biochemistry. (Prerequisites: Mathematics through calculus and general physical chemistry.)

These will ordinarily be chosen from the following list but other substitutes may be selected with the approval of the Graduate Adviser: Microbiology 213 — Membrane Molecular Biology; Chemistry 253 — Proteins and Nucleic Acids; Chemistry 255 — Biological Catalysis; Chemistry 257 — Physical Chemistry of Biological Macromolecules; Chemistry 263 — Cellular Metabolism; Chemistry 267 — Nucleic Acid and Protein Biosynthesis; Biological Chemistry 269 — The Biochemistry of Differentiation.

3. Examinations:

a. Departmental Written Qualifying Examination — to be taken at the end of the first year of graduate study. The examination consists of two parts: 1) General Biology (mandatory) and 2) four of the following six areas of Microbiology: Bacteriology, Genetics (and Immunogenetics), Immunology, Mycology, Parasitology and Virology. The student may choose an alternate way of fulfilling part two by selecting two of the aforementioned six areas to be examined on and indicating two other areas from among the six to be credited on the basis of course work. A list of appropriate courses for fulfilling the latter is available from the Graduate Adviser. The course work may be completed any time up to the end of the second year. A score of 75% is required to pass each part of the written examination. Parts failed have to be repeated.

b. Oral Qualifying Examination — to be taken within three years of enrolling in the Department. Administered by student's Doctoral Committee. The Oral Examination includes:

- 1) The defense of a prepared "proposition".
- 2) Explanation of research plans and results to date.
- 3) A demonstration of general knowledge of microbiology and immunology.
4. Participation in teaching of a laboratory section in a course presented by the Department.

#### Upper Division Courses

**M185. Immunology.** (Same as Bacteriology M185 and Biology M185.) Prerequisites: course M132; Chemistry 22 and 24; concurrent enrollment in Chemistry 152 or 156 is recommended. Introduction to immunobiology and immunocytochemistry. Cellular and molecular aspects of humoral and cell-mediated immune reactions. The Staff (F)

**M187. Immunology Seminar.** (½ course) (Same as Bacteriology M187 and Biology M187.) Prerequisites: Microbiology M187 and Immunology M185 (which may be taken concurrently); consent of instructor. Student presentation of selected papers from the immunology literature. Designed to serve as a forum for the critical analysis of research papers. Must be taken concurrently with Biology M186. The Staff (W)

**199. Directed Individual Research Studies in Microbiology and Immunology.** (½ to 2 courses) Prerequisites: senior standing and consent of instructor, based on written research proposal. Individual research projects carried out under direction of individual professor. The Staff

#### Graduate Courses

### IMMUNOLOGY

**209. Cellular Immunology.** (½ course) Prerequisite: course M185 and M187 or M258 and consent of instructor. Lectures present the concepts of induction, maturation, expression and regulation of cell-mediated and antibody responses from a cellular aspect. Mr. Bonavida, Mr. Weimer

**209L. Cellular Immunology.** Prerequisite: course M185 and M187 or M258 and consent of instructor. The laboratory applies classical and modern immunological techniques used in assessing cell-mediated and humoral responses. Laboratory need not be taken with lecture.

**M211. Advanced Immunology Workshop. (No Credit)** (Same as Microbiology M211.) Prerequisite: consent of instructor. Combined laboratory, lecture and seminar sessions covering specialized subjects and methods in immunology will be offered in intensive periods of two- to three-day duration at appropriate times. The Staff

**212. Laboratory Procedures in Immunological Research (½ course)** Prerequisite: course M185 or equivalent and the consent of instructor. A series of 12 intensive laboratory workshops designed to acquaint the student with the advanced methodologies utilized for immunological research. Workshops will be offered at regular intervals and will have a duration of 2-3 days. Successful completion of four workshops constitutes the requirements for one course. Enrollment will be limited to 25. May be repeated for credit if different projects are undertaken. Graded S/U. Mr. Ashman, Mr. Bonavida, Mr. Stevens (F,W,Sp)

**254. Seminar in Immunogenetics.** (½ course) Review of current literature in the field of immunogenetics, with emphasis on fundamental studies involving genetic and immunologic principles and techniques. Selected topics will be discussed and results interpreted; conclusions and experimental methods will be evaluated. Mr. Hildemann (Sp)

**M258A. Advanced Immunology.** (Same as Bacteriology M258A; formerly numbered M258.) Prerequisite: the equivalent of Microbiology and Immunology 185 or Microbiology and Immunology 201 or consent of instructor. This two term lecture discussion course is designed to provide continuity between the basic immunology courses and the original research literature. The major aspects of the immune system will be intensively examined with emphasis on fundamental principles and on advances of the past five years. The first term will consist of lectures dealing with the development of B and T lymphocytes and the interaction of these two lymphocyte subpopulations in the production of immunoglobulin. In addition to the lectures there will be five discussion sessions for those enrolled in the course. To be offered in the Fall Quarter of each academic year. Grade or S/U. Mr. Fahey, Mr. Stevens (F)

**M258B. Advanced Immunology.** (Same as Bacteriology M258B.) Prerequisite: the equivalent of Microbiology and Immunology 185 or Microbiology and Immunology 201 and M258A or consent of instructor. A continuation of M258A which will consider the details of antibody structure, T lymphocyte function and selected topics of broad immunological significance. To be offered in the Winter Quarter of each academic year. Grade or S/U. Mr. Ashman, Mr. Bonavida, Mr. Stevens (W)

**M260. Immunology Forum.** (½ course) (Same as Microbiology M260.) Prerequisite: microbiology and Immunology M185. A broad range of current topics in immunology will be presented and discussed at an advanced frontier level. This is a continuing UCLA-wide, general graduate level seminar involving faculty, postdoctoral immunologists, and graduate students from diverse departments. The Staff (F,W,Sp)

**261. Tumor Immunology.** (½ course) Prerequisite: course M258 or equivalent. Experimental basis for investigation of immune response to tumors; review of cell-mediated immunity and related humoral immunity; evidence for tumor-associated antigens in man; evaluation of attempts at immunotherapy of tumors. Letter grade. Mr. Golub (Sp)

**262. Seminar in Immunobiology of Cancer.** (½ course) Prerequisite: consent of the instructor. Review of recent literature in the fields of immunology, biology and biochemistry of cancer with emphasis on fundamental studies involving cell-mediated immunity, humoral response, tumor specific antigens and new techniques. Reports on scientific meetings will be discussed and evaluated. Mr. Bonavida

**M263. Cellular Immunology Seminar.** (½ course) (Same as Microbiology M263.) Prerequisite: consent of instructor. Critical discussions of the current literature in T and B cell immunology with emphasis on molecular mechanisms. Mr. Sercarz (F,W,Sp)

**264. Molecular Immunology.** (½ course) Prerequisite: Microbiology and Immunology M185, Microbiology and Immunology M259 or equivalent. Consent of instructor. Ongoing seminar reviewing control processes at a molecular level during proliferation and differentiation of cells in the immune responses and relationship to similar processes in other differentiation cell systems. Mr. Wettstein (F)

**266. Immunochemistry.** (¾ or 1½ courses) Prerequisite: consent of instructor who will require acquaintance with elementary protein chemistry and immunology. The chemical structure and physical properties of immunoglobulin, as they relate to its

interaction with antigen and complement either in the fluid phase or on the cell surface. Structural requirements for antigenicity. Laboratory exercises emphasizing methods currently useful in immunochemical research. Mr. Ashman

**267. Regulation and Maturation of Lymphoid Cells.** (½ course) Prerequisite: course M185 or equivalent. A combined lecture-seminar course concentrating on molecular and cellular processes active within lymphoid cells during differentiation. Topics will be drawn from new and/or controversial areas of molecular immunology. Mr. R. Stevens

**276. Viral Immunology.** (½ course) Prerequisite: MI 201 (or equivalent) and consent of instructor. This course will focus on selected areas of immunovirology: principles of non-specific and specific immunity to viruses, immunological effector mechanisms in the maintenance of viral latency, influence of virus infections on different immune functions and the immune response to virally induced tumors. The Staff (F)

### MICROBIOLOGY

**201. Microbiology and Immunology.** (2½ courses) Lectures and laboratory. Prerequisite: consent of instructor. Study of the infectious agents of human disease with emphasis on host-parasite relationships and immunologic phenomena in immunity and disease, including identification of bacteria, fungi, animal parasites and viruses, and principles of prevention, treatment, and laboratory diagnosis. The Staff (F)

**202. Microbiology and Immunology. (2 courses)** Lecture and Laboratory. Study of infectious agents of human disease with emphasis on host parasite relationships and immunologic phenomena in immunity and disease, including identification of bacteria, fungi, animal parasites and viruses, and principles of prevention, treatment, and laboratory diagnosis. For Microbiology and Immunology graduate students only. The Staff (F)

**210. Medical Mycology.** (½ course) Prerequisite: Bacteriology 101, 103 and 185; recommended Bacteriology 110. Consent of instructor may be obtained in special cases. A study of the morphology, physiology, and pathogenicity of fungi causing human and animal diseases. Mr. Howard (Sp)

**210L. Medical Mycology.** (½ course) Prerequisite: Bacteriology 101, 103 and 185; recommended Bacteriology 110. Consent of instructor may be obtained in special cases. Laboratory application of principles discussed in 210. Laboratory must be taken by undergraduate students. Mr. Howard (Sp)

**214. Bacterial Pathogenesis.** (½ course) Prerequisite: Microbiology and Immunology 201 and/or consent of instructor. A study of the genetic and biochemical properties of bacteria and factors of the host which are relevant to the pathogenesis of bacterial diseases. Mr. Vasil (W)

**251. Seminar in Microbiology and Immunology.** (½ course) Consideration of the history of infectious diseases, their host-parasite relationships, etiology, pathogenesis, epidemiology, diagnosis, and immunity. The Staff (F,W)

**252. Seminar in Viral Disease.** (½ course) A consideration of basic phenomena involved in pathogenesis of viral disease, using carefully selected examples. Emphasis will be given to those systems which have been meaningfully dissected by quantitative biochemical methods. Mr. Stevens

**253. Seminar in Medical Parasitology.** (½ course) Review of current and recent literature in the field of medical parasitology, emphasizing experimental work of medical or public health importance. Students will be expected to prepare reviews of selected subjects, and to discuss the contributions of various workers from the standpoint of experimental methods, results, their interpretation and their evaluation. Mrs. Voge

**255. Seminar in Medical Mycology.** (½ course) Review of current and recent literature in the field of medical mycology, with emphasis on the host-parasite relationships in the human and animal mycoses. Students will be expected to prepare reviews of selected subjects and to discuss contributions of various workers from the standpoint of experimental methods, results, their interpretation and evaluation. Must be taken in conjunction with 210 by Graduate Students. Mr. Howard (Sp)

**M257. Seminar in Host-Parasite Relationships.** (½ course) (Same as Microbiology M257.) A discussion of recent advances in our knowledge of host-parasite interactions and means of controlling the parasites. Mr. Miller, Mr. Pickett (Sp)

**M293. Major Concepts in Oncology.** (Same as Bacteriology M293, Dentistry M293, and Pathology M293.) Prerequisite: graduate standing or consent of instructor. Course designed for graduate students contemplating research in oncology. Lecture. Topics include cancer pathophysiology, genetics, membranes, macromolecular synthesis and control, cell cycle, growth control, physical, chemical and viral oncogenesis, epidemiology of cancer, tumor immunology; principles of cancer surgery, radiation therapy and chemotherapy. Mr. Baluda and The Staff (W)

## CELL BIOLOGY AND VIROLOGY

**208. Animal Virology.** Prerequisites: courses in general biochemistry and in general microbiology, including virology. Consent of the instructor may be obtained in special cases. Recommended for advanced undergraduate students with a major in public health, biology or bacteriology and for graduate students with an interest in any field of biology or chemistry. The course encompasses an overview of animal viruses including viral structure, virus cell interaction, virus replication and viral oncogenesis. Special emphasis is placed in understanding the molecular mechanism involved in the control and regulation of replication, transcription and translation of viral genome and its complex interaction with host. Mr. Nayak (Sp)

**M226. Chromosome Structure and Regulation.** (Same as Microbiology M226, Biology M226, Biological Chemistry M226 and Chemistry M226.) Prerequisite: consent of instructor. Lectures and panel discussions on the structural and functional organization of eukaryotic chromosomes. Satisfactory/unsatisfactory grades are used for this course. The Staff

**250. Topics in New Biology.** Lectures and student seminar presentations. A review of selected current topics in molecular and cell biology. Topics will be selected from recent experimental results on the organization, expression and regulation of genes in eukaryotic cells. Graded S/U. Mr. Wall (W)

**256. Seminar in Viral Oncology.** (½ course) An advanced research seminar designed to consider the current developments in the field. Selection of current subjects and publications dealing with tumor viruses, oncogenesis, development, and cellular regulation. Mr. Baluda (F,W,Sp)

**265. Co-Seminar in Animal Virology.** (½ course) Prerequisites: Animal Virology 208 or must be concurrently enrolled in course 208 and the consent of the instructor. Critical review and analysis of the selected papers in the field. Topics will include structure and biology of animal viruses and virus-host interaction at the cellular and molecular level. Mr. Nayak (Sp)

**M298. Seminar in Current Topics in Molecular Biology.** (½ course) (Same as Biological Chemistry M298, Biology M298, Chemistry M298, Microbiology M298, and Molecular Biology M298.) Prerequisite: Approval by the instructor and by the Graduate Adviser of the Interdepartmental Molecular Biology Ph.D. Committee. Each student enrolled conducts or participates in discussions on assigned topics. May be repeated for credit. The Staff

### Individual Study and Research

**596. Directed Individual Study or Research.** (½ to 1 course) Laboratory by arrangement. Consent of Graduate Adviser. The Staff

**597. Preparation for the Qualifying Examination for the Ph.D. in Microbiology and Immunology.** (½ to 1½ courses) The Staff

**599. Research for and Preparation of the Doctoral Dissertation in Microbiology and Immunology.** (½ to 2 courses) Prerequisite: Bacteriology and/or Biochemistry. Research on an original problem in the field of Microbiology and Immunology, to be selected by the graduate student with the advice of the instructor. Fields of study may be in bacteriology, immunochemistry, immunogenetics, microbial genetics, mycology, parasitology, virology, viral oncology, tumor biology, or cell biology. The Staff

## MILITARY SCIENCE

(Department Office, 127 Men's Gymnasium)

Paul K. Takamiya, M.A.Ed. Lieutenant Colonel, Field Artillery, Assistant Professor of Military Science.

Lawrence C. Hinkle, M.S., Captain, Signal Corps, Assistant Professor of Military Science.

Frederick R. Jones, M.Ed., Captain, Air Defense Artillery, Assistant Professor of Military Science.

Charles Tillman, M.A., Captain, Infantry, Assistant Professor of Military Science.

### Army Reserve Officers' Training Corps

The Army R.O.T.C. program provides education in leadership and management leading to a commission in the United States Army Reserve or Regular Army. Students in all academic fields are eligible for admission. An individual need not be enrolled as a cadet to take any level class. Classes are open to all interested persons formally enrolled in the University or through the University Extension. Most department majors have sufficient free electives to allow Military Science Department courses to be applied toward degree requirements. It is important for students to check with this Department and with their major department adviser on this matter.

Students may be enrolled in the Army Reserve Officers' Training Corps under one of three programs. These programs are:

**Scholarship Program.** Army R.O.T.C. Scholarships are designed for students considering an Army career. High School seniors selected by nationwide competition for a Four-Year Scholarship receive tuition, books, uniforms, fees and \$100 per academic month from

the Department of the Army. A limited number of two- and three-year scholarships are available for competition by outstanding college and university students. One-year scholarships are also available to students enrolled in the junior year of the R.O.T.C. Program. See the Military Science Department for details.

**Four-Year Program.** Students are enrolled in the Basic Course (Freshman and sophomore years) on a voluntary basis. Upon completion of the Basic Course and entrance into the Advanced Course (Junior and Senior years), students are required to execute a contract with the Department of the Army agreeing to complete the Advanced Course, enlist in the United States Army Reserve, and accept a commission if offered. Advanced Course students receive \$100 subsistence allowance per academic month, military science books, and uniforms.

**Two-Year Program.** This program is primarily designed for transfer students from community colleges, and four-year institutions that do not offer Army R.O.T.C. Students apply for this program during the Winter Quarter of their sophomore year and must attend summer camp between their sophomore and junior years. Upon successful completion of this basic summer camp, the student will enter the Advanced Course under the same requirements as for the four-year program. All Advanced Course students receive \$100 per academic month, military science books, and uniforms.

**General Information.** The Army R.O.T.C. program is divided into two parts: (1) the two-year Basic Course for all qualified male and female students who select Army R.O.T.C. and (2) the Advanced Course for selected students who desire to complete an additional two years of R.O.T.C. training leading to a commission in the United States Army Reserve or Regular Army. Successful completion of the two- or four-year R.O.T.C. program and degree requirements is required for an Army commission. Students who elect to be commissioned in the Army Reserve or National Guard may be commissioned upon completing Military Science requirements prior to completing degree requirements. The interests, aptitudes, and educational accomplishments of students are given careful consideration in order that they may be recommended for a commission in the arm of service for which they are best qualified. All undergraduate students are expected to maintain a grade-point average of 2.0 on all work undertaken in their majors and a 2.0 GPA in all Military Science courses.

### Basic Course (Lower Division)

The Basic Course is offered on an elective basis to all qualified undergraduate students. (The two-year Basic Course may be compressed into one year with the approval of the professor of Military Science.)

The objective of the two-year Basic Course is to acquaint the student with the fundamental principles of national security, military history, and to introduce the techniques and principles of modern warfare.

All necessary equipment, uniforms, and textbooks are provided to students free of charge.

### The Advanced Course (Upper Division)

The Advanced Course of instruction is designed to produce commissioned officers (Second Lieutenants). Training in military leadership is emphasized. Instruction is given in subjects common to all branches of the Army and qualifies the graduate for the duties of a junior officer.

Admission to the Advanced Course is by selection from qualified students who meet the academic and physical requirements and who have demonstrated positive interest and leadership potential. Students may apply if they have successfully completed the Basic Course, have credit for the Basic Course from other institutions authorized to present the equivalent instruction, can present evidence of honorable service in the Armed Forces, or successfully complete Basic Camp. Advanced standing may be granted graduates of High School R.O.T.C. programs, with each applicant evaluated on an individual basis. Normally, students accepted for entrance into the Advanced Course must have at least two more academic years remaining before enrolling for their first baccalaureate degree. However, graduate students are admissible with two academic years remaining.

**Veterans.** Eligible veterans may enroll directly in the Advanced Course. Veterans receive VA benefits concurrently with Advanced Course subsistence and Scholarship allowances.

Advanced Course students are required to attend a six-week course of training at R.O.T.C. Advanced Camp during the summer period following the completion of the first year of the Advanced Course. The training is designed to provide practical work in leadership, physical development, and knowledge of the important roles played by the various branches of the Army for intelligent branch selection by the graduate. The student is furnished uniforms, equipment and receives one-half the pay of a second lieutenant and travel expenses to and from camp.

**Leadership Laboratory.** All Cadets are required to attend the monthly leadership laboratory.

### Prerequisite Courses

**Directed Subjects:** Each cadet must take an introductory course in Probability and Statistics and one in Computer Science, as prerequisites to Military Science 125, Decision Making. The following appropriate courses in this catalog satisfy this requirement: (Equivalent courses at other universities are acceptable.)

**Probability and Statistics:** Mathematics 50, Economics 140, Psychology 41, Sociology 18, Anthropology 173A, and Management 115A.

**Computer Science:** Management 113A, Engineering 5, Engineering 10.

**Curriculum Substitute Courses:** The following specific courses (or their equivalent) must be taken by all cadets as prerequisites to courses within the Military Science Department: Psychology 10, prerequisite to Military Science 111. Must be taken before Junior year. Management 190, prerequisite to Military Science 125. Must be taken during Junior year. Political Science 138A, prerequisite to Military Science 124. Must be taken prior to Spring Quarter, Senior year.

Other courses may be substituted for those listed above based upon their equivalent or more comprehensive coverage of the desired subject content. The decision as to adequacy of substitute courses will be made by the cadet's primary Military Science Instructor/Adviser.

**11. U.S. Defense Establishment.** (½ course) A study of the evolution of the U.S. Department of the Defense; includes a study of the military services, with emphasis on the U.S. Army. Capt. Jones

**12. U.S. Defense Establishment.** (½ course) A study of the military institution and other elements of national power as instruments of national policy and strategy in conditions of peace and war. Capt. Jones

**13. Theory of Warfare.** (½ course) Inquiry into the theory, nature, causes, and elements of warfare, with attention also directed to the evolution of weapons and warfare. Capt. Jones

**21. United States Military History.** (½ course) Prerequisite: CADET: Completion of Military Science 11, 12, and 13 or equivalent; NON-CADET: College student. In depth study of U.S. Army from 1755-1860, with emphasis on leaders and combat actions. An introductory survey of opposing strategies and relationships to the men leading and serving in the U.S. Army. Capt. Tillman

**22. United States Military History.** (½ course) Prerequisite: CADET: Completion of Military Science 11, 12, and 13 or equivalent; NON-CADET: College student. In depth study of the U.S. Army from the beginning of the Civil War to World War II (1860-1939) with emphasis on leadership at all levels and campaigns involving the U.S. Army. Emphasis on the development of strategy and combat operations of both sides. Capt. Tillman

**23. United States Military History.** (½ course) Prerequisite: CADET: Completion of Military Science 11, 12, and 13 or equivalent; NON-CADET: College student. In depth study of the U.S. Army from World War II to present, with emphasis on strategies and leadership on both sides. Capt. Tillman

**111. Psychology of Leadership.** (½ course) Prerequisite: CADET: Completion of Basic Course or equivalent; NON-CADET: Upper division standing. Introduction to Psychology 10 (for both). Familiarization of the student with current concepts in the behavioral sciences which builds the theoretical framework for understanding human behavior in relating to the basic problems of management and the organizational context of leadership. Emphasis is placed on the leader/manager problems of directing and controlling resources. Lt. Col. Takamiya

**112. Theory of Learning Applied to Teaching I.** (½ course) Prerequisite: CADET: Completion of Basic Course or equivalent; NON-CADET: upper division. An examination of learning theories to support development of knowledge, skills and attitudes necessary for the instructing-teaching application. Emphasis is placed on the education/instructional processes. Lt. Col. Takamiya

**113. Theory of Learning Applied to Teaching II.** (½ course) Prerequisite: CADET: Completion of Basic Course or equivalent; NON-CADET: upper division completion of Military Science 112 or equivalent (both). A study of instructional processes, lesson content planning procedures, techniques for applicatory education, role of testing including evaluation and analysis. Emphasis is placed on improvement of teaching and group process. Lt. Col. Takamiya

**123. Military Legal Systems.** (½ course) Prerequisite: CADET: first year Advanced Military Science; NON-CADET: upper division standing. An introduction to the theory and application of military law and legal systems. Course focuses on the Uniform Code of Military Justice and the rights of the accused under the constitution. Capt. Hinkle

**124. Military-Societal Relations.** (½ course) Prerequisite: CADET: First year Advanced Military Science, Management 190, and Political Science 138A, or equivalent; NON-CADET: upper division standing, Political Science 138A, or equivalent. An advanced study of the U.S. Army as a professional organization: its relationship to society; professional ethics; and social problems. Capt. Hinkle

**125. Decision-making.** (½ course) Prerequisite: CADET: one introductory course in Probability and Statistics, one course in Computer Science and Management 190; NON-CADET: same as for cadet; consent of instructor. Theory of decision-making, functions of the decision-making process, optimizing decisions, information systems, operations research, systems management. Capt. Hinkle

**MOLECULAR BIOLOGY  
(INTERDEPARTMENTAL)**

(Molecular Biology Institute Bldg. Room 171)

D.E. Atkinson, Ph.D., *Professor of Chemistry.*  
 Marcel A. Baluda, Ph.D., *Professor of Viral Oncology.*  
 Paul D. Boyer, Ph.D., *Professor of Chemistry.*  
 R. John Collier, Ph.D., *Professor of Bacteriology.*  
 David S. Eisenberg, Ph.D., *Professor of Molecular Biology in Chemistry.*  
 F.A. Eiserling, Ph.D., *Professor of Bacteriology in Biology.*  
 John Fessler, Ph.D., *Professor of Molecular Biology in Biology.*  
 C. Fred Fox, Ph.D., *Professor of Molecular Biology in Bacteriology.*  
 Issac M. Harary, Ph.D., *Professor of Biological Chemistry.*  
 James A. Lake, Ph.D., *Professor of Molecular Biology in Biology.*  
 George Laties, Ph.D., *Professor of Plant Physiology.*  
 Donald P. Nierlich, Ph.D., *Professor of Bacteriology.*  
 George Popjak, Ph.D., *Professor of Psychiatry and Biological Chemistry.*  
 Dan S. Ray, Ph.D., *Professor of Molecular Biology in Biology.*  
 W.R. Romig, Ph.D., *Professor of Bacteriology.*  
 Winston A. Salsler, Ph.D., *Professor of Molecular Biology in Biology.*  
 Verne N. Schumaker, Ph.D., *Professor of Molecular Biology in Chemistry.*  
 Larry Simpson, Ph.D., *Professor of Cell Biology.*  
 Fritiof S. Sjöstrand, Ph.D., *Professor of Biology.*  
 Emil Smith, Ph.D., *Professor of Biological Chemistry.*  
 Roberts A. Smith, Ph.D., *Professor of Chemistry.*  
 Clara Szego, Ph.D., *Professor of Biology.*  
 Philip Thorner, Ph.D., *Professor of Molecular Biology in Biology.*  
 Felix Wettstein, Ph.D., *Professor of Molecular Biology in Microbiology and Immunology.*  
 Samuel Wildman, Ph.D., *Professor of Biology.*  
 Irving Zabin, Ph.D., *Professor of Biological Chemistry.*  
 Stephen Zamenhof, Ph.D., *Professor of Microbial Genetics and Biological Chemistry.*  
 Clifford Brunk, Ph.D., *Associate Professor of Biology.*  
 William R. Clark, Ph.D., *Associate Professor of Cell Biology.*  
 George C. Fareed, Ph.D., *Associate Professor of Molecular Biology in Microbiology and Immunology.*  
 Dohn G. Glitz, Ph.D., *Associate Professor of Biological Chemistry.*  
 Richard N. Halpern, M.D., *Associate Professor of Medicine in Residence.*  
 Harvey Herschman, Ph.D., *Associate Professor of Biological Chemistry.*  
 Bruce Howard, Ph.D., *Associate Professor of Biological Chemistry.*  
 John M. Jordan, Ph.D., *Associate Professor of Molecular Biology in Chemistry.*  
 Harumi Kasamatsu, Ph.D., *Associate Professor of Molecular Biology in Biology.*  
 David S. Sigman, Ph.D., *Associate Professor of Biological Chemistry.*  
 Patrice Zamenhof, Ph.D., *Associate Professor of Biological Chemistry.*  
 Jay Gralla, Ph.D., *Assistant Professor of Molecular Biology in Chemistry.*  
 Michael Grunstein, Ph.D., *Assistant Professor of Molecular Biology in Biology.*  
 Judith Lengyel, Ph.D., *Assistant Professor of Molecular Biology in Biology.*  
 Harold B. Martinson, Ph.D., *Assistant Professor of Chemistry.*  
 Emil Reisler, Ph.D., *Assistant Professor of Molecular Biology in Chemistry.*  
 Robert M. Sweet, Ph.D., *Assistant Professor of Molecular Biology in Chemistry.*  
 Allan J. Tobin, Ph.D., *Assistant Professor of Biology.*  
 Randolph Wall, Ph.D., *Assistant Professor of Microbiology and Immunology in Residence.*  
 Richard L. Weiss, Ph.D., *Assistant Professor of Chemistry.*  
 William T. Wickner, Ph.D., *Assistant Professor of Molecular Biology in Biological Chemistry.*  
 Gary Wilcox, Ph.D., *Assistant Professor of Bacteriology.*  
 Bernadine Wisnieski, Ph.D., *Assistant Professor of Bacteriology.*

**Undergraduate Study**

Undergraduate studies which readily lead to advanced work or employment in the molecular biology area include undergraduate majors in biochemistry, biology, or physics. Students may wish to supplement their course programs in consultation with the appropriate undergraduate advisers. In making preparation for graduate study, attention should be given to recommendations given below for preparation for the Ph.D. degree in molecular biology.

**The Ph.D. Program**

A program of study for the Ph.D. degree is supervised by the Interdepartmental Degree Committee for Molecular Biology. The Molecular Biology Institute was established to encourage fundamental research in molecular biology, biophysics, and biochemistry, and to support graduate instruction for qualified students. Members and Associates of the Institute supervise graduate work in a variety of areas as indicated later. Applicants for the Ph.D. degree program should have a major in a biological or physical science or mathematics. Course work should include mathematics through calculus, one year each of general and of organic chemistry, a year each of physics and physical chemistry based on use of calculus, and a year of biology. Modification in undergraduate requirements may be made for qualified candidates with interests in certain areas. Candidates may enter the program with some course deficiencies but with anticipation these will be made up in the early part of the graduate program.

**The Individual Study Program**

An individual program of study will be worked out for each student depending upon his particular background and area of specialization. A Student Guidance Committee selected from Molecular Biology Institute Members and Associates will be appointed by the Graduate Adviser for each first-year student. The Committee will meet with the student before the beginning of each quarter and once again at the end of the year. Its functions are to aid in the design of a course program tailored to fit the needs of the student, to help select three laboratories for the student's first year research experience, and to evaluate the student's progress. The supervision of the student's second-year curriculum and research will be transferred from the Guidance Committee to the student's Dissertation Research Supervisor, together with the Graduate Adviser. It is anticipated that by the conclusion of the second year, the student will have completed his course work, his qualifying examinations, and made a start on his dissertation research.

**Minor Field of Study**

Each student is required to design and follow a program of study leading to proficiency in some subject related to, but outside of, Molecular Biology. This requirement can be satisfied by a set of courses or other program of individual study developed in consultation with the Graduate Adviser following guidelines established by the Ph.D. Committee.

**Qualifying Examination**

A qualifying examination for the doctoral degree usually will be held 1½ to 2 years after entrance to the program. The examination will include preparation of a written research proposition and its defense. The Examination Committee may also require an additional written examination at its discretion.

**Dissertation Research**

The final period of the student's graduate training is devoted to intensive research in one of a variety of fields:

1. **Molecular Basis of Cellular Functions** — The molecular changes, controls, and structures involved in development and in evolution; the understanding of neural processes at the molecular level; the chemical, genetic, and physical changes involved in carcinogenesis and in possible cancer control.
2. **Molecular Genetics and Virology** — Molecular basis of transmission and expression of genetic information and of viral replication and action.
3. **Structure-Function Relationships of Cell Biopolymers** — The detailed linear and 3-dimensional structure and chemical properties of nucleic acids and proteins, in both the isolated state and living organism; biological ultrastructure as revealed by x-ray analysis and electron microscopy.
4. **Bioenergetics, Catalysis, and Control** Molecular nature of active transport, photosynthesis, oxidative phosphorylation and related processes; mechanisms of biological catalyses; control mechanisms in catalysis, metabolism, growth and differentiation.

The program leading to a doctoral program in molecular biology will usually require four years.

**501. Cooperative Program. (½ to 2 courses)** Prerequisites: approval of UCLA Graduate Adviser and Graduate Dean. Approval of host campus Instructor, Department Chairman and Graduate Dean. The course is used to record the enrollment of UCLA students in courses taken under cooperative arrangements with neighboring institutions. To be graded S/U. The Staff

**Courses Related to Molecular Biology**

The following courses offered by the departments listed are particularly appropriate to the research areas mentioned above. With the approval of the Guidance Committee or Research Supervisor, other related courses may be included in a student's program.

**Bacteriology 131A-131B.** Microbial and General Genetics.

**Biological Chemistry M251.** Biorganic Catalysis. (Same as Chemistry M251.)

M253. Proteins and Nucleic Acids. (Same as Chemistry M253.)

M255. Biological Catalysis. (Same as Chemistry M255.)

M257. Physical Chemistry of Biological Macromolecules. (Same as Chemistry M257.)

M261. Advanced Chemistry and Biochemistry of Lipids. (Same as Chemistry M261.)

M263. Cellular Metabolism. (Same as Chemistry M263.)

266A-266B-266C. Seminar in Biochemistry of Differentiation.

M269. Developmental Biochemistry. (Same as Chemistry M269.)

**Biology M132.** Comparative Genetics. (Same as Bacteriology M132.)

144. Introduction to Molecular Biology.

154. Functional Ultrastructure of Cells.

M220. Gene Structure and Function. (Same as Microbiology M220.)

225. Biochemical Analysis of Development.

227. Chromosome Structure and Replication.

229. Structural Macromolecules.

238. Structure, Function and Biogenesis of the Mitochondrion.

280. Seminar in Chromosome Structure and Replication.

294. Seminar on Current Aspects of Photosynthesis.

**Chemistry 156.** Physical Biochemistry.

M267. Nucleic Acid and Protein Metabolism. (Same as Biological Chemistry M267.)

**Microbiology 204.** Microbial Genetics.

208. Regulatory Mechanisms in Microbial Physiology.

213. Membrane Molecular Biology.

M233A-233B. Electron Microscopy. (Same as Biology M233A-233B.)

M285. Seminar in Biological Membranes. (Same as Biology M285.)

**Microbiology and Immunology 208.** Animal Virology.

250. Topics in New Biology.

251. Seminar in Microbiology and Immunology.

254. Seminar in Immunogenetics.

256. Seminar in Viral Oncology.

M258. Advanced Immunology. (Same as Microbiology M258.)

M259. Advanced Immunology Co-Seminar. (Same as Microbiology M259.)

261. Tumor Immunology.

262. Seminars in Immunology of Cancer.

264. Molecular Immunology.

265. Co-Seminar in Animal Virology.

266. Immunochemistry.

**Molecular Biology M298.** Seminar in Current Topics in Molecular Biology. (Same as Microbiology M298, Biological Chemistry M298, Biology M298, Chemistry M298, and Microbiology and Immunology M298.)

**Physiology 202.** Permeability of Biological Membranes to Ions.

225. Biological and Artificial Membranes.

**MUSIC**

(Department Office, 2449 Schoenberg Hall)

Peter C. Crossley-Holland, M.A. *Professor of Music.*  
 Frank A. D'Accone, Ph.D. *Professor of Music.*  
 Paul E. Des Marais, M.A., *Professor of Music.*  
 Maurice Gerow, Ph.D., *Professor of Music.*  
 Edwin H. Hanley, Ph.D., *Professor of Music.*  
 Nazir A. Jairazbhoy, Ph.D., *Professor of Music.*  
 Boris A. Kremeniev, Ph.D., *Professor of Music.*  
 Henri Lazarof, M.F.A., *Professor of Music.*  
 David Morton, Ph.D., *Professor of Music.*  
 J.H.K. Nketia, B.A., *Professor of Music.*  
 Gilbert Reaney, M.A., *Professor of Music.*  
 Abraham A. Schwadron, Mus. A.D., *Professor of Music.*  
 Robert M. Stevenson, Ph.D., *Professor of Music.*  
 Roy E. Travis, M.A., *Professor of Music.*  
 Robert L. Tusler, Ph.D., *Professor of Music.*  
 D.K. Wilgus, Ph.D., *Professor of English and Anglo-American Folk Song.*  
 Mantle L. Hood, Ph.D., *Emeritus Professor of Music.*  
 W. Thomas Marrocco, Ph.D., *Emeritus Professor of Music.*  
 Robert U. Nelson, Ph.D., *Emeritus Professor of Music.*  
 Laurence A. Petran, Ph.D., F.A.G.O., *Emeritus Professor of Music and Psychology.*  
 H. Jan Popper, Ph.D., *Emeritus Professor of Music.*  
 Clarence E. Sawhill, Mus. D., *Emeritus Professor of Music.*  
 Alden B. Ashforth, Ph.D., *Associate Professor of Music.*  
 Elaine R. Barkin, Ph.D., *Associate Professor of Music.*  
 Murray C. Bradshaw, Ph.D., *Associate Professor of Music.*  
 Malcolm S. Cole, Ph.D., *Associate Professor of Music.*  
 Marie L. Gollner, Ph.D., *Associate Professor of Music (Chairman of the Department).*  
 Frederick F. Hammond, Ph.D., *Associate Professor of Music.*  
 Richard A. Hudson, Ph.D., *Associate Professor of Music.*  
 William R. Hutchinson, Ph.D., *Associate Professor of Music.*  
 James W. Porter, M.A., *Associate Professor of Music.*  
 Paul V. Reale, Ph.D., *Associate Professor of Music.*  
 Max L. Harrell, Ph.D., *Assistant Professor of Music.*  
 Charlotte A. Heth, Ph.D., *Assistant Professor of Music.*  
 James E. Westbrook, D.M.A., *Assistant Professor of Music.*  
 Robert S. Winter, M.A., *Assistant Professor of Music.*  
 ———, *Assistant Professor of Music.*  
 ———, *Assistant Professor of Music.*

Salome R. Arkatov, M.A., *Lecturer in Music.*  
 Edward Auer, B.M., *Lecturer in Music.*  
 David M. Breidenthal, *Lecturer in Music.*  
 Stanley Buettens, M.A., *Lecturer in Music.*  
 Majorie Call, B.M., *Lecturer in Music.*  
 Mario Carta, *Adjunct Assistant Professor of Music.*  
 Charles DeLancey, M.A., *Lecturer in Music.*  
 Robert L. DiVall, B.A., *Lecturer in Music.*  
 David E. Draper, Ph.D., *Acting Assistant Professor of Music.*  
 Alan J. Gilbert, *Lecturer in Music.*

Jeffrey Goodman, M.A., *Lecturer in Music.*  
 Gary C. Gray, M.M., *Lecturer in Music.*  
 John A. Guarnieri, *Lecturer in Music.*  
 John L. Hall, M.M., *Lecturer in Music.*  
 Thomas F. Harmon, Ph.D., *Lecturer in Music and University Organist.*  
 Johana Harris, *Lecturer in Music.*  
 Maureen D. Hooper, Ed.D., *Lecturer in Music.*  
 Freeman K. James, M.A., *Lecturer in Music.*  
 John T. Johnson, B.F.A., *Lecturer in Music.*  
 Bess Karp, M.A., *Lecturer in Music.*  
 Leon Knopoff, Ph.D., *Professor of Geophysics and Physics.*  
 Kobia Ladzekpo, B.F.A., *Lecturer in Music.*  
 Sidney M. Lazar, M.A., *Lecturer in Music.*  
 Dong Youp Lee, *Lecturer in Music.*  
 Tsun Y. Lui, *Lecturer in Music.*  
 Shirley L. Marcus, B.M., *Lecturer in Music.*  
 Peter Mercurio, M.A., *Lecturer in Music.*  
 John Neufeld, *Lecturer in Music.*  
 Theodore Norman, *Lecturer in Music.*  
 Barbara R. Patton, B.A., *Lecturer in Music.*  
 Stanley E. Plummer, *Lecturer in Music.*  
 David Raksin, B.M., *Lecturer in Music.*  
 Sven H. Reher, M.A., *Lecturer in Music.*  
 Peggy Ann Sheffield, M.M., *Lecturer in Music.*  
 Donald J. Staples, B.A., *Lecturer in Music.*  
 Sheridan W. Stokes, *Lecturer in Music.*  
 Paul O. W. Tanner, M.A., *Lecturer in Music.*  
 Milton Thomas, *Lecturer in Music.*  
 Suenobu Togi, *Lecturer in Music.*  
 Aube Tzerko, B.M., *Senior Lecturer in Music.*  
 Alan Vogel, M.M.A., *Lecturer in Music.*  
 Roger Wagner, Mus.D., *Senior Lecturer in Music.*  
 Donn E. Weiss, M.M., *Lecturer in Music.*  
 Erwin Windward, B.A., *Lecturer in Music.*  
 Ikuo Yuge, *Lecturer in Music.*  
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#### Requirements for Entering Music Students

All applicants for admission are required to pass an audition in their principal performing medium.

Students planning to complete a major in music whether or not they have taken courses elsewhere, are required to pass a piano skills test. Aptitude and achievement tests are required for enrollment in Theory of Music 17A. These examinations are administered during registration week only. Students with exceptional ability and achievement may satisfy lower division requirements in Theory of Music by examination. Further information may be obtained from the Department of Music.

#### General Requirements

All music majors will be required to complete two years of applied music instruction in their major performance medium at the intermediate or advanced level.

All music majors must enroll in a performance organization for no credit each quarter in residence. They must participate in a minimum of two different organizations, one of which must be from 90A-90H or 91A-91Z.

#### Preparation for the Major

Courses 17A through F, 26A-26B-26C. Three quarters of either French, German, or Italian, or the equivalent. Students who plan to specialize in Historical or Systematic Musicology are urged to take six quarters, or the equivalent, of German.

#### The Major

A minimum of 10 courses in the upper division, including 107A, 126A-126B-126C; five courses selected from one of the specializations listed below and one course free elective for all areas except music education.

1. Composition and Theory: courses 106A-106B, 107B-107C and one elective course from 101, 103A-103B, 104A-104B, 108, 109A-109B-109C, 110A-110B, 111A-111B, 140-149, 155 and 156A-156B.
2. History and Literature: one course from 127A-127C; one course from 127D-127F, one course from 140A-140B-140C, and two electives from 104A-104B, 108, 130-131, 133-138, 151A-151B, 155-157, and 188A-188Z.
3. Ethnomusicology: 140A-140B-140C, and two courses selected from 108, 127A-127F, 131A-131B, 141-143, 145-149, 152, 153A-153B-153C, 157, and 190A-190B.
4. Applied Music: Two courses in applied music 160-165, one course from 175 and 8 units of elective no more than 4 of which can be additional chamber ensembles. Recommended: 101, 110A-110B, 111A-111B, 112A-112B, 119A-119B-119C, 127A-127F, 135A-135B-135C, 139, 140A-140B-140C, 151A-151B, or 187.
5. Music Education: 193, 195, 100A-100B-100C, 110A, 111A, four units from 115A-115E, and 6 units of electives selected under advisement from 110B, 111B, 112A-112B, 140A-140B-140C, 185, 187, and 199.
6. Systematic Musicology: five courses from the following list, taken on the advice and with the approval of the undergraduate

adviser in systematic musicology. Music 103A-103B, 108, 138, one course from 140A-140B-140C, 149, 187, 199, and Anthropology 144.

#### Graduate Division

The Music Department offers programs leading to the degrees of Master of Arts and Doctor of Philosophy in the fields of historical musicology, ethnomusicology, systematic musicology, composition, and music education and a program leading to the degree of Master of Fine Arts in Performance Practices. New students will be admitted for graduate study to the Department of Music only once a year, at the beginning of the Fall term.

#### Admission Timetable

Application for admission by students requesting financial aid must be received by: December 15th.

Departmental examinations will be administered: First week in February.

Notice of acceptance or denial: March 15th.

Application for admission by all other students must be received by: February 15th.

Departmental examinations will be administered: First week in April.

Notice of acceptance or denial: May 15.

#### Admission to the Master of Arts and Master of Fine Arts Program

All applicants must have completed a Bachelor of Arts degree with a major in music (or the equivalent degree) as described in this bulletin. See Graduate Division. Transcripts must show an average grade of B in the basic areas that normally constitute the undergraduate core curriculum in music (harmony, counterpoint, the history of music, analysis and musicianship), plus one college year (or its high school equivalent) of French, German, or Italian. In addition, all applicants are required to take the departmental entrance examination (see below) and are asked (a) to submit a letter describing the background of study and stating their reasons for wishing to pursue graduate studies in music; (b) to request three former instructors to write letters of recommendation in their behalf (form letters are included in the application for admission). Applicants for the M.A. are required to submit written examples of their work; for all branches of musicology and music education a paper on an appropriate subject in the applicant's area; for composition, music scores. Applicants for the M.F.A. are required to (1) submit a repertoire list and sample programs of recitals or concerts, and (2) demonstrate by audition their general musical proficiency in one of the specified areas. Further information concerning specific audition requirements may be obtained from the Department of Music. No application can be considered until the examination has been taken and all of the above materials are received.

#### Admission to the Doctor of Philosophy Program

The applicant must have completed a Master of Arts degree in music (or the equivalent degree) as described in this bulletin. See Graduate Division. The degree normally will have been taken in the same field of concentration as the proposed doctorate. If a student wishes to obtain a doctorate in a field other than that of his M.A., he must complete additional work as prescribed by the Department. All applicants who have received an M.A. from a university other than UCLA are required to take the departmental entrance examination (see below) and are asked (a) to submit a letter describing their reasons for wishing to pursue graduate studies in music; (b) to request three former instructors to write letters of recommendation on their behalf (form letters are included in the application for admission); (c) to submit a copy of their M.A. thesis or composition. No application can be considered until the examinations have been taken and the above materials are received.

#### Departmental Entrance Examination

The departmental entrance examination will be administered at Schoenberg Hall on the UCLA campus two times a year in February and in April (see admission timetable). Applicants outside of the Southern California area who find it impossible to take the examination on campus should make arrangements with the Department of Music to have the examination administered in absentia on or about one of the dates mentioned here. (For details, further information, write the Music Counselor, Department of Music, UCLA). The departmental entrance examination is approximately three hours in length and consists of five parts: (1) written exercises in harmony and counterpoint, (2) harmonic and formal analysis; (3) identification of music terms; (4) an essay on two historical subjects; (5) two-part dictation, chord recognition, sight-singing and piano sight-reading. For M.A. and Ph.D. applicants solo performance in the student's principal performing medium. For M.F.A. applicants an audition. In addition to the above, a comprehensive examination will be required of students in Music Education. Entrance examinations are evaluated by the Graduate Committee of the Music Department to determine the applicant's fitness for graduate study.

#### Teaching Credentials.

Students may earn credentials for teaching music and other subjects in California elementary and secondary schools. Completion of the Teacher Credential Program in the Teacher Education Laboratory is required. Consult with the Graduate School of Education (201 Moore Hall) for information. Consultation with music education faculty advisor is required.

#### Requirements for the Master of Arts Degree

*General Requirements.* For general requirements see Graduate Division. Students are required to complete a minimum of nine courses, five of which must be the graduate level. Upper division courses that may be counted toward the minimum of nine courses include: 103A-103B, 104A-104B, 106A-106B, 107B-107C, 108, 109A-109B-109C, 110A-110B, 111A-111B, 112A-112B, 119A-119B-119C, 127A-127B-127C-127D-127E-127F, 140A-140B-140C\*\*, 141, 142A-142B, 143A-143B, 145, 146A-146B-146C, 147, 148, 149, 151A-151B, 153A-153B-153C, 155, 156A-156B, 157, 175, M180, M181, 185, 187. A maximum of one course in chamber ensembles may be counted toward the degree. Course 598 serves to guide the preparation of the thesis and should normally be taken during the last quarter of residence.

\*\*Will not count for students whose emphasis is ethnomusicology.

*Language Requirement.* A reading knowledge of German or French is required in ethnomusicology, systematic musicology and composition; of German, French, Italian, or Spanish in music education, and of German and a choice of French, Italian or Latin in historical musicology. Students lacking these requirements must begin language study during the first year of residence.

#### Course of Study

Each student must plan his program under the guidance of the graduate adviser in his field of concentration. Course requirements for each field of concentration are as follows:

1. Historical musicology: 200A, 200B, either 210 or 211 (students planning to enter the Ph.D. program are strongly advised to take both 210 and 211 in the first year of residence), three terms of 260A-260F and one seminar from 250A-250B, 256, 257, 266A-266B, or 269; the remaining courses are elective upon the recommendation of the graduate adviser.
2. Systematic musicology: 200A, 200B, three terms of 272, and one term of 255, 269, 273 or 275; the remaining courses are elective upon the recommendation of the graduate adviser.
3. Ethnomusicology: 190A, 190B, 200A, 200B, the remaining courses are elective upon the recommendation of the graduate adviser.
4. Composition: 200A, one from 251A-D, three terms of 252 one of which may be substituted with 596A; and 266A or 266B; the remaining courses are elective upon recommendation of the graduate adviser.
5. Music Education: 185, 200A, 200B, and two terms of 270A-270F; the remaining courses are elective upon the recommendation of the graduate adviser. Students may elect either the Thesis Plan (see below) or the Comprehensive Examination Plan. The Comprehensive Examination Plan is not acceptable for future Ph.D. candidates. In lieu of a thesis the student is expected to pass a comprehensive examination consisting of a three-hour examination in one selected area (general, choral, instrumental); a three-hour examination in the broad field of music education; and a two-hour examination in either theory, composition, historical musicology, systematic musicology or ethnomusicology.

#### Thesis

In historical musicology, ethnomusicology and systematic musicology the thesis will be an extended essay. For students of composition the thesis will be a work for chamber ensemble or orchestra. Students in music education may elect either the Thesis Plan or the Comprehensive Examination Plan (see program in Music Education above).

#### Final Examination

The final examination is oral and includes both discussion of the thesis and related matters. This examination does not apply to music education candidates electing the comprehensive examination plan.

#### Requirements for the Master of Fine Arts Degree

*General Requirements.* For general requirements see Graduate Division. Students are required to complete a minimum of eighteen courses, including six or more at the graduate level and six or more in the 400 series. The student must participate in a public performance of soloistic nature each quarter in residence; however, only one of the performances each year (see Annual Performance Project below) must be a complete solo recital.

The minimum residence requirements for the M.F.A. is two years.

*Language Requirement.* A reading knowledge of French, German, or Italian is required. Candidates in the Opera specialty must also be fluent in speaking one of these languages. In addition, all M.F.A. students are required to pass a departmental examination covering musical performance terminology in French, German, and Italian.

*Course of Study.* Each student must plan his program under the guidance of the graduate advisor in performance. Course requirements are as follows: 200A, three terms of 261A-261F; six terms of 400 level courses, two terms of 598, six electives. Recommended electives: 108, 127A-127F, 138, 139, 140A-140B-140C, 175, 187, and additional courses from the 200 and 400 level series. Course 598 serves to guide the preparation of the final project and should normally be taken during the last two quarters of residence.

*Annual Performance Project.* A recital or concert on campus (usually a noon concert) to be evaluated by a faculty committee is required

NOTE: For key to symbols, see page 51



during each year of residence. Program notes are to be written by the candidate.

**Final Project.** (To be completed during the final quarters of residence.) A solo recital and an appropriate scholarly paper will be required in all areas. In addition a major operatic performance is required in the area of Opera. The scholarly paper should be an independent study and analysis of an extended composition or group of shorter compositions posing significant problems in performance practices. The work(s) studied should be part of the solo recital to be evaluated by a faculty committee.

#### Requirements for the Doctor of Philosophy Degree

**General Requirements.** For general requirements see Graduate Division. The status of students in all fields of concentration is provisional subject to departmental approval of the Form I Application (Notice of Intention to Proceed to Candidacy for the Ph.D. degree). Normally this application is filed at the end of the first year of residence. Upon approval of the application and completion of the language requirement, the student may request that a guidance committee be appointed. The guidance committee will assist him in preparing for the written and oral qualifying examinations which are administered by the same committee. After successful completion of the examinations, a doctoral committee will be appointed. This committee guides the student in writing his dissertation.

**Language Requirement.** A reading knowledge of French and German is required in systematic musicology, ethnomusicology and music education; of French, German and a third language approved by the Council in historical musicology. In the field of composition two languages are required (one of which must be German or French), the other language may be chosen from Latin, Italian, or Russian.

#### Course of Study

Each student must plan his program under the guidance of the graduate adviser in his field of concentration. Course requirements for each field of concentration are as follows:

1. Historical musicology: 200A, 200B, 210, 211, five terms of 260A-260F and one seminar from 250A-250B, 256, 257, and 266A-266B or 269. Students who have received the M.A. in historical musicology from UCLA will normally take a minimum of two terms of 260A-260F in the Ph.D. program. Students may complete their residence requirements by electing courses from the 100 series listed under the general requirements for the M.A., and 200 level courses upon recommendation of their adviser.
2. Systematic musicology: 200A, 200B, five terms of 272 and one term of 255, 269, 273 or 275. Students who have received the M.A. in systematic musicology from UCLA will normally take a minimum of two terms of 272 in the Ph.D. program. Students may complete their residence requirements by electing courses from the 100 series listed under the general requirements for the M.A. and 200 level courses, upon recommendation of their adviser.
3. Ethnomusicology: 190A, 190B, 200A, 200B, and six seminars of which at least three shall be 280, the others to be chosen from 248, 253, 254A-254B, or 255. Students are also expected to complete two area studies courses. Parts of these requirements may be completed at the M.A. level. Students may complete their residence requirements by electing courses from the 100 series listed under the general requirements for the M.A., and 200 level courses, upon recommendation of their adviser.
4. Composition: 200A, one from 251A-D, six terms of 252, two of which may be substituted with 596A; 266A or 266B. Students who have received the M.A. in composition from UCLA will normally take a minimum of three terms of 252 in the Ph.D. program. Students may complete their residence requirements by electing courses from the 100 series listed under the general requirements for the M.A. and 200 level courses, upon recommendation of their adviser.
5. Music Education: 185, 200A, 200B, 274, and five terms of 270A-270F. Students who have received the M.A. in music education from UCLA will normally take a minimum of three terms of 270A-270F in the Ph.D. program. Under advisement two of the three terms of 270A-270F may be completed under special studies (596C). Students who wish to pursue the Ph.D. in Music Education with a minor in Ethnomusicology will be required to take 185, 190A-190B, 200A, 200B, three terms of 270A-270F, 274, and two courses from 141-143, 145-149, 152, 153A-153B-153C, 281-288. Electives are 140A-140B-140C, M180, M181, 187, 254A-254B, 255, and 280. Students may complete their residence requirements by electing courses from the 100 series listed under the general requirements for the M.A. and 200 level courses upon recommendation of their graduate adviser.

#### Examinations

Before he is admitted to candidacy, the student must pass a series of written and oral qualifying examinations; after he has completed his dissertation he must pass a final examination, concerned primarily with the dissertation.

In fields of Historical Musicology, Ethnomusicology and Music Education the written examinations consist of the following: (a) history of musical styles in Western civilization (three hours); (b) analysis of form and style (three hours); (c) an examination to demonstrate a basic knowledge of music in non-Western cultures (two hours); and (d) a choice of one or more: acoustics of music, aesthetics of music, psychology of music, and organology (two hours). Further written examinations, totaling six hours are

required in two areas: (1) Historical Musicology: one area to be selected from Ancient, Medieval, Renaissance, or Baroque music; the other area from Classic, Romantic or 20th-Century music. (2) Ethnomusicology: two areas to be selected from contrasting musical cultures. (3) Music Education: two areas; one to encompass historical, philosophical and psychological bases, the other to be selected from music education emphasizing elementary, secondary, college-university levels, or adult education. For the student in Music Education with a minor in Ethnomusicology the area examinations will include (a) general examination on the broad application of both fields to curricular, pedagogical, philosophical, psychological and administrative problems and practices in public school music, and (b) an examination relating the candidate's particular fields of interest in Ethnomusicology to their implementation in Music Education, e.g., performance groups, world culture courses, etc.

In the field of Systematic Musicology, the written qualifying examinations consist of the following: (a) history of musical styles in Western civilization (three hours); (b) analysis of form and style (three hours); (c) an examination to demonstrate a basic knowledge of music in non-Western cultures (two hours); (d) a general examination in systematic musicology (two hours); (e) two areas to be selected from acoustics, psychology of music, aesthetics of music, sociology of music and organology (six hours).

In the field of Composition, the written qualifying examinations consist of the following: (a) composition of a short homophonic and a short polyphonic piece (three hours); (b) general history of music (three hours); (c) one or more of the following: acoustics, psychology of music, aesthetics of music, or ethnomusicology (two hours); (d) 20th-Century Music (two hours); (e) analysis of form and style (three hours); and (f) music theory from the medieval period to the present, with optional emphasis on theoretical writings before or after 1700 (three hours).

#### Dissertation

In all fields but composition the dissertation will be an extended monograph. In the field of composition the dissertation will consist of (1) an extended composition accompanied by a short description of the style and techniques of the work, and (2) an analytical monograph dealing with some aspect of 20th Century music.

*Note: Check the Schedule of Classes for courses restricted to majors only.*

#### Lower Division Courses

**1. Fundamentals of Music.** Five hours weekly, including two laboratory hours. Singing, ear training, reading music and harmonization of simple melodies are the basic skills developed in this course.  
Mr. Morton, Mrs. Patton

**2A-2B-2C. Introduction to the Literature of Music.** Five hours weekly, including two laboratory hours. 2A is prerequisite to 2B, 2B is prerequisite to 2C. Designed for the general university student. Will not count for the Music Major. A survey of the stylistic development of Western art music within its cultural context. 2A Gregorian Chant through the Renaissance; 2B Monteverdi through Beethoven; 2C Schubert through the present.  
Mr. Winter

**4A-4B-4C. Basic Piano for Music Majors. (No credit)** Three hours weekly. Remedial class instruction in the fundamentals of piano.  
Miss Sheffield

**5A-5B-5C. Fundamentals of Sound and Music of the World. (½ course each)** Prerequisite: consent of the instructor. The acoustical make-up of sound (pitch, tone quality); tuning systems; modes and scales; harmony and polyphony, rhythm and meter; notational systems; relationships of music to culture. Laboratory: Ear training and instrumental techniques.  
Mr. Harrell, Mr. Hutchinson

**10. Computer Assisted Sight-Singing Laboratory. (½ course)** Three hours weekly, including one laboratory hour. Prerequisites: course I or its equivalent and consent of the instructor. An individualized, self-instructional approach for the development of sight-singing skills through the use of a music computer, keyboard instrument, and linear program learning.  
Mr. Gerow

**17A-17F. Theory of Music.** Eight hours weekly, including four laboratory hours. Prerequisites: Aptitude, Achievement and Performance examinations. Series must be taken in order A, B, C, D, E, F. An integrated study of theoretical and practical techniques. First Year: harmony through chromatic embellishment of diatonic progressions; two-part modal and tonal counterpoint; structural analysis; basic instrumentation; keyboard skills including open-score clef-reading and figured bass; melodic and rhythmic dictation and sight-singing. Second Year: advanced harmony through modulations and total chromaticism; three and four-part counterpoint (motet and fugue); advanced keyboard skills; dictation and sight-singing of modulating melodies. The Staff

**26A-26B-26C. History and Literature of Music I.** Five hours weekly, including one laboratory hour. Prerequisites: courses 17A-17B-17C. 26A is prerequisite to 26B; 26B is prerequisite to 26C. The history and literature of music from the beginning to the Christian era to 1750, with emphasis upon analysis of representative works of each style period. Materials selected will illustrate the history of style and changing techniques of composition.  
The Staff

**60-65. Applied Study of Music Literature: Intermediate. (1 course per year)** For Music Majors Only. Private instruction of one hour per week. Prerequisite: Audition. May be repeated for credit in entire year sequence only. This course is offered on an In-Progress basis, which requires students to complete the full three-quarter sequence, at the end of which time a grade is given for all quarters of work. Students will be admitted in the Fall Quarters only. All students must perform in a practicum once during the academic year. Examination by jury in Spring Quarter.

**Strings:** 60A. Violin; 60B. Viola; 60C. Cello; 60D. String Bass; 60E. Harp; 60F. Classical Guitar; 60G. Viola da gamba; 60K. Lute.

**Woodwinds:** 61A. Flute; 61B. Oboe; 61C. Clarinet; 61D. Bassoon; 61E. Saxophone.

**Brass:** 62A. Trumpet; 62B. French Horn; 62C. Trombone; 62D. Tuba.

**Percussion:** 63. Percussion.

**Keyboard:** 64A. Piano; 64B. Organ; 64C. Harpsichord.

**Voice:** 65. Voice.

**80A-80N. Performance Organizations. (¼ course each)** For Non-Music Majors Only. (90A-90N is for the music major) Three hours weekly. Prerequisite: Audition. May be repeated for credit.

**80A.** A Cappella Choir; **80B.** University Chorus; **80C.** Madrigal Singers; **80D.** Opera Workshop; **80E.** Symphony Orchestra; **80F.** Concert Band; **80G.** Symphonic Wind Ensemble; **80H.** Collegium Musicum; **80J.** Men's Glee Club; **80K.** Women's Glee Club; **80L.** Musical Comedy Workshop; **80M.** Marching and Varsity Bands; **80N.** Jazz Band.

**81A-81Z. Ethnomusicology Performance Organizations. (1/4 course each)** For Non-Music Majors Only. (91A-91Z is for the music major) Three hours weekly. Prerequisite: consent of the instructor. May be repeated for credit.

**81A.** Music and Dance of the American Indian; **81B.** Music and Dance of Bali; **81C.** Music and Dance of Bulgaria; **81D.** Music and Dance of China; **81E.** Music and Dance of Ghana; **81F.** Music and Dance of India; **81G.** Music and Dance of Japan; **81H.** Music of Java; **81J.** Music of Korea; **81K.** Music of Mexico; **81L.** Music of Persia; **81M.** Music of Thailand; **81Z.** Open Ensemble.

**90A-90N. Performance Organizations. (No Credit)** For Music Majors Only. (80A-80N is for the non-music major) Three hours weekly. Prerequisite: Audition. May be repeated. Music majors may enroll in only one performance organization per quarter.

**90A.** A Cappella Choir; **90B.** University Chorus; **90C.** Madrigal Singers; **90D.** Opera Workshop; **90E.** Symphony Orchestra; **90F.** Concert Band; **90G.** Symphonic Wind Ensemble; **90H.** Collegium Musicum; **90J.** Men's Glee Club; **90K.** Women's Glee Club; **90L.** Musical Comedy Workshop; **90M.** Marching and Varsity Bands; **90N.** Jazz Bands.

**91A-91Z. Ethnomusicology Performance Organizations. (No credit)** For Music Majors Only. (81A-81Z is for the non-music major) Three hours weekly. Prerequisite: consent of the instructor. May be repeated. Music majors may enroll in only one performance organization per quarter.

**91A.** Music and Dance of the American Indian; **91B.** Music and Dance of Bali; **91C.** Music and Dance of Bulgaria; **91D.** Music and Dance of China; **91E.** Music and Dance of Ghana; **91F.** Music and Dance of India; **91G.** Music and Dance of Japan; **91H.** Music of Java; **91J.** Music of Korea; **91K.** Music of Mexico; **91L.** Music of Persia; **91M.** Music of Thailand; **91Z.** Open Ensemble.

#### Upper Division Courses

**100A-100B-100C. Music in American Education. (1/2 course each)** Three hours weekly. Prerequisites: courses 17A-17F, 26A-26B-26C, 193, and 195. 110A is prerequisite to 100B; 111A is prerequisite to 100C. 100A is not prerequisite to 100B; 100B is not prerequisite to 100C. A critical study of principles and practices in music education, historical and current, at elementary and secondary levels. 100A. General Music; 100B. Choral Music; 100C. Instrumental Music. 100A-100B-100C may be taken in any order.  
The Staff

**101. Keyboard Harmony and Score Reading.** Four hours weekly. Prerequisites: courses 17A-17F. Emphasizes the reading of figured bass, sequences, modulations in the harmonic vocabulary of the 18th and 19th centuries. Reading at the piano of multistaff notation, the various C clefs, and parts for transposing instruments; chamber music and simple orchestral scores.  
Mr. Harmon

**\*103A-103B. Advanced Theory.** Three hours weekly. Prerequisites: courses 17A-17F. 103A or consent of the instructor is prerequisite to 103B. Techniques of tonal coherence studied through analysis and compositional exercises in the styles of given periods.

**104A-104B. Advanced Counterpoint.** Three hours weekly. Prerequisites: courses 17A-17F. 104A or consent of the instructor is prerequisite to 104B. Comparative contrapuntal practices and forms from all periods studied through analysis and compositional exercises in the styles of the given periods. (Not open to students who have received credit for 104 or 105.)  
Mr. Reale

- 106A-106B. Advanced Orchestration.** Three hours weekly. Prerequisites: courses 17A-17F. Course 106B is prerequisite to 106C. Scoring and analysis for ensembles and full orchestra. (106A is not open to students who have received credit for 106B; 106B is not open to students who have received credit for 106C.)  
Mr. Travis
- 107A-107B-107C. Composition.** Three hours weekly. 107A. Prerequisites: courses 17A-17F. 107A is prerequisite to 107B; 107B is prerequisite to 107C. 107B-107C are primarily for the student whose specialization is composition. Vocal and instrumental composition in the smaller forms; two- and three-part song forms, rondo, sonata, etc.  
The Staff
- 108. Acoustics.** Three hours weekly. Prerequisite: consent of the instructor. The interrelationship of acoustical and musical phenomena. Tuning systems, consonance and dissonance, tonal quality. Lecture, demonstration, and discussion and tours of instrumental collections and acoustical research facilities.  
Mr. Hutchinson
- 109A-109B-109C. Composition for Motion Pictures and Television.** (½ course each) Two hours weekly. Prerequisites: courses 17A-17F or consent of the instructor. 109A is prerequisite to 109B; 109B is prerequisite to 109C. Composition of music for the dramatic and documentary film in cinema and television. Techniques used in recording and editing.  
Mr. Raksin
- 110A-110B. Study and Conducting of Choral Literature.** (½ course each) Prerequisite: courses 17A-17F and 26A-26B-26C. 110A is prerequisite to 110B. The theory and practice of conducting as related to the study of choral works from the Renaissance to the present day. 110A. Conducting fundamentals including basic skills, techniques, analysis and repertoire. 110B. Stylistic interpretation of music literature.  
Mr. Gerow, Mr. Weiss
- 111A-111B. Study and Conducting of Instrumental Literature.** (½ course each) Prerequisite: courses 17A-17F and 26A-26B-26C. 111A is prerequisite to 111B. The theory and practice of conducting as related to the study of instrumental works for string and wind ensembles. 111A: Conducting fundamentals including basic skills, techniques, analysis and repertoire. 111B: Stylistic interpretation of music literature.  
Mr. James, Mr. Westbrook
- 112A-112B. Practical Scoring.** Four hours weekly. Prerequisites: courses 17A-17F, 26A-26B-26C, and consent of the instructor. Emphasis on practical problems in scoring for small and large ensembles at various educational levels. 112A. Band Scoring; 112B. Choral Scoring.  
Mr. James, Mr. Weiss
- 113A-113B. Music Literature for Children.** Four hours weekly, including one laboratory hour. Prerequisites: course 1, 2A, or consent of the instructor. 113A is not prerequisite to 113B. Designed for the non-music major, particularly the elementary education student. A study of music literature applicable to elementary school programs. 113A: Emphasis on listening analysis, movement, and improvisation. 113B: Emphasis on class performance — music reading, singing, and folk instruments.  
Mr. Gerow, Miss Hooper
- 115A-115E. Study of Instrumental and Vocal Techniques.** (½ course each) Four hours weekly. Prerequisites: courses 17A-17F, 26A-26B-26C, 193, and 195. Applied studies in basic performance techniques and tutorial materials. 115A. Strings; 115B. Woodwinds; 115C. Brass; 115D. Percussion; 115E. Voice.  
The Staff
- 119A-119B-119C. Advanced Study and Conducting of Choral Literature.** (½ course each) Three hours weekly. Prerequisites: courses 110A-110B. 119A is prerequisite to 119B; 119B is prerequisite to 119C. Advanced theory and practice of conducting; the study of representative choral works from the conductor's viewpoint.  
Mr. Wagner
- 126A-126B-126C. History and Literature of Music II.** Five hours weekly, including one laboratory hour. Prerequisites: courses 17A-17F and 26A-26B-26C. 126A is prerequisite to 126B; 126B is prerequisite to 126C. The history and literature of music from 1750 to the present with emphasis upon analysis of representative works of each style period. Materials selected will illustrate the history of style and changing techniques of composition.  
The Staff
- 127A-127F. Selected Topics in the History of Music.** Special aspects of the music of each period, studied in depth. Each course may be repeated once for credit by graduate students only. 127A. Middle Ages; 127B. Renaissance; 127C. Baroque; Prerequisites: course 17A-17F and 26A-26B-26C. 127D. Classic. Prerequisites: courses 17A-17F, 26A-26B-26C, and 126A. 127E. Romantic. Prerequisites: courses 17A-17F, 26A-26B-26C, and 126A-126B. 127F. Twentieth Century. Prerequisites: courses 17A-17F, 26A-26B-26C, and 126A-126B-126C.  
The Staff
- 130. Music of the United States.** Four hours weekly. Prerequisite: course 2A or consent of the instructor. A survey of art music from colonial times to the present.  
Mr. Stevenson
- 131A-131B. Music of Hispanic America.** Four hours weekly. Prerequisites: consent of the instructor. 131A is not prerequisite to 131B. Survey of art music including attention to ethnic developments and Peninsular background. 131A. Mexico, Central America and the Caribbean isles; 131B. Hispanic South America.  
Mr. Stevenson
- 132A-132B. Development of Jazz.** Four hours weekly, including one laboratory hour. Prerequisite: course 2A or consent of the instructor. Course 132A is prerequisite to 132B. An introduction to jazz: its historical background and its development in the United States.  
Mr. Tanner
- 133. Bach.** Four hours weekly, including two laboratory hours. The life and works of Johann Sebastian Bach.  
The Staff
- 134. Beethoven.** Four hours weekly, including two laboratory hours. The life and works of Ludwig van Beethoven.  
Mr. Hanley, Mr. Reaney
- 135A-135B-135C. History of the Opera.** Five hours weekly, including one laboratory hour.  
135A: Opera of the Baroque and Classical Periods; 135B: Opera of the Romantic Period; 135C: Opera of the Twentieth Century.  
Mr. Bradshaw, Mr. Hanley
- 138. Aesthetics of Music.** Three hours weekly. A survey of the literature of music aesthetics from Plato to the present.  
Mr. Schwadron
- 139. History and Literature of Church Music.** Four hours weekly. Prerequisite: course 2A or consent of the instructor. A study of the forms and liturgies of western church music.  
Mr. Harmon
- 140A-140B-140C. Musical Cultures of the World.** Five hours weekly. Prerequisite: consent of the instructor. 140A is not prerequisite to 140B, 140B is not prerequisite to 140C. A survey of the musical cultures of the world (excluding western art music), the role of music in society and its relationship to other arts; consideration will also be given to scale structure, instruments, musical forms and performance standards.  
Mr. Porter
- \*141. Survey of Music in Japan.** Three hours weekly. A survey of the main genres of Japanese traditional music, including Gagaku, Buddhist chant, Biwa music, Koto music, Shamisen music, and the music used in various theatrical forms.  
Mr. Merton
- \*142A-142B. Music of the Balkans.** Five hours weekly, including two laboratory hours. Prerequisites: courses 140A-140B-140C or consent of the instructor. 142A is prerequisite to 142B. 142A surveys the folk music of Bulgaria, including a study of eastern and western elements; performance on representative instruments; 142B investigates vocal and instrumental styles of other Balkan countries, with emphasis on Yugoslavia. (142A-142B is not open to those students who have had 142.)  
Mr. Merton
- 143A-143B. Music of Africa.** Five hours weekly, including two laboratory hours. Prerequisite: courses 140A-140B-140C or consent of the instructor. Course 143A is prerequisite to 143B. An investigation of the historical aspects, social functions and relationships of music to other art forms in selected areas of Africa.  
Mr. Nketia
- 144. American Popular Music.** Five hours weekly, including two laboratory hours. Prerequisites: course 1 or its equivalent is recommended. A survey of the history and characteristics of American popular music and its relationship to American culture, with emphasis on 20th-century popular music and its major composers, including a comparison between traditional pre-1950 popular music and trends in post-1950 popular music.  
Mr. Merton
- 145. History of Chinese Opera.** Four hours weekly. Prerequisite: consent of the instructor. A survey of dramatic elements in Chinese operas, incorporating singing, dance, and acrobatics. Emphasis on traditional and modern Peking opera and its relation to Cantonese and other genres.  
Mr. Lui
- \*146A-146B-146C. Studies in Chinese Instrumental Music.** Four hours weekly, including one laboratory hour. Prerequisite: consent of the instructor. 146A is not prerequisite to 146B; 146B is not prerequisite to 146C. 146A: A study of the literature, major sources, paleography, theory, and philosophy of the Ch'in and P'i P'a, including transcription and analysis. 146B: A comprehensive study of Chinese musical instruments, classification system, specific musical notation, and use in the context of Chinese society. 146C: A study of the rules of improvisation, particularly as related to the Shanghai style, as realized on the P'i P'a, Ti, Er Hu, San Shien, Sheo, and related instruments.  
Mr. Lui
- 147A-147B. Music of China.** Five hours weekly, including two laboratory hours. Prerequisites: courses 140A-140B-140C, or consent of the instructor. 147A is prerequisite to 147B. 147A: History and theory of the music of China, including a survey of various provinces. Instrumental techniques. 147B: Introduction to various notational systems. Analysis of representative styles. 147A is not open for credit to students who have credit for 147.  
Mr. Lui
- 148. Folk Music of South Asia.** Prerequisite: consent of instructor. An illustrated survey of some of the regional genres, styles, and musical instruments found in India and Pakistan, with special reference to the religious, social, economic, and cultural context of their occurrence.  
Mr. Jaizabhoj
- \*149. The Anthropology of Music.** A cross-cultural examination of music in the context of social behavior, and how musical patterns reflect patterns exhibited in other cultural systems; including economic, political, religious and social structure.  
Mr. Jaizabhoj
- 151A-151B. History of Musical Performance Practices.** Four hours weekly. Prerequisites: courses 17A-17F and 26A-26B-26C. A general survey of musical interpretation and re-creation from the viewpoint of stylistic authenticity. 151A Medieval through Baroque;
- 151B Classic through 20th Century.** Not open for credit to those who have had 151.  
Mr. Hudson
- \*152. Survey of Music in India.** Four hours weekly. A consideration of the main music genres in India, with particular reference to the religious, socio-cultural and historical background of the country.  
Mr. Jaizabhoj
- 153A-153B-153C. Music of the American Indians.** Four hours weekly. American Indian music will be studied within the broader context of styles, cultural values, and sources. Films, recordings, lectures, and limited group singing and dancing will relate the music to the culture producing it. 153A: Musics of the Eastern, California-Yuman, Great Basin, and Northwest Coast areas; 153B: Musics of the Athabaskan, Pueblo, Plains, and modern Pan-Indian trends; 153C: Sociology of American Indian Music with specific reference to the manner in which cultural values, prescriptions, oral traditions, language and technological advances have affected music of various tribes.  
Miss Heth
- \*154A-154B. The Afro-American Musical Heritage.** (Same as Folklore M154A-154B.) Four hours weekly. Prerequisite: course 1 or consent of the instructor. 154A is prerequisite to 154B. A study of the Afro-American rhythm, dance music, field hollers, work songs, spirituals, blues, and jazz; the contrast between West African, Afro-American and Afro-Brazilian musical traditions.  
Mr. Stevenson
- 156A-156B. Techniques of Electronic Music.** (Formerly numbered 156.) Prerequisites: courses 107A or equivalent and consent of instructor. 156A is not open for credit to students who have credit for 156. 156A is prerequisite to 156B. Manipulation of analog synthesizers and auxiliary equipment, tape techniques, and realization of original compositional materials.  
Mr. Ashforth
- 157. Music of Brazil.** Four hours weekly. Prerequisites: consent of the instructor and some knowledge of Portuguese. History of ethnic and art music in Brazil with some reference to Portuguese antecedents.  
Mr. Stevenson
- 158. New Orleans Jazz.** Four hours weekly, including one laboratory hour. Prerequisites: course 17B, or Music 1 and consent of the instructor. Major black and creole figures in the origin and development of jazz in New Orleans from the turn of the twentieth century through the nineteen-sixties, with emphasis on polycultural roots, local municipal traditions, and stylistic analysis.  
Mr. Ashforth
- 160-165. Applied Study of Music Literature: Advanced. (1 course per year)** For Music Majors Only. Private instruction of one hour per week. Prerequisite: Audition. May be repeated for credit in entire year sequence only. This course is offered on an In-Progress basis, which requires students to complete the full three-quarter sequence, at the end of which time a grade is given for all quarters of work. Students will be admitted in Fall Quarters only. Applied majors must perform in a noon concert once during their junior year and will be required a full recital in their senior year. All other students enrolled will be required to participate in a practicum once during the academic year. Examination by jury in Spring Quarter.
- Strings:** 160A. Violin; 160B. Viola; 160C. Cello; 160D. String Bass; 160E. Harp; 160F. Classical Guitar; 160G. Viola Da Gamba; 160K. Lute.
- Woodwinds:** 161A. Flute; 161B. Oboe; 161C. Clarinet; 161D. Bassoon; 161E. Saxophone.
- Brass:** 162A. Trumpet; 162B. French Horn; 162C. Trombone; 162D. Tuba.
- Percussion:** 163 Percussion.
- Keyboard:** 164A. Piano; 164B. Organ; 164C. Harpsichord.
- Voice:** 165. Voice.
- 175. Chamber Ensembles. (½ course)** Two hours weekly. Prerequisite: Audition. Students must be at the advanced level of their instrument to participate in the course. May be repeated for credit. Applied study of the performance practices of literature appropriate to the ensemble.  
The Staff
- M180. Analytical Approaches to Folk Music.** (Same as Folklore M180.) Four hours weekly. Prerequisites: Music 5A-5B-5C. An intensive study of the methods and techniques necessary to the understanding of Western folk music.  
Mr. Porter
- M181. Folk Music of Central and Western Europe.** (Same as Folklore M181.) Four hours weekly. Prerequisite: Music 5A-5B-5C, or 140A, or 140B, or 140C, or consent of the instructor. An analysis of the folk musical styles of Europe, excluding the Balkans and Soviet Russia. Particular attention will be paid to the comparative study of European folk music.  
Mr. Porter
- 185. Historical and Philosophical Foundations of Music Education.** Three hours weekly. Prerequisites: completion of the undergraduate specialization in music education. The development of music education in the United States according to established schools of thought.  
Mr. Schwadron
- 187. Problems in Musical Aesthetics.** Three hours weekly. Prerequisites: courses 17A-17F and 26A-26B-26C. Critical approach to musical problems of aesthetic analysis, description, values, theories; including both Western and non-Western considerations. Recommended for students in all specializations of music.  
Mr. Schwadron
- 188A-188Z. The Master Composer.** Four hours weekly, including one laboratory hour. A survey of the works of an outstanding com-

poser in Western art music, considered within the context of his age. **188A.** Josquin; **188B.** Palestrina; **188C.** Monteverdi; **188D.** Purcell; **188E.** A. Scarlatti; **188F.** Vivaldi; **188G.** Handel; **188H.** Haydn; **188J.** Mozart; **188K.** Schubert; **188L.** Schumann; **188M.** Berlioz; **188N.** Chopin; **188P.** Brahms; **188Q.** Wagner; **188R.** Verdi; **188S.** Mahler; **188T.** Debussy; **188U.** Schoenberg; **188V.** Stravinsky; **188W.** Bartok; **188X.** Copland; **188Y.** Webern; **188Z.** Ives.  
Mr. Cole, Mr. Hanley, Mr. Winter

**189. The Symphony.** Four hours weekly, including one laboratory hour. A survey of symphonic literature from Haydn through the 20th Century with special emphasis upon the current symphonic programs of the Los Angeles Philharmonic Orchestra and other performing groups in the Los Angeles area. Mr. Winter

### Proseminars

**190A-190B. Proseminar in Ethnomusicology.** Three hours weekly. Prerequisites: courses 140A-140B-140C.  
Mr. Crossley-Holland

**193. Proseminar in Music Education. (½ course)** Two hours weekly. Prerequisites: courses 17A-17B-17C. This course is prerequisite to all courses in the music education specialization. A historical and philosophical introduction to the field.  
Mr. Schwadron

**195. Field Studies in Music Education. (½ course)** Four hours weekly, including two laboratory hours. Prerequisite: course 193. Discussion and observation of current practices. Miss Hooper

**199. Special Studies in Music.** Prerequisite: senior standing, consent of the instructor and adviser, and a 3.0 grade-point average. Individual studies in Music resulting in a research project. May be repeated to a maximum of eight units. The Staff

### Graduate Courses

Not open to undergraduate students. See College of Fine Arts, Unit Requirements.

**200A. Research Methods and Bibliography.** Three hours weekly. A survey of general bibliographic material in music. The Staff

**200B. Research Methods and Bibliography.** Three hours weekly. Prerequisite: course 200A. Guided writing, utilizing specific bibliography in historical musicology, systematic musicology, ethnomusicology, and music education. The Staff

**210. Medieval Notation.** Three hours weekly. Prerequisite: consent of the instructor. Vocal and instrumental notation; paleography of the period. Mr. Bradshaw

**211. Renaissance Notation.** Three hours weekly. Prerequisite: consent of the instructor. Vocal and instrumental notation; paleography of the period. Mr. D'Accone

**248. Seminar in Comparative Music Theory.** Prerequisite: consent of the instructor. The comparative study of the codified music theories of select cultures — Western and non-Western — considered in themselves and as expressions of their societies. Theory considered as a science of music; its place between cultural values and artistic practice in different civilizations.  
Mr. Crossley-Holland

**250A-250B. Seminar in the History of Music Theory.** (Formerly numbered 250.) Prerequisite: course 200A. 250A is not prerequisite to 250B. 250A: Music Theory from Antiquity through Zarlino; 250B: Music Theory from Rameau to the present.  
Mr. D'Accone, Mr. Maegaard

**251A-251D. Seminar in Special Topics in Composition and Theory.** Three hours weekly. May be repeated for credit. An intensive exploration of specialized aspects of composition. **251A.** Orchestration; **251B.** Specific media; **251C.** Specific styles; **251D.** Compositional Analysis.  
Mrs. Barkin, Mr. Des Marais

**252A-252B-252C. Seminar in Composition.** Three hours weekly. Prerequisites: courses 160B and 107C. 252A is prerequisite to 252B; 252B is prerequisite to 252C. May be repeated for credit. Course may be taken out of sequence only by consent of the instructor. Mrs. Barkin

**253. Seminar in Notation and Transcription in Ethnomusicology.** Three hours weekly. Prerequisites: courses 140A-140B-140C, 190A-190B, or consent of the instructor.

**254A-254B. Seminar in Field and Laboratory Methods in Ethnomusicology.** Prerequisites: courses 190A-190B or consent of the instructor. Training includes experience in handling of technical apparatus, films, recording, processing and editing; field projects. Mr. Jairzobhy

**255. Seminar in Musical Instruments of the Non-Western World.** Three hours weekly. Prerequisites: courses 140A-140B-140C, 190A-190B, or consent of the instructor. Mr. Harrell

**256. Seminar in Musical Form.** Three hours weekly. Prerequisites: courses 126A-126B-126C. The analysis of structural organizations in music. Mr. Cole, Mr. Stevenson

**\*1257. Seminar in Music of the United States and Canada.** Three hours weekly. Prerequisite: course 130.

**M258. Seminar in Folk Music.** (Same as Folklore M258.) Three hours weekly. Prerequisite: consent of the instructor. Mr. Porter

**260A-260F. Seminar in Historical Musicology.** Three hours weekly. Prerequisites: courses 200A, 200B, 210 or 211. Students may enroll in 200B, 210 or 211 concurrently. May be repeated for credit. **260A.** Medieval Music; **260B.** Renaissance; **260C.** Baroque; **260D.** Classical; **260E.** Romantic; **260F.** General Topics. The Staff

**261A-261F. Problems in Performance Practices.** Three hours weekly. May be repeated for credit. Prerequisites: courses 151A-151B or consent of the instructor. An investigation of primary source readings in performance practices as related to the period; analytical reports and practical applications in class demonstrations. **261A.** Medieval; **261B.** Renaissance; **261C.** Baroque; **261D.** Classical; **261E.** Romantic; **261F.** Contemporary. Mr. Harmon, Mr. Winter

**266A-266B. Seminar in Music of the Twentieth Century.** Three hours weekly. Prerequisites: courses 126A-126B-126C. Students who have received credit for 266 may take either 266A or 266B. **266A:** Discussion and analysis of the major works of the 20th Century before World War II. Emphasis will be placed on the study of groups of works written at the same time in history. **266B:** Discussion and analysis of composers and their works from 1945 to the present.

**269. Seminar in the History of European Instruments.** Three hours weekly. Mr. Hammond

**270A-270F. Seminar in Music Education.** Three hours weekly. Prerequisite: consent of the instructor. May be repeated for credit. **270A.** Tests and Measurements; **270B.** Non-Western Musics; **270C.** Curriculum Innovations; **270D.** Administration and Supervision; **270E.** Historical Foundations; **270F.** General Topics. Mr. Gerow, Mr. Schwadron

**\*1272. Seminar in Systematic Musicology.** Three hours weekly. Prerequisite: course 108 and consent of the instructor. May be repeated for credit. Mr. Hutchinson

**273. Seminar in the Acoustics of Music.** Prerequisite: course 108 or consent of the instructor. May be repeated once for credit. Mr. Hutchinson

**\*1274. Seminar in the Philosophy of Music Education.** Three hours weekly. May be repeated once for credit.

**\*1275. Seminar in Aesthetics of Music.** Three hours weekly. Prerequisite: course 187, or consent of the instructor. May be repeated once for credit. Mr. Hutchinson

**280. Seminar in Ethnomusicology.** Three hours weekly. Prerequisite: courses 190A-190B and 200A-200B. May be repeated for credit. Mr. Crossley-Holland, Mr. Jairzobhy

**281A-281B. Music of Indonesia.** Three hours weekly. Prerequisite: consent of the instructor. The 2000-year old cultural history of Indonesia will serve as a background for the materials of this course. During the first quarter emphasis will be on the music of related performing arts of Java, including an analytical and comparative concentration on music as well as exercises in the melodic writing of classical gending; a similar emphasis in the second quarter will be devoted to the music and performing arts of Bali. Concurrent participation in one of the Indonesian performance groups is required. Mr. Harrell

**\*1282. Music of Persia.** Three hours weekly. Prerequisite: consent of the instructor. The course emphasizes the analytical and comparative study of various genres of the music of Persia and presents the music in a broad socio-cultural context. Musical practice is critically compared with musical theories developed during the last twelve centuries. Persian music is placed in the broad perspective of the music of the entire Near East. Concurrent participation in the Persian performance group is required.

**\*1283. Music of Thailand.** Three hours weekly. Prerequisite: consent of the instructor. A study of the traditional music of Thailand: historical background and intercultural influences, instruments and ensembles, theatrical and dance music, the music in its social context; analysis of forms and styles through examination of representative compositions, with practice in composing in basic styles. Concurrent participation in the Thailand performance group is required. Mr. Morton

**284. Music of the Arabic Near East.** Three hours weekly. Prerequisite: consent of the instructor. The course concentrates on the analytical and comparative study of various genres of the Arabic-speaking Near East and presents the music in a broad socio-cultural context. Musical practice is critically compared with musical theories developed during the last twelve centuries. Arabic theory and practice are placed in the broad perspective of musical traditions of the non-Arabic Near East.

**\*1285. Music of Tibet.** Three hours weekly. Prerequisite: consent of the instructor. A study of the traditional music of ethnic Tibet as ritual, art and folklore in its cultural matrix, and its relationship with other arts. Topics include traditional instruments and ensembles and studies in formal and stylistic analysis. Mr. Crossley-Holland

**\*1286A-286B. Classical Music of India.** Three hours weekly. Prerequisite: consent of the instructor. A study of the history, theory and practice of North and South Indian classical music. The first quarter will be concerned primarily with music history and traditional theory, while the second quarter will involve analysis of present-day forms, styles, techniques, and musical instruments. Concurrent participation in the Indian performance group is required. Mr. Jairzobhy

**287. Seminar in African Music.** Three hours weekly. Prerequisites: courses 140A-140B-140C, 143A-143B, 200A, and 200B. Intensive investigation of musical style, historical, social and cultural aspects of indigenous musical traditions and related art forms. Mr. Nkietia

**\*1288. Seminar in North American Indian Music.** Three hours weekly. Prerequisite: consent of the instructor. A survey of representative musical styles of Native North American Indians, including problems of transcription, methods of analysis, symbolic implications of song texts. Emphasis will be placed on interrelationship between music and cultural context. The influence of Western music in acculturative contexts will also be discussed. Mr. Draper

### Professional Courses

**370. Music in General Education. (½ course)** Two hours weekly. Prerequisite: acceptance into the teacher training program through the School of Education. All music students shall take Music 370 concurrently with Education courses 100, 112, 312, 315, and supervised teaching. May be repeated for credit up to six units. Critical discussions related to supervised teaching in progress. Miss Hooper, Mr. James

**460A-465. Master Class in Applied Literature.** One hour of private instruction and two hours of performance laboratory per week. Prerequisite: Admission to the M.F.A. program. May be repeated for credit. Intensive study and preparation of musical literature in the area of specialization.

**String Classes:** **460A.** Violin. **460B.** Viola. **460C.** Cello. **460D.** String Bass; **460E.** Harp; **460F.** Classical Guitar; **460G.** Viola da gamba; **460K.** Lute.

**Woodwind Classes:** **461A.** Flute; **461B.** Oboe; **461C.** Clarinet; **461D.** Bassoon; **461E.** Saxophone.

**Brass Classes:** **462A.** Trumpet; **462B.** French Horn; **462C.** Trombone; **462D.** Tuba.

**Percussion Class:** **463.** Percussion.

**Keyboard Classes:** **464A.** Piano; **464B.** Organ; **464C.** Harpsichord.

**Voice Class:** **465A.** Voice.

**472. Master Class in Opera.** Three hours weekly. Prerequisite: consent of the instructor. Intensive study and preparation of opera literature. May be repeated for credit. The Staff

**475. Master Class in Conducting.** Three hours weekly. Prerequisite: consent of the instructor. Intensive study and preparation of musical literature in the specialized field of conducting. The Staff

### Individual Study and Research

**596A. Directed Individual Studies in Orchestration and Composition. (½ to 1 course)** May be repeated for credit. A maximum of two courses (eight units) may be applied for credit for the M.A. degree. The Staff

**596B. Directed Individual Studies in Musicology. (½ to 1 course)** The Staff

**596C. Directed Individual Studies in Music Education. (½ to 1 course)** The Staff

**597. Preparation for the Comprehensive Examination for the Master's Degree or the Qualifying Examination for the Ph.D. (½ or 1 course)** The Staff

**598. Guidance of Master's Thesis or M.F.A. Final Project. (1 or 2 courses)** M.A. candidates may apply 4 units toward degree requirements. M.F.A. candidates may apply 8 units toward degree requirements. May be repeated for credit. The Staff

**599. Guidance of Doctoral Dissertation. (1 or 2 courses)** The Staff

### Related Courses in Other Departments

**Dance 154.** Music as Dance Accompaniment.

**206.** Music for Dance.

**Folklore 106.** Anglo-American Folk Song.

**M243A.** The Ballad.

**Integrated Arts \*1A-1B-1C.** Integrated Arts.

## NAVAL SCIENCE

(Department Office, 123 Men's Gymnasium)

George I. Thompson, M.A., M.S., *Captain, U.S. Navy, Professor of Naval Science (Chairman of the Department).*

Linda P. Richardson, M.A., *Commander, U.S. Navy, Assistant Professor of Naval Science (Vice Chairman of the Department).*

William T. Meyers, M.S., *Lieutenant Commander, U.S. Navy, Assistant Professor of Naval Science.*

George A. Carlson, B.S.E.E., M.B.A., *Major, U.S. Marine Corps, Assistant Professor of Naval Science.*

Paul B. Hendrickson, B.S., *Lieutenant, U.S. Navy, Adjunct Assistant Professor of Naval Science.*

Gregory B. Jones, M.S., *Lieutenant, U.S. Navy, Assistant Professor of Naval Science.*

In June 1938, by action of the Secretary of the Navy and the Regents of the University of California, a Naval Reserve Officers' Training Corps (NROTC) was established on the Los Angeles campus. The primary objective of the NROTC is to provide an education at civil institutions which will qualify selected students for regular or reserve commissions in the U.S. Navy or Marine Corps as elected by the student.

The Department of Naval Science offers several programs:

1. **Naval ROTC College Program:** This is a four-year, non-scholarship program open to physically qualified men and women between the ages of 17 and 21. Freshmen, and sophomores in a five-year baccalaureate program, are the most likely candidates for this program. Students receive a \$100 per month stipend in their junior and senior years and complete one summer training cruise after their third year. Upon graduation, the student will be commissioned as Ensign, U.S. Naval Reserve or Second Lieutenant, U.S. Marine Corps Reserve. A three year active duty obligation is incurred. Application should be made in the summer or early in the fall quarter. Scholarships may be offered to highly qualified College Program students.

2. **NROTC Two-Year Program:** This program is open to men and women who will be entering their junior year of undergraduate study. Applications are sought from UCLA students as well as incoming junior college transfers. After a six-week summer training period at the Naval Science Institute, students enroll in the NROTC Unit as juniors, with the same obligations and privileges as in the College Program described above. U.S. citizenship is required and the age limit is 25 years at the time of graduation. Applicants should contact the Department of Naval Science no later than April 1st of their sophomore year of study.

3. **Two-Year Scholarships:** These programs are open to academically and physically qualified students in their second year of undergraduate study, who have had some background in college physics and calculus. As with the Two-Year Program described above, candidates will attend a summer Naval Science Institute before their junior year. They will receive full tuition, fees, book expense and \$100 per month during their last two years. Upon graduation, they will receive Regular Navy commissions and enter nuclear power training or other Navy fields as Ensigns. Applications should be made by April 1st, usually in the sophomore year.

4. **NROTC Scholarship Program:** This is a nationwide competition open to physically qualified men and women between the ages of 17 and 21. U.S. citizenship is required. High school seniors and students enrolled in the NROTC College Program are eligible to apply. Successful applicants receive \$100 per month for four years, plus full payment for tuition, fees, and book expenses. Three summer training cruises are required. Upon graduation, the student receives a commission in the Regular Navy or Marine Corps, with a four year active duty obligation. December 1st is the application deadline for Fall 79 admissions.

Naval Science courses may be taken as free elective courses and applied toward the total departmental course requirements. It is important to contact the Naval Science Department and the cognizant college or department to determine the number of free elective courses for which Naval Science courses may be substituted.

For further information on program requirements, etc., contact the Professor of Naval Science, 123 Men's Gymnasium.

### Freshman Year

**1A. Introduction to Naval Science.** (½ course) An introduction to the structure of the Department of the Navy and its legal framework. Relationships in the Department of Defense. Components of the Naval Service. Shipboard organization. The Staff

**1B. Naval Ship Systems I.** An introduction to the principles of ship hull and superstructure design. The concepts of ship structural integrity, stability and buoyancy are examined in detail. Basic thermodynamic principles, inherent in ship power generation propulsion and salt water distillation systems are analyzed. P. Hendrickson

### Sophomore Year

**20A. Seapower and Maritime Affairs.** (½ course) A conceptual study of seapower, emphasizing the historical development of naval and commercial power. Seapower is examined in relation to economic, political and cultural strengths, focusing on current abilities of specific nations to utilize the oceans to attain national objectives. G. Carlson

**20B. Naval Ship Systems II.** A study of naval weapons systems with emphasis on target designation and acquisition, methods of solving fire control problem and target detection systems. Analysis of transfer and feedback functions inherent in weapon systems. Infra-red, radar and sonar principles. P. Hendrickson

### Junior Year

**101A. Navigation I.** A study of principles of piloting, rules of the

road, shiphandling and basic concepts of multiple ship formations in ocean transit. Course includes in depth discussion of problems associated with high seas and inland water, applying to small craft and supertankers alike. G. Jones

**101B. Navigation II.** Prerequisites: course 101A or consent of instructor. A continuation of Navigation I to include a detailed study of electronic and celestial navigation employed in the determination of a ship's position at sea. The course includes spherical trigonometry, mathematical analysis, sextant sights and the use of navigational aids. G. Jones

**\*103. Military Operations.** A study of the evolution of warfare including historical and comparative consideration of the influence that leadership, political, economic, and sociological and technological development factors have had on warfare, and the influence they will continue to exert in the age of limited warfare. G. Carlson

\*Courses to be taken by candidates for commissions in the Marine Corps or Marine Corps Reserve in lieu of courses 101A, 101B, 102B and 102C.

### Senior Year

**102B. Naval Leadership Management I.** An examination of both current and classical leadership and management theories and their application to the military environment. Various aspects of the leadership process are examined in detail including interpersonal communication, counseling theory, moral and professional ethics, conflict resolution, and management of change. The unique leadership problems created by racism, sexism, alcoholism, and drug abuse are also discussed. W.T. Meyers

**102C. Naval Leadership and Management II.** Prerequisite: course 102B. A continuation of Naval Science 102B which examines current leadership and management utilized by the U.S. Navy. Areas covered include human resources management, personnel management, material management, and performance and career evaluation. W.T. Meyers

**\*104. Amphibious Operations.** A study of the art of amphibious operations including the historical development of techniques used to project military power from sea to land. The evolution of amphibious doctrine and techniques is examined through study of the U.S. landings during World War II, the Korean Conflict and the Vietnam War. G. Carlson

\*Courses to be taken by candidates for commissions in the Marine Corps or Marine Corps Reserve in lieu of courses 101A, 101B, 102B and 102C.

## NEAR EASTERN LANGUAGES AND CULTURES

(Department Office, 376 Kinsey Hall)

Amin Banani, Ph.D., *Professor of Persian and History (Chairman of the Department).*

Arnold Band, Ph.D., *Professor of Hebrew.*

Andras Bodrogligeti, Ph.D., *Professor of Turkic and Iranian.*

Seeger A. Bonebakker, Ph.D., *Professor of Arabic.*

Giorgio Buccellati, Ph.D., *Professor of Ancient Near East and History.*

Herbert A. Davidson, Ph.D., *Professor of Hebrew.*

Avedis K. Sanjian, Ph.D., *Professor of Armenian.*

Hanns-Peter Schmidt, Ph.D., *Professor of Indo-Iranian.*

Stanislaw Segert, Ph.D., *Professor of Biblical Studies and Northwest Semitics.*

Wolf Leslau, Docteur-ès-Lettres, *Emeritus Professor of Hebrew and Semitic Linguistics.*

Moshe Perlmann, Ph.D., *Emeritus Professor of Arabic.*

John Callender, Ph.D., *Associate Professor of Egyptology.*

Thomas Penchoen, Ph.D., *Associate Professor of Berber.*

Ismail Poonawala, Ph.D., *Associate Professor of Arabic.*

Yona Sabar, Ph.D., *Associate Professor of Hebrew.*

Claude-France Audebert, Ph.D., *Assistant Professor of Arabic.*

Elizabeth Carter, Ph.D., *Assistant Professor of Near Eastern Archaeology.*

Lev Hakak, Ph.D., *Assistant Professor of Hebrew.*

Stanford West, Ph.D., *Assistant Professor of Turkish.*

\_\_\_\_\_, *Assistant Professor of Persian.*

Piotr Michalowski, Ph.D., *Adjunct Assistant Professor of Sumerian.*

Shimeon Brisman, *Lecturer in Hebrew.*

Jay D. Frierman, M.A., *Lecturer in Near Eastern Archaeology.*

David L. Lieber, D.H.L., *Lecturer in Hebrew.*

Stanford Shaw, Ph.D., *Professor of History.*

### Bachelor of Arts Degree

**Department Programs.** The department offers the Bachelor of Arts degree in four fields: (1) Ancient Near Eastern Civilizations, (2) Arabic, (3) Hebrew, and (4) Jewish Studies. In each of these fields the student must meet the prerequisites and take the courses prescribed for majors. Each student is assigned an adviser who will assist the student in devising a plan of study developed around his interests.

There are four options for a major in Ancient Near Eastern Civilizations: (1) Mesopotamia, (2) Egypt, (3) Syria-Palestine, and (4) Biblical Studies. The prerequisites for options 1 and 2

(Mesopotamia and Egypt) are German 1 and 2; the prerequisites for options 3 and 4 (Syria-Palestine and Biblical Studies) are Greek 1 and 2, Hebrew 1A-1B-1C, and Hebrew 102A-102B-102C. Majors in all four fields will be expected to continue their study of German or Greek beyond the prerequisite levels. Also, majors in all four options are required to take 14 quarter courses selected in consultation with the program adviser.

**Majors selecting options 1, 2 and 3** are required to take four language courses as follows: option 1 (Mesopotamia), Semitics 140A-140B, 141, 142; option 2 (Egypt), Ancient Near East 120A-120B-120C, 121A; option 3 (Syria-Palestine), Semitics 130, and three quarters of Hebrew 120. The remaining 10 courses for all three options are to be selected from the following list of courses: three literature courses from Ancient Near East 150A-150B-150C, Jewish Studies 150A; three courses in history and religion from Ancient Near East 130, 170, 171, 172, History 117, 124C, 138A, 140A-140B, 203; Iranian 169, 170; three courses in archaeology and art from Ancient Near East 160A-160B, 161A-161B-161C, 162, Art 101A-101B-101C-101D; and one course in research methodology (such as Anthropology 175 or Linguistics 120) to be taken preferably in another department with the consent of the adviser.

**Majors selecting option 4 (Biblical Studies) in Ancient Near Eastern Civilizations** are required to take 14 quarter courses as follows: Three quarters of Hebrew 120; Ancient Near East 150C, 162, 170; English 108B; Greek 130; Jewish studies 150A; History 138A; and Semitics 130. The remaining three courses may be selected from the following: Ancient Near East 130, 150A-150B, 160A-160B, 171, 172; Art 101D, 105A; Classics 166B; Greek 200C; History 117, 124C, 140A-140B, 203; Iranian 169, 170.

For a major in Arabic the prerequisites are Arabic 1A-1B-1C, 150A-150B. The student is required to take 14 quarter courses as follows: Arabic 102A-102B-102C, 103A-103B-103C, 130A-130B-130C; three courses of Arabic 111A-111B-111C or 140A-140B-140C; and History 134A-134B.

For a major in Hebrew the prerequisites are Hebrew 1A-1B-1C, 102A-102B-102C, Jewish 150A-150B or their equivalents. The student is required to take 16 quarter courses distributed as follows: Hebrew 103A-103B-103C; three quarters of Hebrew 120; two courses from Hebrew 130A-130B-130C-130D; two courses from Hebrew 140, 160; both Hebrew 190A and 190B; two additional courses in Hebrew or Aramaic to be approved by the adviser; and two quarter courses from History 137A-137B, 138A-138B.

For a major in Jewish Studies the prerequisites are Hebrew 1A-1B-1C, History 138A-138B or their equivalents. The student is required to take 16 quarter courses including: Hebrew 102A-102B-102C, 103A-103B-103C, Jewish Studies 150A-150B, Jewish Studies 151A-151B, 199 (undergraduate thesis), and five other upper division courses. At least two of the five must be courses in the areas of Hebrew, Jewish History, or Yiddish. The remaining three may be chosen either from those areas or from courses with Jewish content given in other departments and approved by the Jewish Studies adviser.

### Requirements for the Master's Degree

*General Requirements.* See Master's Degree.

**Department Programs.** The M.A. degree is offered in seven areas of specialization: (1) Ancient Near Eastern Civilizations, (2) Arabic, (3) Armenian, (4) Hebrew, (5) Iranian, (6) Semitics, and (7) Turkish. The department follows the Comprehensive Examination Plan that does not require a thesis. The candidate's program of study will be devised by a guidance committee of at least three members of the department faculty under the chairmanship of his adviser. The requirement for admission to all the M.A. programs is a bachelor's degree or its equivalent in the language area chosen for the degree.

**Departmental General Requirements.** The requirements for all the M.A. degree programs are:

1. A minimum of nine upper division and graduate level courses, of which at least six courses must be on the graduate level. All candidates will be required to take one quarter of Near Eastern Languages 200 (Bibliography and Method). The candidate may concentrate on either language or literature in his chosen field but will be required to do work in both. In the case of the Ancient Near Eastern field, the candidate may concentrate on a combination of both language and literature with Near Eastern archaeology.

2. The candidate will be required to have competent knowledge of the history of his major culture area.

3. The candidate will be required to pass an examination in one major modern European language other than English by the end of the third quarter of residence. The choice of the language will be determined in consultation with his adviser. The student has the option of satisfying this requirement by one of the following methods: a) Educational Testing Service, b) departmentally administered examination, c) two years college level or equivalent in the language selected. It is strongly recommended that the student who intends to continue towards a Ph.D. degree acquire a knowledge of a second major European language other than English while still a candidate for the M.A.

4. Upon completion of his course requirements, the candidate will be required to take a comprehensive final examination administered by the departmental guidance committee.

**Specific Requirements:** The specific requirements for the M.A. degree in the several areas of specialization are as follows: The candidate in Ancient Near Eastern Civilizations will be required to study two ancient languages, one of which must be one of the major languages of the Ancient Near East (Ancient Egyptian, Akkadian, or Hebrew), and the history and archaeology of the related area. The major area of concentration may be either the linguistic, literary, or archaeological aspect of the discipline. The candidate in Hebrew will be required to study Hebrew and another Semitic language; in Semitics, three Semitic languages; in Turkish, two Turkic languages; and in Arabic, Armenian and Iranian, one other related Near Eastern language in addition to his major language area.

#### Doctor of Philosophy Degree

**General Requirements:** See Doctoral Degrees.

**Department Programs:** The Ph.D. degree is offered in seven areas of specialization: (1) Ancient Near Eastern Civilizations, (2) Arabic, (3) Armenian, (4) Hebrew, (5) Iranian, (6) Semitics, and (7) Turkish. The candidate may concentrate on either language or literature in his chosen field but will be required to do work in both. In all areas of specialization, the student's program of study will be devised in consultation with his adviser. Prior to admission to the Ph.D. program the candidate is expected to take the M.A. degree in his field.

**Specific Requirements:** A candidate specializing in the languages of the Near East is expected to take the equivalent of one year of general linguistics and one year of grammar in his field of concentration (e.g. Semitics or Turkish). He is also required to achieve competence in three related languages within his field of concentration with particular emphasis on two major languages. It is mainly the structural mastery of the languages and familiarity with their development and their position within the appropriate family of languages that are required. The student is also advised to acquaint himself with the historical, literary, religious, and social background of the various language areas of his interest.

A candidate specializing in the literatures of the Near East is required to achieve competence in two languages; his second language must be a literary language taken from the cultural area related to his first language (e.g., a Hebraist can choose Akkadian, Arabic, Aramaic, or Yiddish; an Arabist can choose Persian or Turkish, and so on). The candidate will also be required to be familiar with the history of literary criticism and methods of literary research. This requirement may be fulfilled by taking courses offered by various departments at UCLA, particularly the course in literary criticism offered by the English department or the course in the Methodology of Comparative Literature.

A candidate specializing in Ancient Near Eastern Civilizations will be required to achieve competence in two ancient languages. His major area of concentration may be in either the linguistic, literary, or archaeological aspect of the discipline.

**Language Requirements:** The candidates for the Ph.D. degree in all areas of specialization will be required to have a reading knowledge of two major modern European languages other than English. The choice of languages must be approved by the adviser. The student has the option of satisfying the language requirements by one of the following methods: a) Educational Testing Service, b) departmentally administered examination, c) two years college level or equivalent in the languages selected. The examination in one of the two languages must be taken at the beginning of his first quarter in residence; the examination in the second language not later than at the beginning of the fourth quarter. The adviser may require additional language skills in modern and/or ancient languages if such skills are needed for scholarly work in the area of the student's interest.

**Qualifying Examinations:** The candidate in languages will be examined in three Near Eastern languages and the literary and historical background of at least two of them. The candidate in literature will be examined in the literatures written in two languages within the cultural area of his concentration, and the historical and cultural background of these languages with emphasis on one of them. The candidate in Ancient Near Eastern Civilizations will be examined in two ancient languages, and the history and archaeology of the major areas of the Ancient Near East.

Upon the successful completion of the written and oral qualifying examinations the student is eligible to advance to candidacy and receive the Candidate in Philosophy degree.

The department does not require an oral defense of the dissertation except in circumstances deemed necessary by the candidate's Doctoral Committee.

## Ancient Near East

(Akkadian, Aramaic, Phoenician, and Ugaritic are listed under Semitics.)

### Upper Division Courses

**\*120A-120B-120C. Elementary Ancient Egyptian.** Lecture, three hours; laboratory, two hours. Prerequisite: consent of the instructor. Grammar and texts. Mr. Callender

**\*121A-121B-121C. Intermediate Ancient Egyptian.** Three hours. Prerequisites: courses 120A-120B-120C. Readings in Ancient Egyptian literature. Mr. Callender

**\*123A-123B. Coptic.** Three hours. Prerequisite: consent of the instructor. An introduction to Coptic grammar and reading of Coptic texts. The quarters this course is offered vary from year to year. Check with department. Mr. Callender

**\*1230. Ancient Egyptian Religion.** Lecture, three hours. An introductory survey of various Ancient Egyptian religious beliefs and practices, their origin and development. Included will be discussions of religio-political institutions such as divine kingship and pious foundations. Mr. Callender

**\*1240A-140B. Elementary Sumerian.** Lecture, three hours. Prerequisite: Semitics 140A-140B. Elementary grammar and reading of royal inscriptions, letters and administrative texts from the Ur III period. The Staff

**145. Sumerian Literary Texts.** Lecture, three hours. Prerequisites: courses 140A and 140B or consent of instructor. Reading and interpretation of selected Sumerian literary texts. The Staff

**\*150A. \*150B. \*150C. Survey of Ancient Near Eastern Literatures in English.** Lecture, three hours. Courses 150A and 150B and 150C may be taken independently for credit. 150A: Mesopotamia; 150B: Egypt; 150C: Syria and Palestine, Asia Minor, Persia. Mr. Buccellati, Mr. Callender, Mr. Segert

**\*160A. \*160B. Introduction to Near Eastern Archaeology.** Lecture, three hours. Terminology, geography, principles, strategy of research, bibliography and a general survey of Near Eastern archaeology. Ms. Carter, Mr. Frierman

**\*161A. \*161B-161C. Archaeology of Mesopotamia.** Prerequisite: consent of the instructor. Survey of the main archaeological periods in Mesopotamia with special emphasis on late prehistoric and early historical periods and with reference to neighboring cultural areas. May be taken independently for credit. Ms. Carter

**\*162. Archaeology of Palestine.** Lecture, three hours. A survey of the archaeology of Palestine and the Sinai Peninsula from the Paleolithic to the destruction of Jerusalem in 586 B.C. with emphasis on the geographic setting and relationships to the other cultures of the Near East. Mr. Frierman

**163. Archaeology of Iran.** Lecture three hours. Prerequisites: None. A lecture course designed to introduce students to Iranian archaeology from prehistoric through Achaemenid times. Lectures would cover geography and settlement patterns, early prehistory, Ancient Elam, the Iranian Plateau in the third and second millenniums B.C. and the rise of the Achaemenid Empire. Ms. Carter

**164A-164B. \*164C. The Archaeology of the Historic Periods in Mesopotamia.** Prerequisite: History 140A-140B. Ancient Near East 161A-161C or consent of the instructor. Survey of the main archaeological periods in Mesopotamia with special emphasis on the historic periods and with reference to neighboring cultural areas. May be taken independently for credit.

**170. Introduction to Biblical Studies.** Lecture, two hours. The Bible (Old and New Testaments) as a book. Canon, text and versions. Linguistic, literary, historical and religious approaches to Bible study. Survey of history of interpretation from antiquity to the present. Knowledge of original languages not required. Mr. Segert

**171. Old Testament: Hebrew and Septuagint Texts.** Lecture, two hours. Prerequisites: Hebrew 102A-102B-102C and Greek 1, 2, or consent of the instructor. Study of the Hebrew original and of the Greek version of the Old Testament books. Mr. Segert

**172. Semitic Background of the New Testament.** Lecture, two hours. Prerequisites: Hebrew 102A-102B-102C, Semitics 130, Greek 1 and 2, or consent of the instructor. Study of the Semitic elements in the Greek New Testament: Traditions transmitted in Aramaic, relations to the Old Testament and to the Post-Biblical Literature, and Palestinian Judaism. Mr. Segert

**199. Special Studies in the Ancient Near East.** (½ to 2 courses) Prerequisite: consent of the instructor. The Staff

### Graduate Courses

**\*1210. Late Egyptian.** (Formerly numbered 122A-122B.) Lecture, three hours. Prerequisites: courses 121A-121B-121C and consent of the instructor. Late Egyptian grammar and reading of both hieroglyphic and hieratic texts. The quarters in which this course is offered vary from year to year. Check with department. May be repeated for credit. Mr. Callender

**220. Seminar in Ancient Egypt.** Three hours. Prerequisite: consent of the instructor. May be repeated for credit. Mr. Callender

**240A-240B-240C. Seminar in Sumerian Language and Literature.** Lecture, two hours. Prerequisites: consent of instructor. Readings of texts from various Sumerian periods and literary genres; selected problems in linguistic or stylistic analysis and literary history. Mr. Michalowski

**250. Seminar in Ancient Mesopotamia.** Prerequisite: consent of the instructor. Selected topics on the political, social and intellectual history of ancient Mesopotamia. May be repeated for credit. Mr. Buccellati

**250X. Seminar in Ancient Mesopotamia.** (½ course) Prerequisite: consent of instructor. Selected topics on the political,

social and intellectual history of ancient Mesopotamia. May be repeated for credit. Ancient Near East 250X is a one unit course for students who participate regularly in class meetings without the homework required of students in the regular course. Ancient Near East 250. Mr. Michalowski

**260. Seminar in Ancient Near Eastern Archaeology.** Lecture, two hours. Prerequisite: consent of the instructor. May be repeated for credit. The Staff

**261. Practical Field Archaeology.** (½ to 2 courses) Two hours. Prerequisite: consent of the instructor. Participating in archaeological excavations or other archaeological research in the Near East under supervision of the staff. May be repeated. Miss Carter

**262. Seminar in Object Archaeology.** Discussion, two hours; laboratory, one hour. Prerequisite: consent of instructor. Selected topics in the analysis and interpretation of Near Eastern archaeological finds in museum collections. Students will work with objects in the Heeramanek Collection of the Los Angeles County Museum of Art. Miss Carter

### Individual Study and Research

**596. Directed Individual Study.** (½ to 2 courses) The Staff

**597. Examination Preparation.** (½ to 2 courses) The Staff

**599. Dissertation Research and Preparation.** (½ to 2 courses) The Staff

### Related Courses in Other Departments

Art 101A. Egyptian Art and Archaeology.

210. Egyptian Art.

History 117. History of Ancient Egypt.

124C. Religions of the Ancient Near East.

140A-140B. History of Ancient Mesopotamia and Syria.

240J. Topics in History.

## Arabic

### Lower Division Courses

**\*121A-1B-1C. Elementary Arabic.** Lecture, four hours; laboratory, two hours. Basic structure. The Staff

**\*12102A-102B-102C. Intermediate Arabic.** Four hours. Prerequisites: courses 1A-1B-1C or consent of the instructor. Readings in both classical and modern Arabic, composition, conversation. Miss Audebert

**\*12103A-103B-103C. Advanced Arabic.** Four hours. Prerequisites: courses 102A-102B-102C or consent of the instructor. Review of grammar, continued reading of literary works. Composition, conversation and a weekly lecture in Arabic. Mr. Poonawala

**\*12110. Introduction to Islam.** Lecture, three hours. The course will treat the genesis of Islam, its doctrines and practices with readings from the Qur'an; forms of Islam: tensions and schism; reform and modernism. Mr. Poonawala

**\*12111A-111B-111C. Spoken Arabic.** Lecture, three hours; laboratory, three hours. Prerequisites: courses 102A-102B-102C. Introduction to one Arabic dialect with some comparison of the other dialects. May be repeated for credit with consent of instructor. The Staff

**\*12113A-113B-113C. Spoken Iraqi Arabic.** Three hours. Prerequisite: courses 102A-102B-102C. Introduction to the contemporary Arabic dialect of Iraq. Phonology, morphology and syntax will be presented with emphasis on oral practice. The Staff

**\*12114A-114B-114C. Spoken Moroccan Arabic.** Lecture, three hours; laboratory, one hour. Introduction to the Spoken Arabic dialect of Morocco. Phonology, morphology and syntax will be presented. Emphasis will be on developing oral skills. Mr. Penchoen

**\*12130A-130B-130C. Classical Arabic Texts.** Lecture, three hours. Prerequisites: courses 102A-102B-102C. Reading and interpretation of texts from classical Arabic literature: Koran, historiography, geography and poetry. Mr. Bonebakker

**132A-132B-132C. Philosophical Texts.** Three hours. Prerequisites: courses 102A-102B-102C or consent of the instructor. A study of excerpts from the major works of medieval Arab philosophy. The Staff

**\*12140A-140B-140C. Modern Arabic Texts.** Lecture, three hours. Prerequisites: courses 102A-102B-102C. Readings and interpretation of modern Arabic texts. The Staff

**\*141. Modern Arabic Literature.** Prerequisite: course 140 or its equivalent. Readings of selected texts representing the most important modern styles and trends. May be repeated for credit with the consent of the instructor. The Staff

**\*150A-150B. Survey of Arabic Literature in English.** Lecture, three hours. Knowledge of Arabic is not required. Courses 150A and 150B may be taken independently for credit. Mr. Bonebakker

**199. Special Studies in Arabic.** (½ to 2 courses) Prerequisite: consent of the instructor. The Staff

#### Graduate Courses

**\*220A-220B-220C. Islamic Texts.** Lecture, two hours. Scripture and interpretation in Islam; traditional Scholarship; historical and literary problems of modern research; selections from various fields of Islamic thought. May be repeated for credit. Mr. Poonawala

**\*230A-230B-230C. Arabic Poetry.** Lecture, two hours. Prerequisite: consent of the instructor. Readings in Arabic poetry from various periods. May be taken independently for credit. Mr. Bonebakker

**\*240A-240B-240C. Arab Historians and Geographers.** Two hours. Readings from the works of the most outstanding Arab historians and geographers of the classical period of Islam. Mr. Poonawala

**\*250A-250B-250C. Seminar in Arabic Literature.** Two hours. May be repeated for credit with the consent of the instructor. Mr. Bonebakker

**\*260A-260B-260C. Introduction to Modern Arabic Dialects.** Lecture, three hours. Prerequisites: Arabic 103A-103B-103C or consent of the instructor. Survey of partition and geographic distribution of Modern Arabic dialects; common structural features and contrasts with Classical Arabic; socio-linguistic evaluation of the Arabic diglossia; analysis of representative texts. The Staff

**\*280. Structure of Classical Arabic.** Three hours. Prerequisites: Arabic 103A-103B-103C or consent of the instructor. The patterning of Classical Arabic at the morpho-phonemic, morphological, and morpho-syntactic structural levels; application of traditional, statistical, and generative methods to the synchronic investigation of structural features. The Staff

#### Individual Study and Research

**596. Directed Individual Study.** (½ to 2 courses) The Staff

**597. Examination Preparation.** (½ to 2 courses) The Staff

**599. Dissertation Research and Preparation.** (1/2 to 2 courses) The Staff

#### Related Courses in Another Department

**History 134A-134B.** Near and Middle East from 600 A.D. 267A-267B. Seminar in Near Eastern History.

### Armenian

**\*12101A-101B-101C. Elementary Modern Armenian.** Four hours. Armenian grammar, conversation and exercises. The Staff

**\*12102A-102B-102C. Intermediate Modern Armenian.** Four hours. Prerequisites: courses 101A-101B-101C or the equivalent. Reading of selected texts, composition and conversation. The Staff

**103A-103B. Advanced Modern Armenian.** Three hours. Prerequisites: courses 102A-102B-102C or the equivalent. Readings in advanced modern Armenian texts. Mr. Sanjian

**\*130A-130B. Elementary Classical Armenian.** Three hours. Grammar of the Classical Armenian language and readings of selected texts. Mr. Sanjian

**\*131A-131B. Intermediate Classical Armenian.** Three hours. Prerequisites: courses 130A-130B or the equivalent. Reading of selected texts. Mr. Sanjian

**\*132A-132B. Advanced Classical Armenian.** Three hours. Prerequisites: courses 131A-131B or the equivalent. Readings in advanced Classical Armenian texts. Mr. Sanjian

**\*150A-150B. Survey of Armenian Literature in English.** Three hours. Knowledge of Armenian is not required. Courses 150A and 150B may be taken independently for credit. Mr. Sanjian

**\*160A-160B. Armenian Literature of the 19th and 20th Centuries.** Three hours. Prerequisites: courses 102A-102B-102C or the equivalent. Reading of texts and discussion of various genres of modern Armenian literature, within the context of the Armenian Cultural Renaissance. Mr. Sanjian

**199. Special Studies in Armenian Language and Literature.** (½ to 2 courses) Prerequisite: consent of the instructor. The Staff

#### Graduate Courses

**\*207. Armenian Intellectual History.** Lecture, three hours. Prerequisites: none. Intellectual and cultural trends reflected in Armenian literature, historiography, religious and philosophical thought. Mr. Sanjian

**\*210. History of the Armenian Language.** Three hours. Prerequisite: consent of the instructor. The development of the Armenian language in its various stages: Classical, Middle, and Modern. Mr. Sanjian

**\*220. Armenian Literature of the Golden Age (A.D. Fifth Century).** Three hours. Prerequisites: courses 131A-131B or the equivalent. Readings of texts and discussion of literary genres; the course will concentrate on both original works and those translated from Greek and Syriac. Mr. Sanjian

**\*250A-250B. Seminar in Armenian Literature.** Three hours. Prerequisite: consent of the instructor. Selected topics from various periods of Armenian literature. May be repeated for credit. Mr. Sanjian

**\*290. Seminar in Armenian Paleography.** Three hours. Prerequisite: consent of the instructor. Discussion of variety of Armenian scripts and training in the use of manuscripts. Mr. Sanjian

#### Individual Study and Research

**596. Directed Individual Study.** (½ to 2 courses) Mr. Sanjian

**597. Examination Preparation.** (½ to 2 courses) Mr. Sanjian

**599. Dissertation Research and Preparation.** (½ to 2 courses) Mr. Sanjian

#### Related Courses in Other Departments

**History 131A-131B-131C.** Armenian History.

132. The Caucasus since 1801.

207. Armenian Intellectual History.

228. Methods in Armenian Oral History.

230S. Advanced Historiography: Armenian.

240. Topics in History: Armenia and the Caucasus.

286A-286B. Seminar in Armenian History.

**Indo-European Studies M150.** Introduction to Indo-European Linguistics.

### Berber

#### Upper Division Courses

**\*12101A-101B-101C. Elementary Berber.** Lecture, three hours; laboratory, two hours. Development of oral proficiency and analysis of basic grammatical structure. Mr. Penchoen

**\*12102A-102B-102C. Advanced Berber.** Prerequisites: courses 101A-101B-101C or consent of the instructor. Advanced study of Berber. Regional and stylistic variants in folk literature. Mr. Penchoen

**\*12120A-120B-120C. Introduction to Berber Literature.** Three hours. Prerequisites: courses 102A-102B-102C or consent of the instructor. The development of Berber literary forms: systematic analysis of texts and a study of Berber writing systems. Mr. Penchoen

**130. The Berbers.** Examination of the main features of Berber societies and cultures with particular attention being given to social structures and institutions on the one hand, and to customs, values and beliefs on the other. The course will present a broad framework within which the study of particular aspects of Berber cultures may be fruitfully pursued. Mr. Penchoen

**199. Special Studies in Berber Languages.** (½ to 2 courses) Prerequisite: consent of the instructor. Study based on the requirements of the individual student. Mr. Penchoen

#### Related Courses in Other Departments

**History 133A-133B.** History of North Africa from the Muslim Conquest.

**Linguistics 225M.** Linguistic Structures: Berber.

### Caucasian Languages

**\*1111A-111B-111C. Elementary Georgian.** Three hours. Prerequisite: consent of the instructor. Script, grammar, simple reading in this main Caucasian language.

**\*199. Special Studies in Caucasian Languages.** (½ to 2 courses) Prerequisite: consent of the instructor. The Staff

### Hebrew

#### Lower Division Courses

**\*121A-1B-1C. Elementary Hebrew.** Lecture, three hours; laboratory, two hours. Structural principles of grammar. Students who have previous knowledge of reading and some vocabulary are advised to take courses 10A-10B-10C. Students with credit for 10A will not receive credit for Hebrew 1A. Students with credit for 10B will not receive credit for 1B or 1C. The Staff

**\*1210A-10B-10C. Accelerated Elementary Hebrew.** Open to students who wish to cover the equivalent of two years college Hebrew in one academic year; for students who have previously studied the rudiments of Hebrew. Students with credit for Hebrew

1A will not receive credit for 10A. Students with credit for 1B and/or 1C will not receive credit for 10B. The Staff

#### Upper Division Courses

**\*12102A-102B. Intermediate Hebrew.** Lecture five hours. Prerequisites: courses 1A-1B-1C or the equivalent. Amplification of grammar; reading of vocalized texts from modern, Biblical, and Medieval/Rabbinic literature. Section I for students with strong grammatical background. Section II for students with strong conversational background. The two sections should be equal in both language skills by the end of the Winter Quarter. Mr. Sabar

**\*12103A-103B-103C. Advanced Hebrew.** Five hours. Prerequisites: courses 102A-102B-102C or the equivalent. Reading of unvocalized texts, primarily modern literature. Mr. Hakak

**\*12120. Biblical Texts.** Three hours. Prerequisites: courses 102A-102B-102C or the equivalent. Translations and analysis of Old Testament texts with special attention given to texts of primary literary and historical importance. May be repeated for credit. Mr. Lieber

**130. Rabbinic Texts.** Lecture, three hours. Prerequisites: courses 103A-103B-103C or consent of the instructor. Readings in Mishnah, Talmud, and/or Midrash. May be repeated for credit. Mr. Davidson

**135. Medieval Hebrew Texts.** Lecture, three hours. Prerequisites: Hebrew 103A-103B-103C or consent of instructor. Readings in Medieval Hebrew Prose and Poetry. May be repeated for credit up to four times. Mr. Davidson

**140. Modern Hebrew Poetry and Prose.** Lecture, three hours. Prerequisites: 103A, 103B, 103C, and consent of the instructor. A study of the major Hebrew writers of the past one hundred years: prose-Mendele, Ahad Ha'am, Agnon, Yizhar; poetry-Balikh, Tchernichovsky, Greenberg, Shlonsky, Alterman, Amihai. May be repeated for credit. Mr. Hakak

**160. The Hebrew Essay.** Three hours. Prerequisites: courses 103A-103B-103C or consent of the instructor. The Hebrew essay from its rise in Europe in the late eighteenth century to the contemporary Israeli essay; the literary, political, philosophical, and scholarly essay will be studied. May be repeated for credit. The Staff

**\*2190A-190B. Survey of Hebrew Grammar.** Three hours. Prerequisites: courses 102A-102B-102C or consent of the instructor. Descriptive and comparative study of the Hebrew phonology and morphology. Mr. Sabar

**199. Special Studies in Hebrew.** (½ to 2 courses) Prerequisite: consent of the instructor. The Staff

#### Graduate Courses

**\*25210. History of the Hebrew Language.** Prerequisites: courses 103A-103B-103C or consent of the instructor. The development of the Hebrew language in its various stages: Biblical, Mishnaic, Medieval, Modern, and Israeli; differences in vocabulary, morphology, syntax, and the influence of other languages; problems of language expansion in Israeli Hebrew. May be repeated for credit. Mr. Sabar

**220. Studies in Hebrew Biblical Literature.** Lecture, three hours. A critical study of the Hebrew text in relation to the major versions; philological, comparative, literary, and historical study of various Biblical books. May be repeated for credit. Mr. Segert

**230. Seminar in Medieval Hebrew Literature.** Three hours. May be repeated for credit. Mr. Davidson

**231. Texts in Judaeo-Arabic.** Prerequisites: a reading knowledge of Hebrew and Arabic. Reading of Philosophic Texts in Judaeo-Arabic. Mr. Davidson

**\*2241. Studies in Modern Hebrew Prose Fiction.** Studies in specific problems and trends in Hebrew prose fiction of the last two centuries. May be repeated for credit. Mr. Band

**\*2242. Studies in Modern Hebrew Poetry.** Studies in specific problems and trends in Hebrew poetry of the last two centuries. Mr. Band

#### Individual Study and Research

**596. Directed Individual Study.** (½ to 2 courses) The Staff

**597. Examination Preparation.** (½ to 2 courses) The Staff

**599. Dissertation Research and Preparation.** (½ to 2 courses) The Staff

#### Related Courses in Another Department

**History 137A-137B.** Jewish Intellectual History.

138A-138B. Jewish History.

## Iranian

### Lower Division Courses

**10A-10B-10C. Persian Conversation.** (½ course each) Three hours. Prerequisite: consent of the instructor. Systematic and structured conversation Persian. The Staff

### Upper Division Courses

**\*12101A-101B-101C. Elementary Persian.** Lecture, four hours; laboratory, two hours. The Staff

**\*12102A-102B-102C. Intermediate Persian.** Lecture, three hours; laboratory, three hours. Prerequisites: courses 101A-101B-101C or the equivalent. The Staff

**\*12103A-103B-103C. Advanced Persian.** Lecture, three hours. Prerequisites: 102A-102B-102C or the equivalent. Mr. Banani

**\*5140. Contemporary Persian Belle Lettres.** Three hours. Prerequisites: courses 103A-103B-103C or equivalent and consent of the instructor. A study of the major Persian poets and prose writers of the twentieth century; prose: Jamalzadeh, Hedayat, Chubuk, Al Ahmad, Sa'edi, Golestan; poetry: Nima, Shamlu, Farrokhzad, Akhavan. Mr. Banani

**\*5141. Contemporary Persian Analytical Prose.** Three hours. Prerequisites: courses 102A-102B-102C or equivalent and consent of the instructor. A study of selected modern Persian analytical and expository prose texts with emphasis on social sciences, literary criticism and history. Mr. Banani

**\*150A-150B. Survey of Persian Literature in English.** Three hours. Knowledge of Persian not required. Courses 150A and 150B may be taken independently for credit. Mr. Banani

**\*5169. Civilization of Pre-Islamic Iran.** (Formerly Indo-European Studies 169.) A survey of Iranian culture from the beginnings through the Sasanian period. Mr. Schmidt

**\*6170. Religion in Ancient Iran.** Lecture, four hours. History of religion in Iran from the beginnings to the Mohammedan conquest; Indo-Iranian background, Zoroastrianism, Manichaeism, Mazdakism. Mr. Schmidt

**\*5190A-190B. Introduction to Modern Iranian Studies.** Three hours. Prerequisites: Persian 101A-101B-101C or their equivalent. Survey of the Iranian languages. Comparative and historical grammar. Mr. Bodrogligeti

**199. Special Studies in Iranian.** (½ to 2 courses) Prerequisite: consent of the instructor. The Staff

### Graduate Courses

**\*2210A-210B. The History of the Persian Language.** Lecture, three hours. Prerequisite: consent of the instructor. Survey of the development of the new Persian language against the background of Middle and Old Persian. Mr. Bodrogligeti

**\*2211A-211B. Modern Iranian Dialects.** Four hours. Prerequisites: Linguistics 100 or equivalent and consent of the instructor. A survey of the Northwestern and Southwestern Iranian languages, and their interaction with the non-Iranian languages of Iran. Discussion includes historical development, linguistic affinities and modern distribution. Material gathered in the field will supplement lectures. May be repeated for credit with the consent of the instructor. The Staff

**\*2220A-220B. Classical Persian Texts.** Three hours. Prerequisites: courses 103A-103B-103C or consent of the instructor. Study of selected classical Persian texts. May be taken independently for credit. Mr. Banani

**\*5211. Rumi the Mystic Poet of Islam.** Three hours. Prerequisites: course 220A or 220B or equivalent and consent of the instructor. A study of the life and works of Rumi in the context of interaction of Sufism and poetic creativity. Mr. Banani

**\*6222A-7222B. Vedic.** (Formerly numbered Indo-European Studies 222A-222B and same as Oriental Languages M222A-222B.) Four hours. Prerequisites: A knowledge of Sanskrit equivalent to Oriental Languages 162, and consent of the instructor. Characteristics of the Vedic dialect and readings in the Rig-Vedic hymns. M222B only may be repeated for credit. Mr. Schmidt

**\*7230A-230B. Old Iranian.** (Formerly numbered Indo-European Studies 230A-230B.) Four hours. Prerequisite: consent of the instructor. Studies in the grammars and texts of Old Persian and Avestan. Comparative considerations. 230B only may be repeated for credit. Mr. Schmidt

**\*2231A-231B. Middle Iranian.** (Formerly numbered Indo-European Studies 231A-231B.) Four hours. Prerequisite: consent of the instructor. Studies in the grammars and the texts of such Middle Iranian languages as best serve the students' needs (e.g., Pahlavi, Sogdian, Sakanian). 231B only may be repeated for credit. Mr. Schmidt

**\*2250. Seminar in Classical Persian Literature.** Three hours. Prerequisites: courses 103A-103B-103C and Iranian 199 or consent of the instructor. May be repeated two times for credit. Mr. Banani

**\*5251. Seminar in Contemporary Persian Literature.** Three hours. Prerequisites: course 140 or equivalent and consent of the instructor. Studies in specific problems and trends in Persian poetry and prose in the twentieth century. Mr. Banani

### Individual Study and Research

**596. Directed Individual Study.** (½ to 2 courses) The Staff

**597. Examination Preparation.** (½ to 2 courses) The Staff

**599. Dissertation Research Preparation.** (½ to 2 courses) The Staff

### Related Courses in Other Departments

**History 130A-130B-130C. Islamic Iran.**

**Oriental Languages 160. Elementary Sanskrit.**

161. Intermediate Sanskrit.

162. Advanced Sanskrit.

**Indo-European Studies 210. Indo-European Linguistics: Advanced Course.**

260A-260B. Seminar in Indo-European Mythology.

280A-280B. Seminar in Indo-European Linguistics.

**Linguistics 225U. Persian Phonology and Syntax.**

226V. Persian Syntax. Prerequisite: course 225U.

**Music 71K. Music of Persia.**

**Music 171K. Music of Persia.**

## Islamic

### Individual Study and Research

**596. Directed Individual Study.** (½ to 2 courses) The Staff

**597. Examination Preparation.** (½ to 2 courses) The Staff

**598. Thesis Research and Preparation.** (½ to 2 courses) The Staff

**599. Dissertation Research and Preparation.** (½ to 2 courses) The Staff

### Related Courses in Another Department

**History 135. Introduction to Islamic Culture.**

136. Islamic Institutions and Political Ideas.

209A-209B. The Modern Middle East.

## Jewish Studies

### Upper Division Courses

**110. Social, Cultural and Religious Institutions of the Jews.** This course will examine aspects of Jewish culture that are not treated in literature or history courses. The character and development of subjects such as the following will be considered: Jewish communal institutions; trades and occupations; contact with non-Jews; family institutions; educational institutions; folk beliefs and attitudes. The Staff

**\*150A-150B. Hebrew Literature in English.** Lecture, three hours. 150A and 150B may be taken independently for credit. 150A: Biblical and Apocryphal literature. 150B: Rabbinic and Medieval literature. Mr. Band, Mr. Davidson

**\*5151A-5151B. Modern Jewish Literature in English.** Lecture, three hours. Jewish Studies 151A-Diaspora literature, Jewish Studies 151B-Israeli literature. Both courses may be taken independently for credit. Mr. Band

**190. Undergraduate Seminar in Jewish Studies.** This course will examine a single topic in depth with the object of encouraging and guiding students' research in the area of Jewish Studies. Literary, cultural and historical subjects will be taken up in successive years, including: midrash; messianic; medieval communal institutions; relations of Jews to non-Jews in the late middle ages. The Staff

**199. Special Studies (Jewish Studies).** (½ to 2 courses) Prerequisite: Jewish Studies majors only. The Staff

## Near Eastern Languages

### Upper Division Course

**198. Special Studies in Near Eastern Languages.** (½ to 2 courses) Prerequisite: consent of the instructor. The Staff

### Graduate Courses

**200. Bibliography and Method of Near Eastern Languages and Literatures.** Two hours. Prerequisite: consent of the instructor.

One quarter required for the M.A. in Near Eastern Languages and Literatures. Introduction to bibliographical resources and training in methods of research in various areas of specialization offered by the department. May be repeated for credit. The Staff

**\*8M210. Survey of Afro-Asiatic Languages.** (Same as Linguistics M225AA.) Lecture, three hours. Prerequisite: consent of the instructor. A survey of the structures of a number of the representative languages from various major branches of the Hamito-Semitic (Afro-Asiatic) language family. The Staff

**\*5M241. Folklore and Mythology of the Near East.** (Same as Folklore M241.) Prerequisite: Folklore 101 or the equivalent. The Staff

**\*5290. Seminar in Paleography.** Three hours. To provide the students with the ability to cope with varieties of manuscripts.

### Individual Study and Research

**501. Near Eastern Languages Cooperative Program.** (½ to 2 courses) Prerequisite: Approval of UCLA Graduate Adviser and Graduate Dean. Approval of host campus instructor, Department Chairman and Graduate Dean. The course is used to record the enrollment of UCLA students in courses taken under cooperative arrangements with neighboring institutions. To be graded S/U. The Staff

**596. Directed Individual Study.** (½ to 2 courses) The Staff

**597. Examination Preparation.** (½ to 2 courses)

**599. Dissertation Research and Preparation.** (½ to 2 courses) The Staff

## Semitics

### Upper Division Courses

**\*12101A-101B-101C. Elementary Amharic (Modern Ethiopic).** Lecture, three hours. Elements of Amharic, and national language of Ethiopia; grammar and reading of texts. The Staff

**102A-102B-102C. Advanced Amharic (Modern Ethiopic).** Lecture, three hours. Prerequisites: courses 101A-101B-101C or consent of the instructor. The Staff

**110. Neo-Aramaic.** Lecture, three hours. Grammar and reading of selected texts (folktales, homilies, songs) in the modern Aramaic dialects of the Jews and Christians of Kurdistan. Mr. Sabar

**\*2130. Biblical Aramaic.** Lecture, three hours. Prerequisites: Hebrew 102A-102B-102C or consent of the instructor. Grammar of Biblical Aramaic and reading of texts. Mr. Segert

**\*2140A-140B. Elementary Akkadian.** Lecture, three hours. Elementary grammar and reading of texts in standard Babylonian. Mr. Buccellati

**\*2141. Advanced Akkadian.** Three hours. Prerequisite: consent of the instructor. Old Babylonian syntax; reading of basic Old Babylonian texts. Mr. Buccellati

**\*5142. Akkadian Literary Texts.** Three hours. Prerequisite: consent of the instructor. Selected readings from Akkadian myths and epics, with an introduction to the historical tradition of the works and their literary structure. Mr. Buccellati

### Graduate Courses

**201A-201B-201C. Old Ethiopic.** Lecture, two hours. Grammar of Old Ethiopic and reading of texts. The Staff

**202A-202B-202C. Readings in Old Ethiopic Literature.** Lecture, two hours. Prerequisites: courses 201A-201B-201C. The Staff

**209A-209B-209C. Comparative Study of the Ethiopian Languages.** Two hours. Prerequisite: consent of the instructor. Comparative study of the various Semitic Ethiopian languages: Geez, Tigrinya, Tigre, Amharic, Harari, Gurage, and Gafat. The Staff

**210. Ancient Aramaic.** Two hours. Prerequisite: course 130 or consent of the instructor. Reading of the surviving inscriptions and papyri. May be repeated for credit. Mr. Segert

**\*5215A-215B. Syriac.** Two hours. Morphology and syntax of the Syriac language; readings in the Syriac translation of the Bible and Syriac literature. 215B only may be repeated for credit. Mr. Segert

**\*1220A-220B. Ugaritic.** Two hours. Prerequisites: Hebrew 102A-102B-102C or consent of the instructor. Study of the Ugaritic language and literature. 220B only may be repeated for credit. Mr. Segert

**225. Phoenician.** Two hours. Prerequisites: Hebrew 102A-102B-102C or consent of the instructor. Study of Phoenician language and inscriptions. May be repeated for credit. Mr. Segert

**230. Seminar in Northwest Semitic Languages and Literatures.** Two hours. Prerequisite: consent of the instructor. May be repeated for credit. Mr. Segert

**240. Seminar in Akkadian Language.** Two hours. Prerequisite: consent of the instructor. Readings of texts from various dialects of

Akkadian; selected problems in the linguistic analysis of Akkadian dialects. May be repeated for credit. Mr. Buccellati

**240X. Seminar in Akkadian Language.** (¼ course) Prerequisite: consent of instructor. Readings of texts from various dialects of Akkadian; selected problems in the linguistic analysis of Akkadian dialects. May be repeated for credit. Semitics 240X is a one unit course for students who participate regularly in class meetings without producing the homework required of students in the regular course, Semitics 240. Mr. Buccellati

**241. Seminar in Akkadian Literature.** Two hours. Prerequisite: consent of the instructor. Readings of texts from various Akkadian literary genres; selected problems in literary history and stylistic analysis. May be repeated for credit. Mr. Buccellati

**241X. Seminar in Akkadian Literature.** (¼ course) Prerequisite: consent of instructor. Readings of texts from various Akkadian literary genres; selected problems in literary history and stylistic analysis. May be repeated for credit. Semitics 241X is a one unit course for students who participate regularly in class meetings without producing the homework required of students in the regular course, Semitics 241. Mr. Buccellati

**280A-280B-280C. Seminar in Comparative Semitics.** Two hours. The Staff

**290A-290B-290C. Comparative Morphology of the Semitic Languages.** Two hours. Prerequisites: courses 280A-280B-280C or consent of the instructor. Comparative study of the noun and verb of the various Semitic languages (Arabic, Hebrew, Ethiopic, Akkadian, and Aramaic). Mr. Leslau

### Individual Study and Research

**596. Directed Individual Study.** (½ to 2 courses) The Staff

**597. Examination Preparation.** (½ to 2 courses) The Staff

**599. Dissertation Research and Preparation.** (½ to 2 courses) The Staff

## Turkic Languages

### Upper Division Courses

**\*12101A-101B. Elementary Turkish.** Five hours. Grammar, reading, conversation and elementary composition drills. Mr. West

**\*12102A-102B. Intermediate Turkish.** Five hours. Prerequisites: courses 101A-101B or the equivalent. Continuing study of grammar, reading, conversation and composition drills. Mr. West

**\*12103A-103B. Advanced Turkish.** Five hours. Prerequisites: courses 102A-102B or equivalent. Reading in modern literature and social science texts; conversation and composition. Mr. West

**\*5112A-112B-112C. Uzbek.** Three hours. Prerequisite: Turkic 102A or consent of the instructor. Grammar, composition drills, reading of literary and folkloric texts. Mr. Bodrogligeti

**114A-114B-114C. Bashkir.** Three hours. Prerequisites: Turkic 102A or consent of the instructor. Grammar, reading of literary and folkloric texts. Mr. Bodrogligeti

**160A-160B. Cultural History of the Turks.** Lecture, three hours. Prerequisites: none. A survey of the cultural history of the Turks, as seen primarily through their literature, from their early history to the present. Mr. West

**\*2180A-180B-180C. Introduction to Turkic Studies.** Three hours. Prerequisite: consent of the instructor. Obligatory for everyone in the Turkish program. Introduction to Turkic Philology and an ethnic and cultural survey of the Turkic people. Mr. Bodrogligeti

**199. Special Studies in Turkic Languages.** (½ to 2 courses) Prerequisite: consent of the instructor. The Staff

### Graduate Courses

**210A-210B-210C. Ottoman.** Lecture, three hours. Prerequisites: 101A-101B-101C or 112A-112B-112C or 114A-114B-114C or consent of the instructor. Introduction to Ottoman: descriptive grammar, Arabic and Persian elements in grammar and vocabulary. Reading and composition drills. Mr. West

**\*2211. Ottoman Diplomatics.** Three hours. Prerequisites: courses 210A-210B-210C or the equivalent. Organization and contents of the Ottoman archives; reading and discussion of documents and registers. Introduction to the use of Ottoman archive materials as a source for historical research. Mr. Shaw

**\*220A-220B-220C. Chagatay.** Lecture, three hours. Prerequisites: Turkic 101A-101B-101C or 112A-112B-112C or 114A-114B-114C or consent of the instructor. Introduction to Chagatay: descriptive grammar, Arabic, Persian and Tajik elements in grammar and vocabulary. Readings and composition drills. Mr. Bodrogligeti

**\*225A-225B-225C. Old Turkic: Turk and Uygur.** Lecture, three hours. Prerequisites: Turkic 180A-180B-180C and consent of the instructor. Textual and linguistic analysis of Turk and Old Uygur documents: inscriptions, manichean and buddhist literary

works. Given in alternate years; to be given 1978-1979.

Mr. Bodrogligeti

**\*5230A-230B-230C. A Historical and Comparative Survey of the Turkic Languages.** Three hours. Prerequisites: Turkic 180A-180B-180C. Extinct and living Turkic languages. The history of Turkic: developments in the phonemic, grammatical and lexical systems from the 8th to the 20th centuries. Structural analysis of the Turkic languages on a comparative basis. Mr. Bodrogligeti

**\*235A-235B. Middle Turkic: Karakhanid, Khorazmian, Mamlukkipchak and Old Anatolian.** Lecture, three hours. Prerequisites: Turkic 180A-180B-180C and consent of the instructor. A survey of Middle-Turkic documents. Textual and linguistic analysis of Middle-Turkic texts from various literary genres. Given in alternate years; to be given 1978-1979. Mr. Bodrogligeti

**\*5240A-240B-240C. Islamic Texts in Ottoman.** Three hours. Prerequisites: Turkic 210A-210B-210C or consent of the instructor. A philological and linguistic survey of the basic Islamic source material written in the Ottoman literary language. Reading and discussion of Ottoman texts on Islamic topics. Mr. Bodrogligeti

**\*5250A-250B-250C. Islamic Texts in Chagatay.** Three hours. Prerequisites: Turkic 220A-220B-220C or consent of the instructor. A philological and linguistic survey of the basic Islamic source material written in the Chagatay literary language. Reading and discussion of Chagatay texts on Islamic topics. Mr. Bodrogligeti

**\*2280A-280B. Seminar in Modern Turkish Literature.** Seminar, two hours. Prerequisites: Turkic 102B or the equivalent and the consent of the instructor. Specific issues and trends in the development of Turkish literature from the middle of the 19th century to the present. Mr. West

**\*2290A-290B. Seminar in Classical Turkic Literatures: Ottoman, Chagatay and Azeri.** Lecture, two hours. Prerequisites: Turkic 210 and/or 220 and consent of the instructor. Survey of the Islamic literatures of the Turks in the Classical period. Readings of Ottoman, Chagatay and Azeri texts from various literary genres. Discussion of stylistic, prosodic and linguistic characteristics. Mr. Bodrogligeti

### Individual Study and Research

**596. Directed Individual Study.** (½ to 2 courses) The Staff

**597. Examination Preparation.** (½ to 2 courses) The Staff

**599. Dissertation Research and Preparation.** (½ to 2 courses) The Staff

### Course in Another Department

**History 201A. History of the Eurasian Nomadic Empires.**

## Urdu

### Upper Division Courses

**\*1101A-101B-101C. Elementary Urdu.** Three hours. Prerequisite: consent of the instructor. Elements of Urdu, the language of Pakistan.

**\*1199. Special Studies in Urdu.** Prerequisite: consent of the instructor.

### Related Courses in Another Department

**South Asian Languages 171A-171B-171C. Hindi.**

## NEUROSCIENCE (INTERDEPARTMENTAL)

An interdisciplinary program of graduate training leading to the Ph.D. in Neuroscience is offered, utilizing facilities, resources, and activities of the Brain Research Institute and administered by an interdepartmental degree committee.

Applicants must satisfy minimum requirements for admission to the Graduate Division. See Admission to Graduate Status. The program is designed particularly for students from the health and life sciences, but applications are encouraged from prospective trainees from the physical sciences and engineering as well. Recommended preparation includes mathematics through calculus, and at least one year each of general chemistry, organic chemistry, physics and basic biology. The Graduate Record Examination or Medical College Admission Test is required.

All students are required to complete a core curriculum designed to provide basic knowledge of the anatomy, physiology, and chemistry of neural function. Thereafter, the student may pursue an educational experience through any of eight subdisciplines: neuroanatomy, neurochemistry, neurophysiology, behavior, neurocybernetics and communications, neuroendocrinology, neuropharmacology, and immunology.

Both the core and in-depth curricula include major commitments to appropriate courses listed by departments, in addition to offerings

shown below. Written and oral qualifying examinations normally are taken as the formal instruction period approaches completion.

Prospective applicants may inquire concerning the availability of this curriculum by consulting the Program Coordinator, 73-375 Brain Research Institute, Center for the Health Sciences.

### Graduate Courses

**\*1200A-200B-200C. Clinical Concepts in the Neurosciences.** (¼ course each) Presents information concerning neurological and psychiatric disorders for students from basic science backgrounds. Mr. Hanley, Mr. Walter

**\*1205. Brain-Behavioral Strategies for the Neurosciences.** (¼ course) Prerequisite: consent of instructor. Emphasis will be placed on behavioral designs, methods and instruments employed to test specific neurological afferent-efferent and integrative systems of the central nervous system. The programming of signals and incentives in arousal, habituation, classical conditioning and operant conditioning paradigms will be discussed in terms of the neural challenges for the coping animal. Behavioral methods will be emphasized along with concurrent recording of neurophysiological data. This course is designed primarily to present practical behavioral techniques for the neuroscience students. Mr. McGuire

**M206A-206B. Neurosciences: The Introductory Course for Graduate Students.** (1½ courses, 1¼ courses) (Same as Anatomy M206A-206B) Two hours of lecture and two of lab per week in the winter quarter; five hours of lecture and two of lab per week in the spring quarter. Prerequisite: a course (or equivalent) in basic and/or general physiology such as Biology 171 or Physiology 101 or consent of instructor. This course is offered on an In Progress basis, which requires students to complete the full two-quarter sequence, at the end of which time a grade is given for all quarters of work. Introductory course in the basic principles of the nervous system for graduate students as a prerequisite to more advanced courses. Fundamental approaches to neuroanatomy (Winter Quarter), neurophysiology and the brain mechanisms for behavior (Spring Quarter) will be stressed. Mr. Scheibel and the Staff

**233. Seminar in Neuroscience.** (¼ course) Topics of current importance will be presented for discussion. Subject matter will be announced. The Staff

**254. Interdisciplinary Research Seminar.** (¼ course) Lectures and discussions concern many different disciplinary approaches to knowledge of brain function. The subject matter serves to broaden the experience of students studying in different fields other than that of the lecturer and offers new information in depth from students in fields closely related to the subject discussed.

**256A-256B-256C. Survey of the Basic Neurological Sciences.** (¼ course each) Summary information concerning methodologies utilized in different research approaches to brain study, (e.g., neurophysiology, neuroendocrinology, brain ultrastructure, neuropharmacology, and others) and brief review of present state of knowledge available from each. For students with interest in interdisciplinary aspects of brain research. Mr. Sterman

**259A-259B-259C. Neurophysiology of Behavior: The Fetus, Newborn, and Infant.** (¼ course each) An integrated review of neuroanatomic, neurophysiologic, and behavioral development of human and animal fetuses and infants. Behavior will be correlated with the development of the brain during this period of rapid change in both. Mr. Parmelee

**596. Directed Individual Study or Research.** (½ to 3 courses) Prerequisite: consent of instructor. Mr. Eiduson

**597. Preparation for the Doctoral Qualifying Examination.** (½ to 3 courses) Prerequisite: consent of instructor. Mr. Eiduson

**599. Dissertation Research for Ph.D. Candidates.** (1 to 3 courses) For students requiring special instruction or time to work on dissertation. Mr. Eiduson

## NURSING

(Department Office, 12-139 Center for the Health Sciences)

Harriet C. Moidel, R.N., M.A., *Professor of Nursing*.  
Mary E. Reres, R.N., M.P.N., Ed.D., *Professor of Nursing*.  
Maria W. Seraydarian, Ph.D., *Professor of Nursing*.  
Donna L. Vredevoe, Ph.D., *Professor of Nursing*.  
Lulu Wolf Hassenplug, R.N., M.P.H., Sc.D., *Emeritus Professor of Nursing*.  
Dorothy E. Johnson, R.N., M.P.H., *Emeritus Professor of Nursing*.  
Agnes A. O'Leary, R.N., M.P.H., *Emeritus Professor of Nursing*.  
Pamela J. Brink, R.N., Ph.D., *Associate Professor of Nursing*.  
Beatrice M. Dambacher, R.N., D.N.Sc., *Associate Professor of Nursing*.  
Phyllis A. Putnam, R.N., Ph.D., *Associate Professor of Nursing*.  
Sharon J. Reeder, R.N., Ph.D., *Associate Professor of Nursing*.  
Barbara M. Artinian, R.N., Ph.D., *Assistant Professor of Nursing*.  
Betty L. Chang, R.N., D.N.Sc., *Assistant Professor of Nursing*.  
Barbara A. Clemence, R.N., D.N.Sc., *Assistant Professor of Nursing*.  
Jeanne F. Deloseph, R.N., Ph.D., *Assistant Professor of Nursing*.  
Loucine M. Huckabay, R.N., Ph.D., *Assistant Professor of Nursing*.  
Lee Schmidt, R.N., M.N., *Assistant Professor of Nursing*.



Sally A. Thomas, R.N., Ph.D., *Assistant Professor of Nursing.*  
 Donna F. Ver Steeg, R.N., Ph.D., *Assistant Professor of Nursing.*  
 Betty L. Williams, R.N., M.N., M.S., *Assistant Professor of Nursing.*  
 Marilyn J. Wood, R.N., Dr. P.H., *Assistant Professor of Nursing.*  
 Norberta W. Brown, R.N., Ed.D., *Assistant Professor of Nursing in Residence.*  
 Carol A. Kirgis, R.N., M.S., *Acting Assistant Professor of Nursing.*  
 Nancy L. Anderson, R.N., M.N., *Assistant Clinical Professor of Nursing.*  
 Diane J. Angelini, R.N., M.N., *Assistant Clinical Professor of Nursing.*  
 Barbara T. Beal, R.N., M.N., *Assistant Clinical Professor of Nursing.*  
 Christine P. Burr, R.N., M.N., *Assistant Clinical Professor of Nursing.*  
 Randy Caine, R.N., M.S., *Assistant Clinical Professor of Nursing.*  
 Barbara Crain, R.N., M.S., *Assistant Clinical Professor of Nursing.*  
 Anayis Derdarian, R.N., M.N., *Assistant Clinical Professor of Nursing.*  
 Kathleen A. Dracup, R.N., M.N., *Assistant Clinical Professor of Nursing.*  
 Marsha Fowler, R.N., M.S., *Assistant Clinical Professor of Nursing.*  
 Maire L. Friel, R.N., M.N., *Assistant Clinical Professor of Nursing.*  
 Ruth B. Harris, R.N., M.S.N., *Assistant Clinical Professor of Nursing.*  
 Corrine L. Hatton, R.N., M.N., *Assistant Clinical Professor of Nursing.*  
 Doris Holm, R.N., M.N., M.S., *Assistant Clinical Professor of Nursing.*  
 Lynn M. Johnson, R.N., M.N., *Assistant Clinical Professor of Nursing.*  
 Cynthia B. Kelley, R.N., M.S., M.A., M.Ed., *Assistant Clinical Professor of Nursing.*  
 Juanita Lee, R.N., M.N., *Assistant Clinical Professor of Nursing.*  
 Lynn R. Messenger, R.N., M.N., *Assistant Clinical Professor of Nursing.*  
 Brenda C. Mills, R.N., M.S., *Assistant Clinical Professor of Nursing.*  
 Noreen P. O'Brien, R.N., M.N., *Assistant Clinical Professor of Nursing.*  
 Brooke P. Randell, R.N., M.N., *Assistant Clinical Professor of Nursing.*  
 Carmela R. Rizzuto, R.N., M.S., *Assistant Clinical Professor of Nursing.*  
 Linda P. Sarna, R.N., M.N., *Assistant Clinical Professor of Nursing.*  
 Lorraine T. Sterman, R.N., M.N., *Assistant Clinical Professor of Nursing.*  
 Carolyn F. Troupe, R.N., M.A., *Assistant Clinical Professor of Nursing.*  
 Gwen C. Uman, R.N., M.N., *Assistant Clinical Professor of Nursing.*  
 Ann D. Drice, R.N., M.S., *Lecturer in Nursing.*  
 Charles K. Ferguson, Ed.D., *Lecturer in Nursing.*  
 Evelyn K. Guilbert, R.N., M.S., *Lecturer in Nursing.*  
 Joy Dan Graves, R.N., M.S., *Lecturer in Nursing.*  
 Gladys B. Jacques, R.N., M.N., *Lecturer in Nursing.*  
 Cynthia C. Scalzi, R.N., M.N., *Lecturer in Nursing.*

The School of Nursing accepts students of junior or higher standing and offers curricula leading to the degrees of Bachelor of Science and Master of Nursing.

#### Preparation for the Major

Completion of 21 courses (84 quarter units) of college work including the courses listed under the Prenursing Curriculum in the College of Letters and Science.

#### The Major

At least 25 courses (100 quarter units) of required upper division nursing courses and elective courses designed to prepare university students for professional nursing responsibilities in the care of the patient and his family.

#### Admission to Graduate Status

Requirements for admission to graduate status are: 1) Graduation from a recognized college or university having an accredited baccalaureate nursing program equivalent to that of the School of Nursing, University of California, Los Angeles and satisfactory to the Graduate Division, Los Angeles. Students who have completed other curricula may be required to enroll in certain undergraduate nursing courses which generally will not be accepted in fulfillment of the requirements for advanced degrees. 2) Status as a registered nurse. Prior to entry into any clinical practicum, evidence of status as a registered nurse in the State of California is mandatory. 3) An upper division statistics course, or a lower division statistics course with content equivalent to Public Health 160A must be completed prior to entrance into the School of Nursing. 4) Professional and/or academic competence in nursing attested through letters of recommendation. 5) A scholarship record satisfactory to the Graduate Division, Los Angeles and to the School of Nursing, University of California. 6) GRE test results must be submitted to the Graduate Admissions Office and the School of Nursing.

#### Master of Nursing Degree Requirements

1. A minimum of three quarters in full time (8 credits/quarter) academic residence.
2. A minimum of ten courses (40 credits) in the 100, 200, 400 and 500 series; eight of these courses must be taken in the School of Nursing with five (20 credits) in the 200 and 400 series.
3. A minimum grade point average of 3.0.
4. A comprehensive examination or a thesis.

#### Required Courses

The candidate for the M.N. degree must successfully complete a minimum of one course from each of the following areas:

1. Research in Nursing (N 204).
2. Selected Problems in Nursing Care (N 210, 211, 221, 222, 223, 224, 225).
3. Supervised Practice in Nursing Care (N 402, 421A, 422A, 423A, 424A, 425A).
4. Clinical Nursing Specialization (N 421B, 422B, 423B, 424B, 425, 429A).

#### Upper Division Courses

##### 101. Introduction to Art and Science of Nursing. (2 courses)

Lecture, four hours, discussion two hours; laboratory, 12 hours, auto-tutorial laboratory, variable; seminars, variable. An introduction to nursing theory and practice. The content will include the following modules: nursing process, pharmacology, interpersonal and technical skills. Methodology will include laboratory, lectures, discussion, seminars, autotutorial laboratory and clinical application.  
 Ms. Harris, Ms. Johnson

**104A. Behavior of Man in Health and Illness.** Lecture, four hours. An examination of the health-illness continuum from the framework of social and biological sciences. Content includes role theory, developmental theory, transcultural communication theory and other theories relevant to nursing practice.  
 Ms. Guilbert

**104B. Behavior of Man in Health and Illness.** Lecture, four hours. Prerequisite: course 104A. An examination of the health-illness continuum from the framework of illness as a stressor and the possible responses to such stress. Content includes anxiety, pain, cognitive disturbances, loss and other responses relevant to nursing practice.  
 Ms. Guilbert

**104C. Behavior of Man in Health and Illness.** Lecture, four hours. Prerequisites: courses 104A and 104B. Continuation of the examination of the health-illness continuum from the framework of illness as a stressor and the possible responses to such stress. Content includes anxiety, pain, cognitive disturbances, loss and other responses relevant to nursing practice.  
 Ms. Guilbert and the Staff

**109. Communication in Health Care.** Lecture, two hours; laboratory, six hours. Study of basic communication and group process theory and its application to practice. Laboratory experience emphasizes development of each individual's ability to communicate effectively in a diad and in a small group.  
 Ms. Randell

**120A. Clinical Nursing.** Five weeks. Lecture, four hours; laboratory, 24 hours. Prerequisites: courses 101, 109 and Physiology 105N. Clinical application of nursing theory in community situations: acute care, convalescent and ambulatory. Theoretical content will include pathophysiology, pharmacology and treatment modalities. Application of the theoretical concepts related to the nursing care of the child and his family.  
 Ms. Messenger

**120B. Clinical Nursing.** Five weeks. Lecture, four hours; laboratory, 24 hours. Prerequisites: courses 101, 109 and Physiology 105N. Clinical application of nursing theory in community situations: acute care, convalescent and ambulatory. Theoretical content will include pathophysiology, pharmacology and treatment modalities. Application of the theoretical concepts of reproduction to the nursing care of the family.  
 Ms. Deloeph

**120C. Clinical Nursing.** Five weeks. Lecture, four hours; laboratory, 24 hours. Prerequisites: courses 101, 109 and Physiology 105N. Clinical application of nursing theory in community situations: acute care, convalescent and ambulatory. Theoretical content will include pathophysiology, pharmacology and treatment modalities. Application of the theoretical content related to the nursing care of the patient undergoing medical interventions.  
 Ms. Kelley

**120D. Clinical Nursing.** Five weeks. Lecture, four hours; laboratory, 24 hours. Prerequisites: courses 101, 109 and Physiology 105N. Clinical application of nursing theory in community situations: acute care, convalescent and ambulatory. Theoretical content will include pathophysiology, pharmacology and treatment modalities. Application of the theoretical content related to the patient undergoing surgical intervention.  
 Ms. Caine

**120E. Clinical Nursing.** Five weeks. Lecture, four hours; laboratory, 24 hours. Prerequisites: courses 101, 109 and Physiology 105N. Clinical application of nursing theory in community situations: acute care, convalescent and ambulatory. Theoretical content will include pathophysiology, pharmacology and treatment modalities. Application of mental health content related to the nursing care of individuals, groups or communities.  
 Ms. Graves

**120F. Clinical Nursing.** Five weeks. Lecture, four hours; laboratory, 24 hours. Prerequisites: courses 101, 109 and Physiology 105N. Clinical application of nursing theory in community situations: acute care, convalescent and ambulatory. Theoretical content will include pathophysiology, pharmacology and treatment modalities. Application of community health concepts to nursing care in public health agencies.  
 Ms. Crain

**M158. Health in Culture and Society.** (Same as Anthropology M158.) Prerequisite: upper division standing. An examination of the theories and methods of medical anthropology in relation to cross-cultural health systems, role networks, attitude and belief systems of the participants. Emphasis will be placed upon interaction networks in health care systems.  
 Ms. Brink

**184. Evolution and Dynamics of the Nursing Profession.** Lecture, four hours. A study of the evolution of nursing focusing on historical, ethical, moral, legal, and institutional ramifications of nursing practice. In addition, consideration will be given to the rights, obligations, societal, and institutional expectations of the professional nurse.  
 Ms. Ver Steeg

**188. Seminar in Physiology. (½ course)** Discussion, two hours. Prerequisite: Physiology 105N or equivalent. Student presentation of selected topics in physiology based on recent monographs,

review articles and original research papers. Topics selected each quarter designed to amplify and extend information presented in lectures in physiology 105N. May be repeated for credit.  
 Ms. Seraydarian

**189. Human Sexuality.** Lecture, three hours; discussion, one hour. Prerequisite: consent of instructor. Lectures, discussions and case presentations considering human sexuality, its joys and pleasures, pitfalls and problems. An interdisciplinary approach encompassing anatomic, physiologic, psychologic and social aspects of heterosexual and homosexual relationships; including development of gender identity, intercourse, pregnancy, abortion, contraception and venereal disease.  
 Ms. Reeder

**190A. Advanced Clinical Nursing. (1½ courses)** Lecture, two hours; laboratory, 20 hours. Prerequisites: successful completion of courses 101, 104 series and 120 series. Beginning concentration in a clinical area of students choice.  
 The Staff

**190B. Advanced Clinical Nursing. (1½ courses)** Lecture, two hours; laboratory, 20 hours. Prerequisites: successful completion of courses 101, 104 series, 120 series and 190A. Beginning concentration in a clinical area of students choice.  
 The Staff

**193. Introduction to Research.** Lecture, four hours. An introduction to planning a research project based upon a simple question. Includes rules for definition of terms, alternative methods of writing purposes, selecting a sample, choosing a data collection instrument, planning for data analysis, protection of human rights, reading research reports, and writing a research proposal.  
 The Staff

**195. Principles of Change and Change Agent Roles.** Lecture, two hours; discussion, two hours. Theories and methods of change and their application to nursing. Principles of leadership, teaching-learning, health delivery systems, organization of nursing care and patient advocacy.  
 Ms. Drice

**196. Health Care Problems of Minority Group Members.** Prerequisite: Sociology 1A or 101. Description and discussion of the special health care problems which members of minority groups face. These problems may be related to socio-economic status as well as ethnic background and subcultural differences.  
 Ms. Drice

**199. Special Studies in Nursing. (½ to 4 courses)** Prerequisites: senior standing and/or consent of the instructor. Individual study of a problem in the field of nursing. May be repeated for credit but only one quarter course (4 quarter units) may be applied toward the Bachelor of Science degree. Grading basis (passed/not passed or letter grade) is to be determined by the student and instructor.  
 The Staff

#### Graduate Courses

##### I. Theory and Research in Nursing

**203. Theoretical Framework for Nursing Practice.** Lecture, four hours. Comparative study of selected conceptual models of nursing and the recipient of nursing, with particular emphasis on the regulatory model, the adaptation model, the supplementary model, and the complementary model.  
 Ms. Williams

**204. Research in Nursing.** Lecture, four hours. Prerequisite: introductory statistics, course 193 or equivalent. In-depth examination of the research process relating to delineation and investigation of nursing problems. Emphasis on development and use of theoretical frameworks. A variety of methodologies and data analysis techniques are examined as they apply to the development of complex research questions.  
 The Staff

**205A. Qualitative Research Methods in Nursing.** (Formerly numbered 205B.) Lecture, four hours. Prerequisite: course 204. Emphasis is placed upon nursing research designs utilizing the field method approach, ethnomethodology, and/or inductive methods.  
 Ms. Artinian

**205B. Quantitative Research Methods in Nursing.** Lecture, four hours. Prerequisite: course 204. Emphasis is placed on nursing research designs requiring statistical analysis of data.  
 The Staff

##### II. Selected Problems in Nursing Care.

**210. Respiratory Physiology As It Related to Nursing.** (Formerly numbered 410.5.) Lecture, three hours; discussion, one hour; seminars. Prerequisite: upper division course in human physiology. An advanced treatment of the topic presented in lectures and seminars with emphasis on current research. Application of knowledge to nursing problems will be stressed.  
 Ms. Seraydarian

**211. Cardiovascular Physiology As It Relates to Nursing.** (Formerly numbered 410.5.) Lecture, three hours; discussion, one hour; seminars. Prerequisite: upper division course in human physiology. An advanced treatment of the topic presented in lectures and seminars with emphasis on current research. Application of knowledge to nursing problems will be stressed.  
 Ms. Seraydarian

**212. Discontinuities in Family Health During the Reproductive Years.** Lecture, two hours; discussion, one hour. An overview of selected problems with health connotations that are potentially disruptive to the family during their childbearing years. Selected problems are examined in depth. Pertinent variables affecting the family's definition of the situation, their resources, strategies for

coping, and utilization of professional services are explored and their relevance for nursing practice is examined. Ms. Reeder

**M217. Selected Topics in Medical Anthropology.** (Same as Anthropology M269N.) Lecture, three hours. Prerequisite: M158 or consent of instructor. Any of the topics covered in upper division course, M158, will be selected each quarter, for intensive literature review and independent projects. The course may be repeated for credit. Ms. Brink

**221. Theoretical Frameworks for Developmental Problems, Middle and Later Years.** (Formerly numbered 410.3.) Lecture, four hours. Aspects of life span development relevant to understanding health needs in middle and later years will be studied. Changes in biological, cognitive, and psychosocial processes will be explored and implications for prevention and rehabilitative care considered. Ms. Putnam

**222. The Concept of Grief and Loss.** (Formerly numbered 400.) Lecture, three hours; laboratory, two to four hours. Prerequisite: enrollment in a clinical nursing course or concurrent. This course will deal with the concepts and theories of grief and loss, with a particular emphasis on the loss of a significant other. There will also be discussions about death and the dying person with the intent of assisting the care giver to deal more effectively with a person and/or family involved in a life-threatening experience. Ms. Hatton

**223. Management of Development Problems, Early Years.** (Formerly numbered 410.2.) Lecture, four hours. Study of selected human developmental theories, hypotheses, and concepts. Problems relevant to nursing are examined through the critique of pertinent literature. Ms. Kirgis

**224. Problems in Patient Motivation.** (Formerly numbered 410.4.) Lecture, one hour. The major purpose of this course will be an exploration of the phenomena which may occur when a person assumes the role of a sick patient. Ms. Thomas

**225. Problems in Environmental Management.** (Formerly numbered 410.1.) Lecture, four hours. The prevention and treatment of nursing problems related to conditions of the physical and social environment. Ms. Kirgis

**250. Seminar: Nursing in Other Cultures.** Lecture, four hours. Prerequisite: consent of instructor. Discussion of anthropological principles which affect nursing care in a particular cultural environment. Individual research projects based upon the medical problems found in such an environment and the projected nursing interventions relative to these findings. Ms. Brink

**264. Seminar in Primary Ambulatory Care.** (½ course) Seminar, two hours. Prerequisites: to be taken concurrently with 402A and/or B, or consent of instructor. Discussion of the concepts of team practice, inter- and intra-professional relationships, legal issues, and the socioeconomic aspects of primary care. Ms. Ver Steeg

### III. Clinical Specialization

#### A. Nursing Assessment

**401. Nursing Assessment and Intervention.** Lecture, two hours; laboratory, four to eight hours. Prerequisite: course 203 or concurrent. Instruction and experience in the systematic assessment of patients for the identification of nursing problems. Discussion and evaluation of major modes of interventive practice. Ms. Chang, Ms. Derdarian

**402A-402B. Primary Diagnosis for Nurse Practitioners.** (Formerly numbered 420.5.) Discussion, two hours; laboratory, up to sixteen hours. Prerequisite: one course in Selected Problems in Nursing Care. Collection, analysis and reporting of data used by the nurse practitioner in identification of patient problems. Principles and practice in history-taking, physical examination, laboratory and other diagnostic methodology. Advanced pathology and pathophysiology incorporated in integrated systems approach. Ms. Holm

**403. Physical Assessment for the Clinical Specialist.** (1 to 1½ courses) Lecture, four hours; optional seminars, two hours. Prerequisite: consent of instructor—not open to Primary Ambulatory Care majors. An introductory study of the basic techniques of history-taking and physical examination which are used by clinical specialists as part of the total nursing assessment process. Includes theory, demonstration, and practice of physical assessment methodology. Optional seminars provide content pertinent to selected specialty areas. Ms. Holm

**404. Comprehensive Group Theory.** Lecture, two hours; laboratory, two hours. This course will offer an in-depth study of group dynamics and group therapy, applicable to any health service area. It will focus on the study and application of group theory and practice relevant to nursing. The student will gain in-depth knowledge of group dynamics and group therapy, know how to apply the above theory to any area of nursing, develop a beginning ability to function as both leader and participant in the area of group dynamics and/or group therapy, and develop the ability to evaluate the effectiveness of group therapy. The Staff

**405. Assessment in Psychiatric Nursing.** Lecture, three hours; laboratory, two hours. A preparatory course for advanced clinical practice in mental health nursing. The theoretical portion of the course includes an overview of theories of personality, communication, psychopathology, development and treatment. The focus of the course is the application of this content through utilization of

the nursing process to mental health populations. The laboratory will involve group experience and the opportunity to assess the students' interviewing skills and his/her ability to establish a therapeutic relationship. Ms. Dambacher

**M410A-410B-410C. Nursing Care of the Developmentally Disabled.** (Same as Psychiatry M472A-472B-472C.) Lecture, one and one-half hours; discussion, one hour; laboratory, eight hours. Prerequisite: enrollment in the Master's Program of the School of Nursing. Study of the handicapping conditions of childhood and their effects upon the child and his/her family. This course combines didactic material and supervised clinical experience. Focus is on prevention, systematic assessment, planning, implementation and evaluation of nursing care. During the final quarter, the student participates in the assessment, planning and delivery of health care to the developmentally disabled in the community. Ms. Savino

**414. Current Perspectives in Respiratory and Cardiovascular Nursing.** (½ course) Lecture, one hour; discussion, one hour. Prerequisite: consent of instructor. Exploration of selected problems, trends and issues in respiratory and cardiovascular health care, with emphasis on their significance for the clinical nurse specialist. Ms. Holm

**415. Assessment in Respiratory and Cardiovascular Nursing.** (½ to 1½ courses) Lecture, one to four hours; laboratory, four to eight hours. Prerequisites: course 210 or 211, 414. Introduction to the basic methods of assessing respiratory and cardiovascular function in health and illness, with emphasis on their application in clinical nursing practice. Ms. Fowler

**416. Oncology and Treatment of Cancer.** Lecture, two hours; discussion one hour; laboratory, eight to ten hours. The emphasis is on providing the graduate student with the basic knowledge from biological, medical, physical, chemical sciences related to development, diagnosis, treatment, and prognosis of cancer. Also, providing of knowledge related to specific nursing care related to diagnostic and treatment modalities. Ms. Friel, Ms. Sarna

**417. Systematic Approach to Oncologic Nursing.** Lecture, two hours; discussion, two hours; laboratory, eight-ten hours. Prerequisite: course 416. The emphasis is on the clinical management of the person who has cancer. The focus is on the assessment of special physical and psychosocial problems of patients with diagnoses of cancer in a specific site. The focus is also providing the student with theoretical and technical skills necessary for the interventions of these problems. Ms. Friel, Ms. Sarna

#### B. Clinical Practica

**421A. Clinical Nursing of Children.** (Formerly numbered 420.1.) Discussion, two hours; laboratory up to 16 hours. Prerequisite: one course in Selected Problems in Nursing Care. Use of a theoretical model as a guide to practice in a pediatric setting. Refinement of skills and increased knowledge to prepare for clinical specialist role with emphasis on skills required to use a diagnostic nursing process. Ms. Schmidt

**421B. Advanced Clinical Nursing of Children.** (2 courses) (Formerly numbered 470.1.) Discussion, two hours; laboratory, up to 30 hours. Prerequisites: course 421A, consent of instructor. To develop increased competence in managing total care of pediatric patients with emphasis on patients with a particular nursing problem, disease entity or age group. To attain skill in working collaboratively as a leader with other health personnel. Ms. Schmidt

**421C. Clinical Specialization in Nursing of Children.** (2 courses) (Formerly numbered 470.1.) Discussion, two hours; laboratory, up to 30 hours. Prerequisites: course 421B, consent of instructor. Refinement and extension of professional knowledge and skills in the nursing of children. Ms. Schmidt

**422A. Clinical Maternity Nursing.** (Formerly numbered 420.4.) Discussion, two hours; laboratory, up to 16 hours. Prerequisites: consent of instructor, one course in Selected Problems in Nursing Care. Intensification and expansion of knowledge and expertise in giving care to mothers and infants in all phases of reproductive process. Pertinent variables considered as well as nursing process. Care of selected patients in family life and health care system. Ms. Reeder

**422B. Advanced Clinical Maternity Nursing.** (2 courses) (Formerly numbered 470.4.) Discussion, two hours; laboratory, up to 30 hours. Prerequisites: consent of instructor, course 422A. Refinement and extension of knowledge and expertise in the field of maternity nursing. Caring for mothers and infants at risk or normal reproductive processes with problems. Emphasis on role of clinical specialist, adaptation of role to various settings within organizational structure. Ms. Reeder

**422C. Clinical Specialization in Maternity Nursing.** (2 courses) (Formerly numbered 470.4.) Discussion, two hours; laboratory, up to 30 hours. Prerequisites: consent of instructor, course 422B. The refinement and extension of professional knowledge and skills in the practice of advanced maternity nursing. Ms. Reeder

**423A. Clinical Medical-Surgical Nursing.** (Formerly numbered 420.3.) Discussion, two hours; laboratory, up to 16 hours. Prerequisite: one course in Selected Problems in Nursing Care. A clinical practicum in a selected medical-surgical setting with emphasis on application of nursing problem theory and use of a

conceptual framework in practice, and on further development of knowledge and skills required of the professional practitioner. Ms. Chang, Ms. Moidel

**423B. Advanced Clinical Medical-Surgical Nursing.** (2 courses) (Formerly numbered 470.3.) Discussion, two hours; laboratory, up to 30 hours. Prerequisites: consent of instructor, course 423A. A study of clinical specialization and other expanding roles in nursing. Emphasis is placed upon continued refinement and extension of professional knowledge and skills in a selected clinical area. Practicum is planned in congruence with student's nursing career goals. Ms. Rizzuto

**423C. Clinical Specialization in Medical-Surgical Nursing.** (2 courses) (Formerly numbered 470.3.) Discussion, two hours; laboratory, up to 30 hours. Prerequisites: consent of instructor, course 423B. The refinement and extension of professional knowledge and skills in the practice of advanced medical-surgical nursing. Ms. Dracup

**424A. Clinical Psychiatric Nursing.** (Formerly numbered 420.2.) Discussion, three hours; laboratory, up to 10 hours. Prerequisite: one course in Selected Problems in Nursing Care. Development and demonstration of advanced competence in the identification and classification of variables which affect the interpersonal process. Emphasis is placed upon the assessment process. Ms. Dambacher

**424B. Advanced Clinical Psychiatric Nursing.** (2 courses) (Formerly numbered 470.2.) Discussion, three hours; laboratory, up to 20 hours. Prerequisites: consent of instructor, course 424A. Refinement and extension of knowledge and skills in clinical field of psychiatric nursing. Emphasis is placed upon learning and application of a variety of nursing intervention techniques. Ms. Thomas

**424C. Clinical Specialization in Psychiatric Nursing.** (2 courses) (Formerly numbered 470.2.) Discussion, two hours; laboratory, up to 20 hours. Prerequisites: consent of instructor, course 424B. The refinement and extension of professional knowledge and skills in the practice of advanced psychiatric nursing. Ms. Clemence, Ms. Dambacher

**425A. Clinical Gerontological Nursing.** Discussion, two hours; laboratory, up to 16 hours. Prerequisite: one course in Selected Problems in Nursing Care. Principles and practice of assessment of psychosocial variables in health problems of elderly. Emphasis placed on integrated understanding of multiple variable influences in total health. Ms. Sterman

**425B. Advanced Clinical Gerontological Nursing.** (2 courses) Discussion, two hours; laboratory, up to 30 hours. Prerequisite: course 425A. Application of knowledge and skills of psychosocial nursing intervention in rehabilitation of the chronically ill aged. Ms. Sterman

**425C. Clinical Specialization in Gerontological Nursing.** (2 courses) Discussion, two hours; laboratory, up to 30 hours. Prerequisite: course 425B. Extension and demonstration of competencies in planning and implementation of nursing support programs in health problems of the elderly. Ms. Sterman

**429A-429B-429C. Preceptorship in Adult Primary Ambulatory Care Nursing.** (2 courses each) Prerequisite: course 402A-402B, 429A-429B, consent of instructor. Application of nurse practitioner knowledge and skills with a selected ambulatory patient population. Focuses on refinement of assessment skills, patient management, and issues and trends in health care delivery. Ms. Anderson

**440A-440B. Clinical Specialization in Community Mental Health Consultation.** (Formerly numbered 476A.) Lecture, three hours; clinical, ten hours. Prerequisites: consent of instructor, course 424B, concurrent with 441A and 441B. The study and application of mental health consultation theory and practices relevant to community mental health nursing. The development of the nursing role in the interdisciplinary health team approach to mental health services. This course is offered on an In Progress basis which requires students to complete the full two-quarter sequence, at the end of which time a grade is given for all quarters of work. Ms. Brown

**441A-441B. Clinical Specialization in Community Organization.** (Formerly numbered 476B.) Lecture, three hours; clinical, ten hours. Prerequisites: consent of instructor, course 424B, concurrent with 440A and 440B. Theories and practices relevant to community development, mental health program planning; health advocacy; primary and secondary prevention of mental illness; and planned changes are stressed. This course is offered on an In Progress basis which requires students to complete the full two-quarter sequence, at the end of which time a grade is given for all quarters of work. Ms. Clemence

#### IV. Functional Preparation

\*Courses numbered in the 300 series are not applicable to University Minimum requirements for graduate degrees.

**\*370. Supervised Practice Teaching in Nursing.** Lecture, two hours; laboratory, ten hours. Prerequisite: course 472. The application of specific teaching strategies and the principles of learning and instruction into actual supervised practice teaching situations. Ms. Huckabay

**470. Conditions of Learning and Instruction in Nursing.** (Formerly numbered 430A.) Lecture, four hours; audio-visual instruction. A systematic study of theories of learning and instruction, and critical analysis of the relevant issues and patterns

of nursing education. Focuses on the development of a theory of nursing instruction by integrating theories of learning with conceptual models of nursing. Ms. Huckabay

**471. Curriculum Development in Nursing.** (Formerly numbered 430B.) Lecture, four hours. Prerequisite: course 470. A critical appraisal of patterns of nursing education from the standpoint of the changing order. Focuses on the relationship between philosophy, objectives, selection and organization of learning experiences and the evaluative process. Ms. Huckabay

**472. Microteaching in Nursing.** (Formerly numbered 370.) Lecture, two hours; laboratory, four hours. Prerequisite: course 471. Instructional skills and the application of theories of learning and instruction to the practice and teaching of nursing within a micro teaching laboratory setting. Reference is made to ways in which teaching skills relate to broader educational issues. Ms. Huckabay

**473. Generic Consultation. (1 to 2 courses)** Discussion, three hours; laboratory, 10 to 20 hours. Prerequisite: introductory and intermediate clinical practicum, and one course in group dynamics and process or the equivalent. The study and application of consultation theory and practice relevant to nursing. Emphasis will be placed on the refinement of knowledge and skills necessary to establish a nursing role as an interdependent clinical nursing consultant. The concepts presented in this course are based on those theories from the following areas: group dynamics, learning, communication, change and nursing process. Ms. Brown, Ms. Clemence

**475. Human Relations in Administration.** (Formerly numbered 425.) Lecture, four hours. A systematic study of the principles of human relations in administration with emphasis upon their application to the field of nursing. Mr. Ferguson

**476. Nursing Administration.** (Formerly numbered 434.) Lecture, four hours. A study of theories of management and their relationship to nursing in health care facilities. Emphasis is placed on organizational theory, decision making and the process of change. Ms. Wood

**477A. Supervised Practice in Nursing Administration. (1 to 2 courses)** (Formerly numbered 475.) Laboratory, 10 to 20 hours; seminar, two hours. Prerequisite: course 476. Application of management theory in nursing service settings. Critical appraisal of theory and process. Guided experience in administration in hospitals or health agencies. Ms. Wood

**477B. Internship in Nursing Administration. (2 courses)** (Formerly numbered 436.) Seminar, two hours; laboratory, 30 hours. Prerequisite: course 477A. Directed learning in nursing service organizations with critical appraisal of the applicability of administrative theories. May be repeated for credit. Ms. Wood

#### V. Individual Study and Research

**596. Directed Individual Studies for Graduate Students. (1 to 2 courses)** Prerequisite: consent of instructor. Opportunity for graduate students in nursing to pursue special research interests. May be repeated for credit, but only one quarter course (4 quarter units) may be applied toward the Master of Nursing degree. Graded only on a satisfactory/unsatisfactory basis. The Staff

**597. Individual Study for Comprehensive Examination. (1 to 2 courses)** Individual study for comprehensive examination. May be repeated for credit, but only one quarter course (4 quarter units) may be applied toward the Master of Nursing degree. Graded only on a satisfactory/unsatisfactory basis. The Staff

**598. Research for Thesis. (1 to 2 courses)** Prerequisite: consent of instructor. May be repeated for credit, but only one quarter course (4 quarter units) may be applied toward the Master of Nursing degree. Graded only on a satisfactory/unsatisfactory basis. The Staff

## ORIENTAL LANGUAGES

(Department Office, 222 Royce Hall)

Hartmut E. F. Scharfe, Ph.D., *Professor of Indic Studies*.  
Ensho Ashikaga, M. Litt, Giko, *Emeritus Professor of Oriental Languages*.

Kenneth K. S. Chen, Ph.D., *Emeritus Professor of Oriental Languages*.  
Kan Lao, B.A., *Academician, Emeritus Professor of Oriental Languages*.  
Richard C. Rudolph, Ph.D., *Emeritus Professor of Oriental Languages*.  
Ben Befu, Ph.D., *Associate Professor of Oriental Languages (Chairman of the Department)*.

Hung-hsiang Chou, Ph.D., *Associate Professor of Oriental Languages*.  
Robert C. Epp, Ph.D., *Associate Professor of Oriental Languages*.  
Shirleen S. Wong, Ph.D., *Associate Professor of Oriental Languages*.  
E. Perry Link, Jr., Ph.D., *Assistant Professor of Oriental Languages*.  
Herbert E. Plutschow, Ph.D., *Assistant Professor of Oriental Languages*.  
\_\_\_\_\_, *Assistant Professor of Oriental Languages*.  
\_\_\_\_\_, *Assistant Professor of Oriental Languages*.

Y. C. Chu, M.A., *Lecturer in Chinese*.

H. Graham Lamont, M. Phil., *Acting Assistant Professor of Oriental Languages*.

Kuo-yi Pao (Unenseñen), M.A., M.S., *Lecturer in Oriental Languages*.  
Hanns-Peter Schmidt, Ph.D., *Professor of Iranian*.

Zenryu Shirakawa, M.A., *Acting Assistant Professor of Oriental Languages*.

George Takahashi, M.A., *Lecturer in Japanese*.

*Department undergraduate advisers:* Kuo-yi Pao, Chinese; Robert Epp, Japanese.

*Department graduate advisers:* Shirleen Wong, Chinese; Herbert Plutschow, Japanese.

*Advising:* At the beginning of each academic year all majors in the department should see the adviser concerning their program of studies. New students entering the Department should consult immediately with the appropriate adviser concerning their proposed study program.

*Aim:* The Department of Oriental Languages aims to provide the general undergraduate student with an exposure to the cultural heritage of China and Japan. This is accomplished through courses in civilization, religion, archaeology and literature in translation. For those undergraduates who wish to major in Oriental Languages, the Department offers a program leading to the B.A. degree in Chinese or Japanese, in which the emphasis is on a more specialized knowledge of the language and literature of the area of major interest. In the language program, the emphasis proceeds from an acquaintance with the spoken language (either Chinese or Japanese) to a reading knowledge of the modern and classical forms of the language.

No credit will be allowed for completing a less advanced course after satisfactory completion of a more advanced course in grammar and/or composition.

#### Preparation for the Major

For the major in Chinese, courses 1A-1B-1C, 11A-11B-11C, 13A-13B, and 40A or 46; also History 9B and 9C. For the major in Japanese, courses 9A-9B-9C, 19A-19B-19C, and 40B; also History 9B and 9C. Recommended for Chinese majors: course 13C. Recommended for both majors: Anthropology 5C, 22 and English 2.

#### The Major

Required for the major in Chinese: Seven upper division language courses which must include:

- Two courses to be chosen from 121A, 121B, 121C, 122A, 122B, 124A, 124B, 124C and 126.
- Two courses to be chosen from 113A, 113B, 151, 152A, 152B, 163A, 163B and 163C.

Also: 140A, 140B or 140C; one course chosen from 170A, 170B, 173 or 183; 199 (at least 1/2 course), Art 114B and either History 191A, 191B, 191C or 191D.

Required for the major in Japanese: Seven upper division courses chosen from 119A, 119B, 129, 134A, 134B, 137, 139, 142A, 142B, 153A, 153B, 175, 179A, 179B. The seven courses must include 119B, 129 and 134A or 134B or 153A or 153B. Also, 141A or 141B, one course chosen from 174, 184; 199 (at least 1/2 course), Art 114C and either History 195A, 195B or 195C.

*Recommended for both majors:* English 100A, 100B, 100C, Geography 186 and additional courses in history. Those planning to undertake graduate study are urged to include in their undergraduate program three courses in classical Chinese or Japanese at the upper division level. Those planning to undertake advanced graduate study are urged to include five quarters of French or German.

#### Requirements for Admission to Graduate Study

Students seeking admission to graduate status in Oriental Languages are expected to meet, in addition to general University requirements, not only the minimum requirements for the undergraduate major but, in addition, a minimum of three courses in classical Chinese or Japanese at the upper division level. Students whose undergraduate preparation was not in the field of Oriental Languages will be admitted only if they can meet the departmental standards in linguistic competence and complete the minimum departmental requirements for the equivalent of a B.A. degree within the period of one year. Selection will be based on 1) prior scholastic performance (at the junior, senior and/or graduate levels), 2) recommendations by professors and others, 3) score on the Graduate Record Examination (aptitude test), and 4) degree of commitment to the field of study. Foreign students furthermore, are required to attain a satisfactory score on the Test of English as a Second Language administered by the Educational Testing Service, and may be required to take English 106J (Advanced Composition for Foreign Students) and 109J (Introduction to Literature) beyond the minimum University requirements in English. The M.A. Committee will evaluate the student's total performance during his first year and will determine whether he will be permitted to continue his studies.

#### Requirements for the M.A. Degree

*General Requirements:* See Masters Degree.

*Fields of Specialization:* The Department recognizes two fields of specialization at the M.A. level: Chinese language and literature and Japanese language and literature.

*Course Requirements:* Completion of at least five graduate courses and the requisite number of courses for a total of eleven courses. With the approval of the department, up to two courses taken outside the department will count toward the eleven courses but not toward the five graduate courses. Course 295 is required for students whose major language is Chinese; 296 for those whose

major language is Japanese. Students majoring in Chinese will be required to present evidence of completion of one year of Japanese with a grade of B or better, and those majoring in Japanese will be required to present evidence of completion of one year of Chinese with a grade of B or better.

*Comprehensive Examinations and the Research Paper:* All students will take comprehensive examinations in the areas of Chinese or Japanese 1) language, 2) literature and 3) civilization. In addition, a brief research paper embodying the results of independent investigation will be required. The results of the examinations and the quality of the research paper will determine whether the student will be permitted to enter the Ph.D. program.

#### Requirements for the Ph.D. Degree

*General Requirements:* See Doctoral Degree.

*Admission to the Doctoral Program:* The M.A. degree in the department or its equivalent is required for admission to the doctoral program. A student admitted with an M.A. degree in Oriental Languages from another institution may be required to take supplementary courses before proceeding to the doctoral program. A student admitted with an M.A. degree in a field other than Oriental Languages must fulfill our course requirements for the M.A. degree. In either case, the student may be required to submit a brief research paper demonstrating his ability to conduct original research and his aptitude in communicating his findings.

*Course Requirements:* A minimum of five courses beyond the M.A. degree is required. In addition, students whose major field of interest is Chinese language and literature will present evidence of successful completion of three courses in modern Japanese at the intermediate level (19A-19B-19C) or higher; those whose major field of interest is Japanese language and literature will present evidence of successful completion of three courses in classical Chinese (13A-13B-13C) or higher. Those whose major field of interest is Buddhism must take five quarters of Sanskrit and, in addition, one quarter of Pali. A grade of B or better is required for all language courses.

*Foreign Language Requirements:* The student will demonstrate a reading knowledge of French and German by passing the Graduate School Foreign Language Test administered by the Educational Testing Service (minimum passing score: 500), or by successful completion of a level 5 course (with a grade of B or better). (With the approval of the department, one of these languages may be substituted by another language or an additional year of Japanese for the Chinese major or Chinese for the Japanese major.)

*Guidance Committee:* A guidance committee consisting of three members, two of whom will be from the student's major language area and one from the minor language area, will be appointed for all entering doctoral level students. The student will select his fields of examination with the approval of this committee.

*The Language Examination:* The student will take a language examination in his major language area well in advance of the written qualifying examinations. The examination will consist of translations into English to test the student's ability to render the Language into English accurately and in an acceptable style.

*Written Qualifying Examinations:* The student will take three written examinations, as follows:

- For the major in Chinese language and literature
  - A general examination in Chinese language and literature
  - An examination in poetry, drama, fiction or archaeological inscriptions
  - An examination in one of the following fields: Japanese language and literature, Buddhism (Chinese), Chinese archaeology (not open to those who offer archaeological inscriptions as a subfield) or a cognate field offered in another departmental or interdepartmental program in the graduate school and approved by the department.
- For the major in Japanese language and literature
  - A general examination in Japanese language and literature
  - An examination in ancient, medieval, early modern or modern Japanese literature
  - An examination in one of the following fields: Chinese language and literature, Buddhism (Japanese) or a cognate field offered in another department or interdepartmental program in the graduate school and approved by the department.
- For the major in Buddhism
  - A general examination in Buddhism
  - An examination in a specified subfield in Buddhism
  - A general examination in Chinese or Japanese language and literature or a cognate field.

All three examinations must be taken within four weeks. The student will take these written qualifying examinations after satisfying all language and course requirements. With the approval of the department, a student may repeat the examinations once only.

*The Oral Qualifying Examinations:* The student must pass an oral qualifying examination on the proposed dissertation topic and in appropriate related areas of study.

*The Dissertation:* The student will present a dissertation embodying the results of independent investigation. If the student changes his dissertation topic after being advanced to candidacy, he will be

required to take written examinations in fields relevant to the new topic. Students who fail to meet the maximum time limit for the completion of the dissertation will be required to take the written qualifying examinations again.

A final oral defense of the dissertation will be optional at the discretion of the doctoral committee.

#### Lower Division Courses

**1A-1B-1C. Elementary Modern Chinese.** Lecture, five hours. Not open to students with previous training. An introduction to standard spoken Chinese and Chinese characters with emphasis on conversation. Mr. Chu, Mr. Pao

**9A-9B-9C. Elementary Modern Japanese.** Lecture, five hours. Not open to students with previous training. Introduction to modern Japanese with attention to conversation, grammar and the written forms. Conversation drill to be based on material covered in class. Mr. Takahashi

**11A-11B-11C. Intermediate Modern Chinese.** Lecture, three hours; laboratory, one hour. A continuation of 1A-1B-1C, with balanced instruction in reading, writing and conversation. Mr. Pao

**13A-13B-13C. Introduction to Classical Chinese.** Lecture, three hours; reading or discussion, one hour. Prerequisite: course 1C or consent of the instructor. Study of the development of the writing system and introduction to literary Chinese. Mr. Chou

**15A-15B-15C. Intermediate Spoken Japanese.** (½ course each) Prerequisite: course 9C. Enrollment limited; permission of the Department required; priority to be given Japanese majors. The Staff

**19A-19B-19C. Intermediate Modern Japanese.** Lecture, three hours; laboratory, one hour. A continuation of 9A-9B-9C. Readings in modern Japanese with emphasis on comprehension and structural analysis. Mr. Epp, Mr. Takahashi

**40A. Chinese Civilization.** No knowledge of Chinese required. A survey of the development of the outstanding aspects of Chinese culture from prehistoric to modern times. Mr. Chou

**40B. Japanese Civilization.** No knowledge of Japanese required. A survey of the development of Japanese culture and its relationship to the Asiatic mainland. Mr. Shirakawa

**46. Chinese Civilization in Modern Times.** Prerequisite: no knowledge of Chinese required. A survey of developments in Chinese culture from the late 19th century to the present. Mr. Link

#### Upper Division Courses

**113A-113B. Intermediate Classical Chinese.** Lecture, three hours; reading or discussion, one hour. Prerequisite: courses 13A-13B. Further readings in the classics. Ms. Wong

**115A-115B-115C. Advanced Spoken Japanese.** (½ course each) (Formerly numbered 119C.) Prerequisite: course 19C. Enrollment limited; permission of the Department required; priority to be given Japanese majors. The Staff

**119A-119B. Advanced Modern Japanese.** Lecture, three hours; laboratory, one hour. A continuation of 19A-19B-19C. Emphasis on comprehension, grammar and proficiency in reading, composition and conversation in modern Japanese. Mr. Takahashi

**121A-121B-121C. Advanced Modern Chinese.** Lecture, four hours. Prerequisite: course 11C. Readings in modern prose and newspaper style. Mr. Chu

**122A-122B. Readings in Modern Chinese Literature.** Lecture, three hours. Prerequisite: course 121B or consent of the instructor. Readings and discussion of masterpieces of modern Chinese literature. (A) poetry and prose; (B) drama and fiction. Mr. Link

**124A-124B-124C. Readings in Modern Expository Chinese.** Lecture, three hours. Prerequisite: course 121B or consent of the instructor. Readings in the social sciences, including Chinese Communist materials: (A) Nationalist Chinese materials including the May 4th Movement; (B) Political and military materials of Communist China; (C) Economic and educational materials of Communist China. Mr. Chu

**126. Post-1949 Chinese Literature.** Prerequisites: course 121B or consent of the instructor. Reading and discussion of selected works in contemporary poetry, drama and fiction with emphasis on the People's Republic of China. Mr. Link

**129. Introduction to Classical Japanese.** Lecture, three hours. Prerequisite: course 119B or consent of the instructor. Introduction to literary Japanese, with readings and discussions in the prose and poetry of the Heian Period. Mr. Befu

**\*13134A. Introduction to Kawabata Yasunari.** Lecture, three hours. Prerequisite: course 19C. Reading and analysis of the Nobel Laureate's short stories with particular emphasis on their emotional structure. Mr. Epp

**\*13134B. Introduction to Mushakoji Saneatsu.** (Formerly 153B.) Lecture, three hours. Prerequisite: course 19C. Reading and discussion of Mushakoji's prose, fiction and poetry. Mr. Epp

**135. Buddhist Themes in Asian Literature.** No knowledge of Asian languages required. A survey of selected works of Buddhist

literature of India, China and Japan. Includes canonical works like the *Lotus Sutra* and non-canonical works of poetry, prose and drama containing Buddhist themes. Mr. Shirakawa

**137. Introduction to Kambun and Other Literary Styles.** Lecture, three hours. Prerequisite: course 119B or consent of the instructor. Introduction to Kambun, the Japanese literary rendering of Classical Chinese, and Sorobun, the epistolary style. Mr. Befu, Mr. Plutschow

**139. Introduction to Buddhist Texts.** Lecture, three hours. Prerequisite: course 13C, 121A or 119A. Studies in Buddhist terminology. Mr. Shirakawa

**140A-140B-140C. Chinese Literature in Translation.** No knowledge of Chinese required. Lectures and collateral reading of representative works in English translation. (A) Poetry from earliest times to the 19th century; (B) Drama and fiction from the 13th century to the end of the Ch'ing period; (C) 20th-century poetry, drama, fiction. Mr. Link, Ms. Wong

**141A-141B. Japanese Literature in Translation.** No knowledge of Japanese required. A survey of Japanese literature from the beginning to modern times, emphasizing Chinese, Buddhist and Western influences: (A) Beginning to 1600; (B) 1600 to modern times. Mr. Plutschow

**\*13142A. Readings in the Japanese Family System.** Lecture, three hours. Prerequisite: course 119B. Analysis and discussion of articles describing and criticizing the family-system mindset, how this mindset permeates interpersonal relationships, and the way the system has functioned in the past. Mr. Epp

**\*13142B. Human Problems in the Modernization of Japan.** Lecture, three hours. Prerequisite: course 119B. Analysis and discussion of articles that deal with the definition of modernization, with its relation to traditional values and self awareness, and with the role of the intellectual. Mr. Epp

**145. Readings in Modern Expository Japanese.** Prerequisite: course 119A. Readings in contemporary affairs, including politics, economics, trade and social issues. The reading material will be taken from current Japanese newspapers and journals. Mr. Plutschow

**151. Readings in Traditional Chinese Fiction.** Prerequisite: course 113A. Readings range from the *pien-wen* stories to the novels of the Ming and Ch'ing periods. The Staff

**\*13152A-152B. Readings in Classical Chinese Poetry.** Lecture, three hours. Prerequisite: course 113A or consent of the instructor. Discussion and collateral reading of representative works selected on the basis of such critical concerns as thematic patterns, image clusters, genres, and the characteristics of major poets. Ms. Wong

**\*13153A. Kawabata's Contemporaries.** (Formerly 134B.) Lecture, three hours. Prerequisite: course 119A, or 134A or 134B. Readings in the fiction and poetry of Ibusse Masuji, Maruyama Kauru, Ozaki Kazuo, Tsuboi Sakae and Yokomitsu Riichi. Mr. Epp

**\*13153B. Introduction to Shiga Naoya.** (Formerly 153A.) Lecture, three hours. Prerequisite: course 119A, or 134A or 134B. Reading and discussion of Shiga's short stories with special emphasis on his I-novel technique. Mr. Epp

**154A-154B. Mongolian.** Lecture, three hours; laboratory, one hour. To be offered when requested by a sufficient number of students. Mr. Pao

**160. Elementary Sanskrit.** Introduction to script and grammar, with reading exercises and attention to the significance of Sanskrit for the understanding of other Indo-European languages. Mr. Scharfe

**161. Intermediate Sanskrit.** Prerequisite: course 160 or equivalent. Advanced aspects of grammar and the reading of literary texts. Mr. Scharfe

**162. Advanced Sanskrit.** Prerequisite: course 161 or equivalent. In this course the entire Bhagavadgita or a comparable amount of other Sanskrit literature is read. Mr. Scharfe

**163A-163B-163C. Readings in Chinese Literary Texts.** Lecture, three hours. Prerequisite: course 113B. (A and B) Literary texts. (C) Historical texts. The Staff

**165. Readings in Sanskrit.** Prerequisite: course 162 or equivalent. Extensive reading in such texts as best serve the students' needs. Mr. Scharfe

**167. Introduction to Indic Philosophy.** A survey of the main trends in Indian philosophy from ancient to modern times. Mr. Scharfe

**170A-170B. Archaeology in Early and Modern China.**

(A) Introduction to Chinese archaeology: early Chinese study of their own past, types of artifacts, antiquarianism, and the beginnings of scientific archaeology in China before 1949.

(B) Archaeology in the People's Republic of China: survey of major excavations of sites of all periods carried out under the intensive archaeological program of the PRC, and the interpretation of the archaeological findings. Mr. Chou

**172. Introduction to Buddhism.** No language requirement. Not open to students who received credit for 172A or 172B. Life of the Buddha and fundamental doctrines of Buddhism; Buddhist writings; the monastic order; early sects. The popular cult. The rise and development of Mahayana Buddhism: writings and doctrines.

The Tantric doctrines and the end of Indian Buddhism. Mr. Lamont

**173. Chinese Buddhism.** No language requirement. The introduction and development of Buddhism in China, interaction between Buddhism and Chinese culture. Mr. Lamont

**174. Japanese Buddhism.** No language requirement. The development of Buddhism in Japan and its influence on Japanese culture with emphasis on the arts. Mr. Shirakawa

**175. The Structure of the Japanese Language.** Lecture, three hours; reading or discussion, one hour. Prerequisite: consent of the instructor. Phonology, morphology and syntax of Japanese. Mr. Takahashi

**177. Readings in Tibetan.** Prerequisite: courses 164A-164B. The Staff

**179A. Readings in Medieval Japanese Literature.** Lecture, three hours. Prerequisite: course 129 or consent of the instructor. Readings and discussion in the prose, poetry and drama up till 1600. Mr. Befu

**179B. Readings in Edo Literature.** Lecture, three hours. Prerequisite: course 129. Readings and discussion in the prose, poetry and drama from 1600 to 1868. Mr. Befu

**183. Introduction to Chinese Thought.** No language requirement. A general survey of indigenous Chinese thought from the Chou period to circa 1800, covers Confucianism, Taoism, Mo-tzu, the Legalists, the study of the Classics, pseudo-scientific thoughts, the rise of the skeptical tradition, the penetration of Buddhism, the development of neo-Taoism and neo-Confucianism. Buddhism will be touched on only in the general context of Chinese thought. Mr. Lamont

**184. Introduction to Japanese Thought.** No language requirement. A general survey of Japanese thought from the earliest records to the Tokugawa period with primary emphasis on indigenous elements. Deals with the religious ideas that shaped Shinto, the encounter of Shinto with Buddhism, the formation of "syntheses" such as Ryobu Shinto, the rise of pessimistic attitudes (*mappo*), philosophies of history and the growth of Japanese self-consciousness, the rise of new Shinto sects in the medieval period, Confucianism in the Tokugawa period and the "National Learning" movement. Mr. Lamont

**199. Special Studies in Oriental Languages.** (½ to 1 course) Prerequisite: senior standing in the Department or advanced reading knowledge of Chinese or Japanese, and consent of the instructor. Required of incoming senior majors transferred from other institutions. Special individual study. May be repeated only once with consent of the instructor. The Staff

#### Graduate Courses

**203A-203B. Chinese Philosophical Texts.** May be repeated for credit with the consent of the instructor. The Staff

**213. Chinese Buddhist Texts.** May be repeated for credit with the consent of the instructor. Mr. Lamont

**214A-214B. Pali and Prakrits.** A knowledge of Sanskrit equivalent to course 161, and consent of instructor. Grammatical studies and reading of texts. Comparative considerations. Mr. Scharfe

**221A-221B. Introduction to Panini's Grammar.** Prerequisite: course 162 or equivalent. Reading of selected passages of the text with an introduction to Panini's technique. Mr. Scharfe

**M222A-222B. Vedic.** (Same as Near Eastern Languages (Iranian Section) M222A-222B.) Prerequisite: a knowledge of Sanskrit equivalent to course 162, and consent of instructor. Characteristics of the Vedic dialect and readings in the Rig-Vedic hymns. M222B only may be repeated for credit. Mr. Schmidt

**223. History of the Japanese Language.** The Staff

**229A-229B. Japanese Buddhist Texts.** May be repeated for credit with the consent of the instructor. Mr. Shirakawa

**240. Advanced Chinese Classics.** Prose and poetry in the Classical style. May be repeated for credit with the consent of the instructor. Ms. Wong

**242A-242B. Japanese Classics.**

242A. Prose and poetry up to 1600.

242B. Prose and poetry from 1600 to 1868. May be repeated for credit with the consent of the instructor. Mr. Befu

**244. Seminar in Chinese Fiction.** Prerequisites: course 113B and 151 and graduate standing in the department. Discussion of the historical development of Chinese fiction, and readings from *pien-wen*, *ch'uan-ch'i* stories, *hua-pen* stories, traditional and modern novels. The Staff

**245. Seminar in Modern Japanese Literature.** May be repeated for credit with the consent of the instructor. Mr. Epp

**247. Selected Readings in Sanskrit Texts.** May be repeated for credit with the consent of the instructor. Mr. Scharfe

**250. Seminar in Medieval Japanese Literature.** Prerequisite: one year of classical Japanese. Selected readings in travel poetry, travel diaries and other genres of Japanese travel literature of the Heian, Kamakura, Nambokucho and Muromachi periods. May be repeated for credit with the consent of the instructor. Mr. Plutschow

- 251. Seminar: Selected Topics in Chinese Literature.** May be repeated for credit. Ms. Wong
- 252. Seminar: Selected Topics in Japanese Literature.** May be repeated for credit. Mr. Befu
- 253. Seminar: Selected Topics in Japanese Buddhism.** May be repeated for credit. Mr. Shirakawa
- 255. Seminar: Selected Topics in Chinese or Indian Buddhism.** May be repeated for credit. Mr. Lamont
- 261A-261B. Seminar in Classical Chinese Poetry.** Prerequisite: course 152A and/or B, or consent of the instructor.
- 261A.** Chinese poetry from the *Shih-ching* phase to the sixth century, with emphasis on the evolution of the lyric form during the Southern Dynasties (ca. 400-600). **261B.** The development of *shih* and *tz'u* from the Tang period (ca. 600-900) and onward; traditional and modern critical approaches to classical Chinese poetry. Ms. Wong
- 270. Seminar: Selected Topics in Chinese Archaeology.** Prerequisite: course 170A or 170B, or consent of the instructor. May be repeated for credit. Mr. Chou
- 275. Seminar: Selected Topics in Chinese Cultural History.** May be repeated for credit. Mr. Chou
- 285. Selected Topics in Buddhist Culture.** May be repeated for credit with the consent of the instructor. Mr. Shirakawa
- 295. Bibliography and Methods of Research in Chinese.** Required of all graduate students in Chinese. Mr. Chou
- 296. Bibliography and Methods of Research in Japanese.** Required of all graduate students in Japanese. Mr. Befu

### Professional Courses

- 301. Teaching an Oriental Language as a Foreign Language.** The Staff

### Individual Study and Research

All of these courses will be graded Satisfactory/Unsatisfactory. A student may repeat these courses with the consent of the instructor; however, none of these may apply toward the minimum course requirement for the M.A.

- 501. Cooperative Program. (½ to 2 courses)** Prerequisite: approval of UCLA Graduate Adviser and Graduate Dean. Approval of host campus Instructor, Department Chairman and Graduate Dean. The course is used to record the enrollment of UCLA students in courses taken under cooperative arrangements with neighboring institutions. To be graded S/U.
- 596. Directed Individual Studies. (1 to 3 courses)** The Staff
- 597. Preparation for the Comprehensive Examination for the M.A. or the Qualifying Examination for the Ph.D.** The Staff
- 599. Research for and Preparation of the Doctoral Dissertation. (1 to 3 courses)** The Staff

### Related Courses in Other Departments

- Anthropology 103C.** Peoples of Asia Japan.
139. Comparative Minority Relations.
206. Culture and Personality of Japan: Selected Topics.
209. Asian-Americans: Personality and Identity.
211. Selected Topics in Comparative Minority Relations.
- Art 114A.** The Early Art of India.
- 114B. Chinese Art.
- 114C. Japanese Art.
- 115A. Advanced Indian Art.
- 115B. Advanced Chinese Art.
- 115C. Advanced Japanese Art.
260. Asian Art.
- English 100A.** Introduction to Poetry.
140. Criticism.
201. Approaches to Literary Criticism.
- Geography 186.** Eastern Asia.
286. Eastern Asia.
- History 124A.** Introduction to the History of Religions.
- 124B. History of Religions: Buddhism in India.
- 191A-191E. History of China.
193. Diplomatic History of the Far East.
- 195A-195B-195C. Japanese History.
- 196A. Early History of India.
- 201B. Themes in Early and Modern Chinese History.
214. Social and Intellectual History of Recent Japan.
230. Advanced Historiography: L. China. M. Japan. P. History of Religions.
240. Topics in History: L. China. M. Japan. P. History of Religions.

- 279A-279B. Seminar in Chinese History.
- 281A-281B. Seminar in Modern Japanese History.
- 282A-282B. Seminar in the History of Religions.
- Linguistics 103.** Introduction to General Phonetics.
- 120A. Linguistic Analysis: Phonology.
- 120B. Linguistic Analysis: Grammar.
220. Linguistic Areas: H. Far East.
225. Linguistic Structures. H. Japanese. P. Chinese.
- Music 81.** Ethnomusicology. Performance Organization: D. Music of China. G. Music and Dance of Japan. J. Music and Dance of Korea.
141. Survey of Music in Japan.
145. History of Chinese Opera.
- 146A-146B-146C. Studies in Chinese Instrumental Music.
- 147A-147B. Music of China.
- Political Science 135.** International Relations of China.
136. International Relations of Japan.
159. Chinese Government and Politics.
160. Japanese Government and Politics.
250. Seminars in Regional and Area Political Studies: C. Chinese and East Asian Studies. D. Japanese and Western Pacific Studies.
- Sociology 134.** Comparative Social Institutions of East Asia.

## PATHOLOGY

(Department Office, 13-267 Center for the Health Sciences)

- Maurice Baluda, Ph.D., *Professor Pathology.*
- Luciano Barajas, M.D., *Professor of Pathology in Residence/Anatomic Pathology.*
- 16 W. Jann Brown, M.D., *Professor of Pathology (Neuropathology).*
- Walter F. Coulson, M.D., *Professor of Pathology (Vice-Chairman of the Department).*
- Robert Y. Foss, M.D., *Professor of Pathology.*
- Harrison Latta, M.D., *Professor of Pathology.*
- M. Michael Lubran, M.D., Ph.D., *Professor of Pathology in Residence/Clinical Pathology.*
- David D. Porter, M.D., *Professor of Pathology.*
- Denis O. Rodgerson, Ph.D., *Professor of Pathology in Residence.*
- Julien L. Van Lancker, M.D., *Professor of Pathology (Chairman of the Department).*
- 16 M. Anthony Verity, M.D., *Professor of Pathology (Neuropathology).*
- Jerry Weisman, M.D., *Professor of Pathology.*
- Roy L. Wallford, M.D., *Professor of Pathology.*
- Luciano Zamboni, M.D., *Professor of Pathology in Residence (Vice-Chairman of Department).*
- Ruth Gussen, M.D., *Adjunct Associate Professor of Pathology.*
- Klaus Lewin, M.D., *Associate Professor in Pathology.*
- William J. Martin, Ph.D., *Associate Professor of Pathology in Residence.*
- Joseph M. Mirra, M.D., *Associate Professor of Pathology.*
- Donald E. Paglia, M.D., *Associate Professor of Pathology.*
- George S. Smith, M.D., *Associate Professor of Pathology.*
- Uwamie Tomiyasu, M.D., *Associate Clinical Professor of Pathology.*
- John F. Ward, Ph.D., *Associate Professor of Pathology in Residence and Associate Research Chemist.*
- Garth E. Austin, M.D., Ph.D., *Assistant Professor of Pathology.*
- David S. Barkely, Ph.D., *Assistant Professor of Pathology in Residence.*
- Judith A. Berliner, Ph.D., *Adjunct Assistant Professor of Pathology.*
- Arthur H. Cohen, M.D., *Assistant Professor of Pathology in Residence/Neuropathology.*
- Harvey Cove, M.D., *Acting Assistant Professor of Pathology.*
- Geoffrey H. Moyer, M.D., Ph.D., *Assistant Professor of Pathology.*
- Roberta S. Nieberg, M.D., *Adjunct Assistant Professor of Pathology.*

Joseph Raymond, M.D., *Lecturer in Pathology.*

### Admission to Graduate Status

Students intending to take advanced degrees in the Department of Pathology must have a Bachelor's degree in Physical or Biological Sciences or in the premedical curriculum. M.D.'s are also encouraged to apply. Minimum course requirements for admission normally include 1 year of Calculus, 1 year of Physics, 1 year of General Chemistry, 1 year of Organic Chemistry, and 1 year of Biological Sciences. Physical Chemistry, a course in Molecular Biology, and a course in Histology are also strongly recommended. In some cases, deficiencies in the prerequisite requirements may be fulfilled in the first year of study.

### Requirements for the Ph.D. Degree

1. General University requirements.
2. The following courses are required: Pathology 231A, M240, 242A, 242B, and 242C, 244, 251, and 250. In addition, students

beginning the program with a Bachelor's degree select 40 units from other areas of individual interest.

3. There is no language requirement.

4. The student must complete successfully both written and oral qualifying examinations, gain teaching experience in Introductory Pathology, and present and defend his dissertation on his research. His total program will require 4-5 years to complete.

### Graduate Courses

**231A. Pathological Anatomy and Physiology.** Prerequisite: regular graduate student status and completion of curriculum satisfying basic requirements for study of human pathology. Lectures, demonstrations and individual study of a student loan collection of microscopic slide preparations and of specimens from recent autopsies. Kodachrome photomicrographs and projection of microslides will be presented. Concentration will be in the area of General Pathology. (Fall Quarter.) The Staff

**231B-231C. Pathophysiology of Disease. (½ course each)** Prerequisite: course 200A. Regular graduate student status and completion of curriculum satisfying basic requirements for study of human pathology. Lectures, demonstrations and individual study of a student loan collection of microscopic slide preparations and of specimens from recent autopsies. Kodachrome photomicrographs and projection of microslides will be presented. The major disease states are presented using an interdepartmental approach as manifestations of pathophysiologic processes rather than as isolated entities. This course is offered on an In Progress Basis which requires students to complete the full two-quarter sequence, at the end of which time a grade is given for all quarters of work. The Staff

**235A-235B. Regulation of Gene Expression in Mammalian Cells. (½ course each)** Prerequisite: consent of instructor. Description of intracellular information flow in mammalian cells by stimuli of different natures as well as induced changes such as induction, repression, differentiation and neoplastic transformation will be analyzed. Use of culture models and its biopathological implications will be stressed. To be offered alternate years. 235A, Fall Quarter, and 235B, Winter Quarter. Mr. Gerschensen and the Staff

**M240. Immunopathology. (½ course)** Lecture, two hours per week. (Same as Medicine M240.) Prerequisite: Immunology course and consent of instructor. Study of the role of immunologic phenomena in the production of lesions and disease. Topics will include immuno complex disease, antitissues antibody, immunologic mediators, cell-mediated immunity, and infectious diseases. Mr. Glascock, Mr. Porter

**242A. Molecular Mechanisms in Disease. (½ course)** Prerequisite: course 231A, consent of instructor. The course concerns itself with a description of molecular events resulting from administration of injurious chemical and physical agents (i.e., x-rays, carcinogens, toxins, etc.) and from reactions to injuries (e.g., necrosis, degeneration, hyperplasia, neoplasia, inflammation, etc.); and also with an interpretation of structural and functional disturbances in terms of the molecular alterations. Mr. Van Lancker and the Staff

**242B. Molecular Mechanisms in Disease. (½ course)** Prerequisite: course 242 or 242A; consent of instructor. This course is a continuation of Pathology 242A, both of which concern themselves with descriptions of molecular events resulting from administration of injurious chemical and physical agents (i.e., x-rays, carcinogens, toxin, etc.) and from reactions to injuries (e.g., necrosis, degeneration, hyperplasia, neoplasia, inflammation, etc.); and also with an interpretation of structural and functional disturbances in terms of molecular alterations. Mr. Van Lancker and the Staff

**242C. Molecular Mechanisms in Disease. (½ course)** Prerequisite: course 242A, 242B; consent of instructor. This course is a continuation of Pathology 242A and 242B which deal with the biochemistry and molecular biology of disease processes produced by nutritional deficiencies, inherited metabolic errors and the administration of injurious chemical or physical agents. This particular segment will cover aspects of neoplasia relation to alterations in the control of cell growth, chemical carcinogenesis and the biology of cancer. Mr. Moyer and the Staff

**244. Electron Microscopy in Experimental Pathology. (½ course)** Prerequisite: consent of the instructor. Ultrastructural aspects of pathology including introduction to use of modern methods of electron microscopy in pathological studies, essentials of normal ultrastructure and ultrastructural phenomena in general pathology. Ms. Berliner, Mr. Zamboni

**245. Environmental Pathology.** Prerequisite: graduate student status and consent of the instructor. This course is designed to explore the interrelationships of man with his total environment. A series of special topics will be presented to discuss the effect on man of changes in the compositions of air, water, soil and other materials. Graded S/U. Mr. O'Donnell and the Staff

**250A-250B-250C. Pathology Graduate Student Seminar.** Prerequisite: open only to students in experimental pathology. Required for all pathology graduate students. Review and discussion of current literature and research in special topics of experimental pathology. The Staff

**251. Pathology Graduate Student Laboratory Seminar.** Prerequisite: consent of instructor. The course consists of ten, two-

hour seminars which may include demonstrations of apparatus and methods dealing with new and advanced experimental techniques of value in experimental pathology. The seminars will be conducted by pathology department staff and guest lecturers. Subjects covered will include the biochemistry, biological and morphological techniques in tissue fractionation, tissue culture and radioautography (electron microscopy, etc.) that are frequently in the study of disease mechanisms.

Mr. Lubran, Mr. Rodgerson

**\*6253. Free Radical Pathology. (½ course)** Lecture, four and one half hours per week. Prerequisites: Basic biochemistry, Physical Chemistry. Free radicals, mechanisms of formation, properties and reactions. Their reactions with significant biomolecules. Modes of production *in vivo*. Reactions *in vivo*. Protection against and sensitization towards these damaging effects.  
Mr. Ward

**M256. Seminar in Viral Oncology. (½ course)** (Same as Microbiology and Immunology M256.) An advanced research seminar designed to consider the current developments in the field. Selection of current subjects and publications dealing with tumor viruses, oncogenesis, development, and cellular regulation.

**\*7260. Quantitative Approaches to Microscopic Anatomy. (½ course)** Lecture, two hours per week. Prerequisite: consent of instructor. Practical and theoretical approaches in the application of measurement to anatomical structures. General principles of estimation of volume, surface area and number will be covered by stereology and other techniques.  
Ms. Berliner

**M293. Major Concepts in Oncology.** (Same as Bacteriology M293, Dentistry M293, and Microbiology and Immunology M293.) Prerequisite: graduate standing or consent of instructor. Course designed for graduate students contemplating research in oncology. Lecture. Topics include cancer pathophysiology, genetics; membranes, macromolecular synthesis and control, cell cycle, growth control; physical, chemical and viral oncogenesis; epidemiology of cancer; tumor immunology; principles of cancer surgery, radiation therapy and chemotherapy.

**596. Directed Individual Study or Research. (1 to 3 courses)** Individual research with members of our staff or of other departments, the latter for the purpose of supplementing programs available in our department. Graded S/U.

**597. Preparation for Qualifying Exams. (½ to 2 courses)** Prerequisite: one year of course work in pathology. Individual study for qualifying exam. Graded S/U.

**599. Preparation of Doctoral Dissertation. (½ to 2 courses)** Prerequisite: completion of qualifying exam and most of doctoral research. Completion and writing of thesis. Graded S/U.

## PHARMACOLOGY

(Department Office, 23-278 Center for the Health Sciences)

<sup>16</sup>John A. Bevan, B.Sc., M.B., B.S., *Professor of Pharmacology*.  
Arthur K. Cho, Ph.D., *Professor of Pharmacology (Vice Chairman of the Department)*.

<sup>16</sup>Robert George, Ph.D., *Professor of Pharmacology*.  
Murray E. Jarvik, M.D., Ph.D., *Professor of Pharmacology and Psychiatry*.  
<sup>16</sup>Donald J. Jenden, B.Sc., M.B., B.S., *Professor of Pharmacology and Biometrics (Chairman of the Department)*.

<sup>16</sup>Peter Lomax, M.D., D.Sc., *Professor of Pharmacology*.  
<sup>16</sup>Dermot B. Taylor, M.A., M.D., *Professor of Pharmacology*.  
Jeremy H. Thompson, M.D., F.R.C.P.I., *Professor of Pharmacology*.  
Matthew Conolly, M.D., *Associate Professor of Pharmacology and Medicine*.

<sup>16</sup>M. David Fairchild, Ph.D., *Adjunct Associate Professor of Pharmacology*.

Che Su, Ph.D., *Associate Professor of Pharmacology in Residence*.  
Rosemary D. Bevan, M.D., *Adjunct Assistant Professor of Pharmacology*.  
Don H. Catlin, M.D., *Assistant Professor of Pharmacology and Medicine*.  
Sue P. Duckles, Ph.D., *Assistant Professor of Pharmacology in Residence*.  
Larry A. Wheeler, Ph.D., *Adjunct Assistant Professor of Pharmacology*.

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II Jin Bak, Ph.D., D.D.S., *Adjunct Associate Professor of Neurology and Pharmacology*.

Robert O. Bauer, M.D., *Professor of Anesthesiology, Obstetrics and Gynecology and Pharmacology*.

Joseph H. Beckerman, Pharm.D., *Lecturer in Pharmacology*.  
Yi-Han Chang, Ph.D., *Adjunct Associate Professor of Medicine and Pharmacology*.

Mark A. Goldberg, M.D., Ph.D., *Associate Professor of Neurology and Pharmacology*.

William L. Hewitt, M.D., *Professor of Medicine and Pharmacology*.  
Louis Levy, Ph.D., *Adjunct Associate Professor of Medicine and Pharmacology*.

Joseph A. Steinborn, Ph.D., *Lecturer in Pharmacology*.

### Admission to Graduate Status

In addition to meeting the requirements of the Graduate Division, the student must have received the bachelor's degree in a biological or physical science or in the premedical curriculum, provided that the following, or their equivalents, have been completed: 6 semester units of college mathematics, 8 units of physics, 16 units of chemistry (including quantitative analysis and organic chemistry), 8 units of zoology (including comparative gross and

microscopic anatomy), 8 units of mammalian physiology (including laboratory), 10 units of biochemistry (including laboratory).

In suitable cases, students who have not completed the above requirements may be admitted to graduate status, but the deficiencies will have to be removed within a specified time.

### Requirements for the Degree of Master of Science

Students entering graduate study in the Department of Pharmacology will be expected to pursue the Ph.D. degree. Exceptional cases may be considered for the degree of Master of Science. In those cases, candidates for the master's degree must meet the general requirements set by the Graduate Division for this degree.

### Requirements for the Doctor of Philosophy Degree

**Advancement to Candidacy.** In addition to the general requirements of the Graduate Division, the student may be required to pass a series of qualifying examinations both written and oral. The Departmental Guidance Committee may also stipulate additional requirements. This committee will be appointed by the Chairman of the Department.

The responsibility for completion of all technical requirements for the doctor's degree rests solely with the candidate.

**Departmental Requirements.** In addition to the general requirements of the Graduate Division the student must complete the following courses or their equivalents; Anatomy 103; Biological Chemistry 101A-101B-101C; one course in Biostatistics; Pharmacology 200 (Introduction to Laboratory Research — must be taken three times); Pharmacology 201 (Principles of Pharmacology and Toxicology); Pharmacology 202 (Pharmacological Basis of Therapeutics); Pharmacology 234A-234B-234C (Experimental Methods in Pharmacology); Pharmacology 237 (Neurotransmission); Pharmacology 241 (Introduction to Chemical Pharmacology); Pharmacology 251 (Seminar); Pharmacology 291 (Selected Topics — must be taken three times); Physiology 101; Physiology 102; Physiology 103.

Upon completion of the first two years of study each student will be required to take a comprehensive examination at which time the student will be recommended 1) for continuation of his studies towards the Ph.D. degree; 2) for further remedial study or; 3) for termination.

### Upper Division Courses

**101A-101B-101C. Elements of Pharmacology. (2 courses)** Prerequisite: enrollment in School of Dentistry or consent of the instructor. Required course for junior dental students. A general consideration of the modes of action and the pharmacological and toxicological effect of drugs with a more detailed study of those agents used in clinical dentistry and the principles governing their use.  
Mr. Lomax in charge

**199. Special Studies. (½ to 2 courses)** Prerequisite: consent of instructor and Chairman of the Department. Special studies in pharmacology, including either reading assignments or laboratory work or both, designed for appropriate training of each student who registers in this course.

### Graduate Courses

**200. Introduction to Laboratory Research. (½ to 1 course)** Prerequisite: consent of the instructor. Individual projects in laboratory research for beginning graduate students. At the end of each quarter the student will submit to his/her supervisor a report covering the research performed. Pharmacology graduate students must take this course three times during their first two years in residence.  
The Staff

**201. Principles of Pharmacology.** Prerequisite: Mammalian Physiology and Biochemistry. A systematic consideration of the principles governing the interaction between drugs and biological systems, and of the principal groups of drugs used in therapeutics. Particular attention is focussed on the modes of action, pharmacokinetics and disposition to provide a scientific basis for their rational use in medicine.  
Mr. Bevan in charge

**202A-202B. Clinical Pharmacology. (2 courses)** A series of lectures and case presentations designed to illustrate the principles of pharmacology in a clinical context, and the solution of problems of practical therapeutics by reference to pharmacokinetics, mechanisms of action and disposition of drugs.  
Mr. Catlin in charge

**234A-234B-234C. Experimental Methods in Pharmacology. (½ course each)** Prerequisite: consent of instructor. A survey of experimental methods and instrumentation used in the analysis, identification, and study of mechanisms of action of pharmacologically active compounds.  
Mr. Cho, Mr. George, Mr. Su

**236. Neuropharmacology.** Prerequisite: neurophysiology. Advanced neuropharmacology, including actions and modes of action of drugs acting on the central nervous system, interactions between drugs and nervous tissue, movements of drugs through the blood brain barrier, and distribution to the central nervous system, problems of central transmission.  
Mr. George

**\*1237. Neurotransmission.** Prerequisite: courses 241, 234A-234B-234C. Consent of instructor. A detailed examination of neurochemical transmission, dealing in particular with the

cholinergic and adrenergic transmission mechanisms and pharmacological agents that affect them. The evidence for mechanisms involving other possible transmitters will also be critically examined.

Mr. Bevan, Mr. Cho, Mr. Su

**\*1239. Psychopharmacology.** (Same as Psychiatry M239.) Prerequisite: consent of the instructor. A presentation of the effects of drugs upon behavior with special attention to drugs used in psychiatry and drug seeking behavior. Physiological and biochemical mechanisms underlying such actions will be analyzed. Reports on relevant current research will be made.  
Mr. Jarvik

**241. Introduction to Chemical Pharmacology.** Prerequisite: Organic and Biological Chemistry. Introduction to general principles of pharmacology. The role of chemical properties of drugs in their distribution, metabolism and excretion.  
Mr. Cho

**251. Seminar in Pharmacology. (½ course each)** Ms. Duckles

**\*1253. Seminar in Environmental Toxicology. (½ course)** Prerequisite: consent of the instructor. Oral reports and discussions of current research on chemical pollutants in the environment, their effects on biological systems and the mechanism of these effects.  
Mr. Jenden

**\*1261. Introduction to Clinical Pharmacology. (½ course)** Prerequisite: consent of the instructor. Lectures, case presentations and discussions designed to acquaint graduate students with the special problems and effects encountered in clinical use of drugs, including absorption, metabolism and excretion, drug interactions and interference with clinical laboratory analysis.  
The Staff

**291. Special Topics in Pharmacology. (½ to 1 course)** Prerequisite: consent of instructor. Examination in depth of topics of current importance in pharmacology. Emphasis on recent contributions of special interest to advanced doctoral candidates, academic staff or visiting faculty. May be taken for credit three times.  
The Staff

### Individual Study and Research

**596. Directed Individual Research in Pharmacology. (1 to 3 courses)** The Staff

**599. Research for and Preparation of the Doctoral Dissertation. (1 to 3 courses)** The Staff

## PHILOSOPHY

(Department Office, 321 Dodd Hall)

Robert Merrihew Adams, Ph.D., *Professor of Philosophy (Chairman of the Department)*.

Rogers Albritton, Ph.D., *Professor of Philosophy*.  
Alonzo Church, Ph.D., *Professor of Philosophy and Mathematics in Residence*.

Keith S. Donnellan, Ph.D., *Professor of Philosophy*.  
Philippa Foot, M.A., *Professor of Philosophy in Residence*.  
Montgomery Furth, Ph.D., *Professor of Philosophy*.  
Donald Kalish, Ph.D., *Professor of Philosophy*.  
David Kaplan, Ph.D., *Professor of Philosophy*.  
Herbert Morris, Ph.D., *Professor of Philosophy and Law*.  
Richard Wasserstrom, Ph.D., *Professor of Philosophy and Law*.  
Robert M. Yost, Ph.D., *Professor of Philosophy*.  
Hugh Miller, Ph.D., *Emeritus Professor of Philosophy*.  
Wesley Robson, Ph.D., *Emeritus Professor of Philosophy*.  
Tyler Burge, Ph.D., *Associate Professor of Philosophy*.  
Thomas E. Hill, Jr., Ph.D., *Associate Professor of Philosophy*.  
Warren S. Quinn, Ph.D., *Associate Professor of Philosophy*.  
Bernard R. Boxill, Ph.D., *Assistant Professor of Philosophy*.  
Gregory Kavka, Ph.D., *Assistant Professor of Philosophy*.

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David J. Hills, B.A., *Acting Assistant Professor of Philosophy*.

### Preparation for the Major

Courses 21, 22, 31, and one other lower division course in Philosophy.

### The Major

Twelve upper division or graduate philosophy courses (48 units). Seven of the twelve courses must be distributed among the groups into which the undergraduate and graduate courses are divided, in the following manner: two courses (8 units) in each of three of the groups, and one course (4 units) in the remaining group.

Courses listed under "No Group" may apply toward the major, but not toward a group requirement. A maximum of eight units of course 199 may apply toward the major but not toward a group requirement. No course employed to satisfy the major or preparation requirements may be taken on a P/NP basis.

Upon the recommendation of the Philosophy Department faculty, honors in philosophy will be awarded at graduation to a major whose grade point average in upper division philosophy courses is 3.3 and who has completed two graduate courses (8 units) in philosophy with an average grade of 3.5.

Students intending to do graduate work in Philosophy should consult with the graduate adviser as well as with the undergraduate adviser.

**Admission to Graduate Status**

Students interested in admission to graduate study should write to the Graduate Adviser, Department of Philosophy for documents describing the graduate program.

An undergraduate major in Philosophy is not required, although some undergraduate preparation is expected.

The graduate program is designed for those who wish to work for the Ph.D. degree. Normally, persons are not admitted who wish to pursue only an M.A. program.

Admission is normally granted for the Fall Quarter only.

**First Year Graduate Program**

During the Fall, Winter, and Spring Quarters of his first full academic year, each graduate student enrolls in Philosophy 200A-200B-200C. These courses serve as the core of the first year graduate program.

**First Year Examination**

At the end of the first full year of graduate study, each student takes a written examination on the material covered in Philosophy 200A-200B-200C that year, plus a written examination on elementary logic.

Candidates for the M.A. may, if necessary, repeat the First Year Examination during their second year, since it serves as the M.A. Comprehensive Examination.

**Admission to the Doctoral Program**

Following a student's First Year Examination, the faculty determines whether the student is to be admitted to the doctoral program. This decision is based on his performance in his first year courses, including Philosophy 200A-200B-200C, on his performance in the First Year Examination, and on any other available evidence concerning his ability to complete the program successfully. (Passage of the First Year Examination is neither necessary nor sufficient for admission to the doctoral program.) In exceptional circumstances the decision may be postponed to the second year.

**Requirements for the Master's Degree**

*General Requirements.* See Master's Degrees.

*Foreign Language.* A reading knowledge of one of the following languages: Greek, Latin, French, or German. On petition to the Department, another language relevant to the candidate's field of specialization may be chosen.

*Comprehensive Examination.* Passage of the First Year Examination which all graduate students are required to take.

*Course Requirement.* At least nine courses (36 units) numbered over 100 (excluding 199), five courses (20 units) of which must be in philosophy courses numbered between 200 and 296, including 200A-200B-200C.

**Requirements for the Candidate in Philosophy Degree**

The Candidate in Philosophy Degree (C.Phil.) is awarded upon a Ph.D. candidate's formal advancement to candidacy. A student is advanced to candidacy for the doctorate when he has completed all requirements for the Ph.D. except the dissertation, and the final examination. The Candidate in Philosophy is not a terminal degree. The Department will not recommend a student for advancement to candidacy and at the same time disqualify him for continued registration and further study or research on his dissertation. If a student withdraws from the University after advancement to candidacy and at award of the C.Phil., then the Department will readmit him upon application, provided the period of absence has not exceeded seven years. Any student, of course may himself decide not to proceed beyond the C.Phil. Four quarters of academic residence, three of which (normally the last three) must be spent in continuous residence at UCLA, are required for the C.Phil.

**Requirements for the Doctor's Degree**

*General Requirements.* See Candidate in Philosophy Degree.

*Foreign Language.* A good reading knowledge of one of the following languages: Greek, Latin, French, German. On petition to the Department, another language relevant to the candidate's field of specialization may be substituted. This requirement may be met either (a) by the completion, at UCLA or elsewhere, of the equivalent of the final course in a two year sequence of college courses in the chosen language, with a grade of C or better, or (b) by passing a translation examination, administered by the Department, from a philosophical book selected by the candidate with Departmental approval.

*Course Requirement.* Twelve courses in the 100 and 200 series (excluding 199), distributed as follows:

*Logic:* 135 and either 133 or 134. Two upper division or graduate courses in logic in either the Philosophy or Mathematics Department approved of by the student's advisor.

*Metaphysics and epistemology:* Two courses or seminars in the 200 series, including the required first year seminar in metaphysics and epistemology.

*Ethics and value theory:* Two courses or seminars in the 200 series, including the required first year seminar in ethics.

*History of philosophy:* Three courses or seminars in the 200 series, including the required first year seminar in the history of philosophy.

*Elective:* Three additional upper division or graduate courses or seminars, of the student's choice.

*First Year Examination.* Before admission to the doctoral program, each student must take a First Year Examination on the contents of the three required first year seminars (200A-200B-200C) and on the contents of the beginning logic courses (31 and 32). Passage of the examination is a requirement for the M.A. but not for the Ph.D. Performance in the examination, however, is an important part of the evidence considered in determining admission to the doctoral program (see above).

*Proposition Requirement.* Two accepted propositions, one in Ethics and Value Theory, the other in Metaphysics and Epistemology. A proposition is a substantial research paper which formulates a philosophical problem, reviews some of the pertinent history and contemporary literature, proposes further steps toward a solution, and surveys difficulties to be anticipated in working out that solution.

*Preparation for Admission to Candidacy.* In the term following completion of the course and proposition requirements, the student must submit a general indication of a topic or problem area for his dissertation. A faculty dissertation supervisor is then chosen, with whom the student must register for at least four units of course 596 each quarter that he is registered until he is admitted to candidacy. In any case, substantial written evidence of progress in the dissertation project must be submitted before the oral qualifying examination can be held.

*Oral Qualifying Examination.* An oral examination, administered by the doctoral committee appointed by the Dean of the Graduate Division. The candidate is examined (a) on substantial written evidence of progress in the dissertation project (as described above) which he has submitted to the committee at least ten days in advance of the examination, and (b) on the field of the dissertation and any related fields in which competence is required for successful completion of the dissertation.

*Dissertation.* A dissertation on a subject chosen by the candidate and approved by his doctoral committee and the Dean of the Graduate Division.

*Final Examination.* An oral examination in the field of the student's special interest as represented by his dissertation may be required at the option of members of the doctoral committee who are to approve the dissertation. Normally, the decision whether to require such an examination is made at the time of the oral qualifying examination.

For details of requirements for all graduate degrees in Philosophy as well as the timetable under which the various requirements are to be completed, consult the department's *Graduate Manual*, obtainable upon request from the Department office.

**Lower Division Courses**

All lower division courses are introductory and without prerequisites except as otherwise stated.

**1. The Beginnings of Western Philosophy.** Lecture, three hours; discussion section, one hour. The views of Plato, Aristotle, and other thinkers, from before Socrates to St. Augustine, on such topics as: the nature of the physical universe, the nature of knowledge, the concept of God, soul and body, the foundations of morality, the Greek and Christian ideas of love.

Mr. Albritton, Mr. Furth

**2. Introduction to the Philosophy of Religion.** Lecture, three hours; discussion section, one hour. An introductory study of such topics as the nature and grounds of religious belief, the relation between religion and ethics, the nature and existence of God, the problem of evil, and what can be learned from religious experience.

Mr. Adams, Mrs. Adams

**3. Personal and Social Ideals.** Lecture, three hours; discussion section, one hour. A study of various conceptions of human perfection and social utopias. Readings will be chosen from such authors as Freud, Thomas More, Marx, B.F. Skinner and Sartre.

Mr. Hill

**4. Philosophical Analysis of Contemporary Moral Issues.** Lecture, three hours; discussion section, one hour. A critical study of principles and arguments advanced in discussion of current moral issues. Possible topics: revolutionary violence, rules of warfare, sexual morality, the right of privacy, punishment, nuclear warfare and deterrence, abortion and mercykilling, experimentation with human subjects, rights of women, the drug culture.

Mr. Hill, Mr. Kavka, Mr. Wasserstrom

**5A. Philosophy in Literature.** Lecture, three hours; discussion section, one hour. A philosophical inquiry into such themes as freedom, responsibility, guilt, love, self-knowledge and self-deception, death and the meaning of life, by examination of great literary works in the Western tradition.

Mr. Morris

**5B. Recurring Philosophical Themes in Black Literature.** Lecture, three hours; discussion section, one hour. Analysis of some main themes in Afro-American political writings; for example, assimilation, cultural nationalism, and separatism in the writings of Booker T. Washington, Frederick Douglass, W.E.B. du Bois, and others.

Mr. Boxill

**6. Historical Introduction to Moral and Political Philosophy.** Lecture, three hours; discussion section, one hour. A study of some classic works in moral and political philosophy. Questions that may be discussed include: What is justice? Why be moral? Why obey the

law? Which form of government is best? How much personal freedom should be allowed in society? Mr. Hill, Mr. Kavka

**7. Mind, Mechanism and Freedom.** Lecture, three hours; discussion section, one hour. An introductory study of philosophical issues about the nature of the mind and its relation to the body, including some of the following: materialism, functionalism, behaviorism, determinism and free will, the nature of psychological knowledge.

Mr. Burge

**8. Introduction to the Philosophy of Science.** Lecture, three hours; discussion section, one hour. An introduction to philosophical questions about the nature of science, drawing examples from specific scientific theories and controversies that can be understood without much mathematical or technical background. What role do observation and explanation play in building and evaluating scientific theories? How should we view the relation between science and common sense?

Mr. Hills

**9. Principles of Critical Reasoning.** The course concerns the nature of arguments: how to analyze them and assess the soundness of the reasoning they represent. Common fallacies that often occur in arguments will be discussed in light of what counts as a good deductive or inductive inference. Other topics to be discussed include the use of language in argumentation to arouse emotions as contrasted with conveying thoughts, the logic of scientific experiments and hypothesis-testing in general, and some general ideas about probability and its application in making normative decisions, e.g. betting.

Mr. Deigh, Mr. Kaplan

**21. Skepticism and Rationality.** Lecture, three hours; discussion section, one hour. Can we know anything with certainty? How can we justify any of our beliefs? An introduction to the study of these and related questions, through the works of some great philosophers of the modern period, such as Descartes, Leibniz, Berkeley, or Hume.

Mr. Donnellan, Mr. Furth, Mr. Yost

**22. Introduction to Ethical Theory.** Lecture, three hours; discussion section, one hour. A systematic introduction to ethical theory, including discussion of egoism, utilitarianism, justice, responsibility, the meaning of ethical terms, relativism, etc. Recommended or required for many upper division courses in Group III.

Mr. Hill, Mr. Quinn

**31. Logic, First Course.** Lecture, three hours; discussion section, one hour. Recommended for students who plan to pursue more advanced studies in logic. The elements of symbolic logic, sentential and quantificational: forms of reasoning and structure of language.

Mr. Burge, Mr. Kalish, Mr. Kaplan

**32. Logic, Second Course.** Lecture, three hours; discussion section, one hour. Prerequisite: course 31, preferably in the preceding quarter. Symbolic logic: extension of the systematic development of course 31. Quantifiers, identity, definite descriptions.

Mr. Burge, Mr. Kalish, Mr. Kaplan

**Upper Division Courses****GROUP I**

**101A. Plato—Earlier Dialogues.** (Formerly numbered M101A.) Lecture, three hours; discussion section, one hour. A study of selected topics in the early and middle dialogues of Plato.

Mr. Furth

**101B. Plato—Later Dialogues.** (Formerly numbered M101B.) Lecture, three hours; discussion section, one hour. Prerequisite: Philosophy 101A. A study of selected topics in the middle and later dialogues of Plato.

Mr. Furth, Mr. Lewis, Mr. Quinn

**102. Aristotle.** Lecture, three hours; discussion section, one hour. A study of selected works of Aristotle.

Mr. Furth

**104. Topics in Islamic Philosophy.** Lecture, three hours; discussion section, one hour. Prerequisite: one course (4 units) in philosophy or consent of the instructor. The development of Muslim philosophy in its great age (from Kindo to Averroes, 850 to 1200), considered in connection with Muslim theology and Mysticism.

Mr. Anawati

**105. Medieval Philosophy from Augustine to Maimonides.** Lecture, four hours. Prerequisite: one course in philosophy or consent of the instructor. The development of early medieval philosophy within the framework of Judeo-Christian theology and its assimilation and criticism of the Greek philosophical heritage. Focus on the problem of universals, the existence and nature of God, the problem of evil, and the doctrines of the Trinity and atonement. Selected writings from Augustine through Maimonides, read in English translation.

Mr. Adams

**106. Later Medieval Philosophy.** Lecture, four hours. Prerequisite: one course in philosophy or consent of the instructor (course 105 is not required). Metaphysics, theory of knowledge, and theology of Aquinas, Duns Scotus, and Ockham, with less full discussion of other authors from the 13th through early 15th centuries. Selected texts read in English translation.

Mr. Adams

**107. Topics in Medieval Philosophy.** Lecture, four hours. Prerequisite: one course in philosophy; 105 or 106 recommended. The study of the philosophy and theology of some one medieval philosopher such as Augustine, Anselm, Abelard, Aquinas, Scotus, or Ockham; or the study of a single area such as logic or theory of knowledge in several medieval philosophers. Consult the department for topic to be treated in a given quarter. May be repeated for credit with consent of instructor.

Mr. Adams

- 109. Descartes.** Lecture, four hours. Prerequisite: one course in philosophy or consent of the instructor. A study of the philosophy of Descartes. Mr. Yost
- 110. Spinoza.** Lecture, three hours; discussion, one hour. Prerequisites: course 21 or consent of the instructor. A study of the philosophy of Spinoza. May be concurrently scheduled with course 210, in which case there will be a weekly discussion meeting for undergraduates only, and fewer readings and shorter papers will be required of undergraduates than off graduates. Enrollment is limited to 30 students when offered concurrently.
- 111. Leibniz.** Lecture, three hours; discussion section, one hour. Prerequisite: course 21 or consent of the instructor. A study of the philosophy of Leibniz. May be concurrently scheduled with course 211, in which case there will be a weekly discussion meeting for undergraduates only, and fewer readings and shorter papers will be required of undergraduates than of graduates. Enrollment is limited to 30 students when offered concurrently. Mr. Adams
- 112. Locke and Berkeley.** Lecture, four hours. Prerequisite: one course in philosophy or consent of the instructor. A study of the philosophies of Locke and Berkeley; the emphasis may sometimes vary from one figure to the other. May be offered concurrently with course 212. Mr. Donnellan, Mr. Hills
- 114. Hume.** Lecture, four hours. Prerequisite: one course in philosophy or consent of the instructor. Selected topics from the metaphysical, epistemological and ethical writings of Hume. May be offered concurrently with course 214, in which case enrollment in course will be limited to 40. Mr. Donnellan
- 115. Kant.** Lecture, three hours; discussion section, one hour. Prerequisite: course 21 or 22 or consent of the instructor. A study of Kant's views on related topics in theory of knowledge, ethics, and politics. Mr. Hill, Mr. Hills
- 116. Nineteenth Century Philosophy.** Lecture, three hours; discussion section, one hour. Prerequisite: one course in philosophy or consent of the instructor. Selected topics in nineteenth century thought.
- 117. Late 19th and Early 20th Century Philosophy.** Lecture, three hours; discussion section, one hour. Prerequisite: one course in philosophy or consent of the instructor. Selected topics in the work of one or more of the following philosophers: Bolzano, Frege, Husserl, Meinong, the early Russell and Wittgenstein. Mr. Burge
- GROUP II**
- 125. Introduction to Modern Logic.** Lecture, three hours; discussion section, one hour. Open to lower division students with consent of the instructor. A survey of elementary topics in sentential logic, axiomatic foundations of arithmetic, calculus of classes and relations, elementary theory of probability, modal logic. Mr. Kalish
- 126A. Philosophy of Science.** Lecture, three hours; discussion section, one hour. Prerequisite: course 31 or course 125. An analysis of explanation, confirmation, and theory in the sciences.
- 126B. Philosophy of Science.** Lecture, three hours; discussion section, one hour. Prerequisite: course 126A or consent of the instructor. Certain philosophical problems regarding the content of the sciences.
- 126C. Philosophy of Science: Social Sciences.** Lecture, three hours; discussion section, one hour. Prerequisite: two courses in philosophy or consent of the instructor. A discussion of topics in the philosophy of social science; e.g., the methods of the social sciences in relation to the physical sciences; value-bias in social inquiry; concept formation; theory construction; explanation and predication; the nature of social laws. Mr. Boxill
- 127A. Philosophy of Language.** Lecture, four hours. Prerequisite: course 31 or consent of the instructor. Syntax, semantics, pragmatics. The semantical concept of truth, sense and denotation, synonymy and analyticity, modalities and tenses, indirect discourse, indexical terms, semantical paradoxes. May be repeated for credit with the consent of the instructor. Mr. Burge, Mr. Church, Mr. Kaplan
- 127B. Philosophy of Language.** Lecture, four hours. Prerequisites: course 32 or consent of the instructor. Course 127A is not a prerequisite for course 127B. Selected topics similar to those considered in course 127A will be discussed but at a more advanced and technical level. Mr. Church, Mr. Kaplan
- 128A. Philosophy of Mathematics.** Lecture, four hours. Prerequisite: course 31, 32, and preferably one additional course in logic. The philosophy of mathematics; logicism of Frege and Russell, arithmetic reduced to logic; ramified type theory and impredicative definition (Russell, Poincare, the early Weyl). Mr. Church
- 128B. Philosophy of Mathematics.** Lecture, four hours. Prerequisite: course 128A or consent of the instructor. Intuitionism of Brouwer, Heyting, and the later Weyl; proof theory of Hilbert. Mr. Church
- 129. Philosophy of Psychology.** Lecture, three hours; discussion section, one hour. Prerequisite: one 4-unit course in Psychology and one course in Philosophy. Selected philosophical issues arising from psychological theories. Relevance of computer simulation to accounts of thinking and meaning; relations between semantical theory and learning theory; psychological aspects of the theory of syntax; behaviorism, functionalism and alternatives; physiology and psychology. Mr. Burge
- 133. Logic, Third Course.** Lecture, four hours. Prerequisite: course 32. Topics in logic and semantics; formal theories, definitions, alternative theories of descriptions. Mr. Kalish, Mr. Kaplan
- 134. Introduction to Set Theory.** Lecture, four hours. Prerequisite: course 32, or upper division standing in mathematics and consent of the instructor. Introduction to axiomatic set theory; sets, natural numbers, relations, functions, cardinality, infinity. Mr. Kalish
- 135. Introduction to Metamathematics.** Lecture, four hours. Prerequisite: course 32; 134 recommended. Models, satisfaction, truth, definability; logical truth and logical consequence; consistency and completeness. Mr. Church, Mr. Kalish, Mr. Kaplan
- 136. Modal Logic.** Lecture, four hours. Prerequisite: course 32; 133 or 135 recommended. The logic of necessity and possibility. Various formulations of the syntax and semantics of such logics. The problem of interpreting quantified modal logic, deontic, and other non-extensional logics. Mr. Kaplan
- GROUP III**
- 150. Society and Morals.** Lecture, three hours; discussion section, one hour. Prerequisite: course 22 or consent of the instructor. A critical study of principles and arguments advanced in discussion of current moral and social issues. The topics will be similar to those of course 4, but familiarity with some basic philosophical concepts and methods will be presupposed. May be repeated for credit with the consent of the instructor. Mr. Hill, Mr. Kavka, Mr. Wasserstrom
- 151A-151B. History of Ethics.** Lecture, three hours; discussion section, one hour. Prerequisite: two courses in philosophy or the consent of the instructor. Course 151A is not a prerequisite for 151B. 151A. Selected classics in earlier ethical theories. 151B. Selected classics in later ethical theories. Mr. Hill, Mr. Kavka, Mr. Quinn
- 153. Topics in Ethical Theory.** Lecture, three hours; discussion section, one hour. Prerequisite: course 22 or consent of the instructor. A study of selected problems in ethical theory. Topics may include the analysis of moral language, the justification of moral beliefs, and various conceptions of the fundamental principles of morality. May be repeated for credit with consent of the instructor. Mr. Hill, Mr. Kavka, Mr. Quinn
- 154. Moral Issues and the Professions.** Lecture, three hours; discussion section, one hour. Prerequisite: consent of the instructor, course 22 recommended but not required. A philosophical examination of specific moral issues, with special attention to problems which arise in medicine, law, engineering, business, and other professions. Critical analysis of principles presupposed in alternative answers, and discussions of the relevance of moral theories to the resolution of the problems. Discussion and individual research is stressed. Restricted enrollment: 20. Philosophy 154 cannot be taken in fulfillment of major requirements in Philosophy. Either Philosophy 154 or Philosophy 150 can be taken: credit will not be given for both. The Staff
- 155. Medical Ethics.** An examination of the philosophical issues raised by problems of medical ethics such as abortion, euthanasia, and medical experimentation.
- 156. Topics in Political Philosophy.** Lecture, three hours; discussion section, one hour. Prerequisite: two courses in philosophy or consent of the instructor; course 22 is advised. Analysis of some basic concepts in political theory. May be repeated for credit with the consent of the instructor. Mr. Boxill, Mr. Kavka
- 157. History of Political Philosophy.** Lecture, three hours; discussion section, one hour. Prerequisite: two courses in philosophy or consent of the instructor; course 22 is advised. Selected classics in the history of political philosophy. Mr. Boxill, Mr. Kavka
- 161. Topics in Aesthetic Theory.** Lecture, three hours; discussion section, one hour. Prerequisites: one course in philosophy or consent of the instructor. Philosophical theories about the nature and importance of art and art criticism, aesthetic experience, and aesthetic values. May be repeated for credit with the consent of the instructor. Mr. Quinn
- 166. Introduction to Legal Philosophy.** Prerequisite: one course in philosophy or consent of the instructor. An examination, through the study of recent philosophical writings, of such topics as: the nature of law, the relationship of law and morals, legal reasoning, punishment, and the obligation to obey the law. Mr. Morris, Mr. Wasserstrom
- GROUP IV**
- 170. Philosophy of Mind.** Lecture, three hours; discussion section, one hour. Prerequisite: two relevant courses in philosophy or consent of the instructor. An analysis of various problems concerning the nature of mind and mental phenomena, such as the relation between the mind and the body, and our knowledge of other minds. Mr. Donnellan
- 172. Philosophy of Language.** Lecture, three hours; discussion section, one hour. Prerequisite: two relevant courses in philosophy or linguistics, or consent of the instructor. Analysis of the concepts of meaning, reference and truth in natural languages; syntactic and semantic descriptions of natural languages; theory of speech acts. Mr. Donnellan
- 174. Contemporary Philosophy.** Lecture, three hours; discussion section, one hour. Prerequisite: two lower division courses in philosophy or one upper division course in philosophy or one course in logic or consent of the instructor. Analysis of the views of several recent philosophers. Mr. Donnellan
- 175. Topics in Philosophy of Religion.** Lecture, three hours; discussion section, one hour. Prerequisite: course 21 or 22 or consent of the instructor. An intensive investigation of one or two topics or works in the philosophy of religion, such as the attributes of God, arguments for or against the existence of God, or the relation between religion and ethics. Consult the department for topic to be treated in a given quarter. May be repeated for credit with the consent of the instructor. Mr. Adams, Mrs. Adams, Mr. Albritton
- 177A. Existentialism.** Lecture, three hours; discussion section, one hour. Prerequisite: one course in philosophy or consent of the instructor. Analysis of the methods, problems and views of some of the following: Kierkegaard, Nietzsche, Heidegger, Jaspers, Sartre, Marcel, and Camus. Possible topics: metaphysical foundations, nature of mind, freedom, problem of the self, other people, ethics, existential psychoanalysis.
- 177B. Historical Studies in Existentialism.** Lecture, three hours; discussion section, one hour. Prerequisite: one course in philosophy or consent of the instructor. A study of the central philosophical texts of one of the following: Kierkegaard, Nietzsche, Heidegger, Jaspers, Sartre, or Camus. The course will focus primarily on explication and interpretation of the texts.
- 178. Phenomenology.** Lecture three hours; discussion section, one hour. Prerequisite: two courses in philosophy or consent of the instructor. Introduction to the phenomenological method of approaching philosophical problems via the works of some of the following: Brentano, Husserl, Heidegger, Scheler, Sartre, Merleau-Ponty, Ricoeur. Topics fall in the areas of ontology, epistemology, and particularly philosophy of mind.
- 182. Elements of Metaphysics.** Lecture, three hours; discussion section, one hour. Prerequisite: course 21 or consent of the instructor. Study of basic metaphysical questions; nature of the physical world, of minds, and of universals; and the answers provided by alternative systems, e.g., phenomenalism; materialism; dualism. Mr. Adams
- 183. Theory of Knowledge.** Lecture, four hours. Prerequisite: course 21 or consent of the instructor. An analysis of the concept of empirical knowledge. Mr. Yost
- 184. Topics in Metaphysics.** Lecture, four hours. Prerequisite: course 21 or consent of the instructor. An intensive investigation of one or two topics or works in metaphysics, such as: personal identity, the nature of dispositions, possibility and necessity, universals and particulars, causality. Consult the department for topics to be treated in a given quarter. May be repeated for credit with the consent of the instructor. Mr. Adams, Mr. Donnellan
- 185. Space and Time.** Lecture, three hours; discussion section, one hour. Prerequisite: two courses in philosophy or consent of the instructor. An analysis of philosophical problems concerning the nature of space and time, including traditional puzzles as well as questions raised by modern science.
- 186. Topics in the Theory of Knowledge.** Lecture, four hours. Prerequisite: course 182 or 183 or consent of the instructor. An intensive investigation of one or two selected topics or works in the theory of knowledge, such as: a priori knowledge, the problem of induction, memory, knowledge as justified true belief. Consult the department for topics to be treated in a given quarter. May be repeated for credit with the consent of the instructor. Mr. Albritton, Mr. Yost
- 188. Philosophy of Perception.** Lecture, four hours. Prerequisite: two courses in philosophy or consent of the instructor. A critical study of the main philosophical theories of perception and the arguments used to establish them. Mr. Yost
- NO GROUP**
- 190. Third World Political Thought.** Lecture, three hours; discussion section, one hour. The political philosophy of various third world thinkers. The topics chosen may vary from year to year, but typically will be chosen from the following: Franz Fanon, Jinhua and Cesaire's "Negritude," W.E.B. du Bois' Pan-Africanism, Che and Mao. Mr. Boxill
- 191. Mysticism.** Lecture, three hours; discussion section, one hour. Prerequisite: one course in philosophy. A study of writings of mystics, concentrating on the phenomenology of mystical experience, epistemological problems connected with such experiences, and the relevance of such experiences for certain systems of ethics and metaphysics. Mrs. Adams
- 192. Philosophical Analysis of Issues in Women's Liberation.** Lecture, four hours. Prerequisite: one course in Philosophy or consent of instructor. A critical study of concepts and principles which arise in the discussion of women's rights and liberation. Topics may include economic and educational equality, preferential treatment, abortion, sex roles, sexual morality, marriage, love, friendship.
- 193. Christian Ethical Thought.** Lecture, three hours; discussion section, one hour. Reading of selected classic and contemporary authors in the Christian ethical tradition, with philosophical analysis



and assessment of their views on morality and the religious life.

Mr. Adams

**195. 19th and 20th Century Religious Thought.** Lecture, three hours; discussion section, one hour. Modern Religious Thought. A philosophical approach to Western religious thought of the last two hundred years, through study of selected works by such authors as Kant, Schleiermacher, Kierkegaard, Buber, Camus, and Tillich.

Mr. Adams

**196. Undergraduate Seminar in Philosophy.** Lecture, three hours; discussion, one hour. Prerequisite: consent of the instructor. Variable Topics; Consult Schedule of Classes or Department Announcements for current topic. May be repeated for credit with the consent of the instructor. The Staff

**199. Special Studies. (½ to 2 courses)** Prerequisite: consent of the instructor. As many as eight units of this course can be used for the philosophy major, but the course cannot be substituted for a course in one of the four groups on the basis of similarity of subject matter. The Staff

## Graduate Courses

### NO GROUP

**200A-200B-200C. Seminar for First Year Graduate Students.** Prerequisite: open only to first-year graduate students in philosophy. Selected topics in metaphysics and epistemology, history of philosophy, and ethics. Required for all first-year graduate students. The Staff

### GROUP I

**201. Plato.** Prerequisite: consent of the instructor. A study of the later dialogues.

**202. Aristotle.** Prerequisite: undergraduate preparation in the history of Greek philosophy. Analysis of major problems in Aristotle's philosophy based on the reading, exposition and critical discussion of relevant texts in English translation. Mr. Furth

**203. Seminar: History of Ancient Philosophy.** (Formerly numbered 251A.) Prerequisite: consent of the instructor. Selected problems and philosophers. May be repeated for credit with the consent of the instructor. Mr. Furth

**206. Topics in Medieval Philosophy.** Lecture/discussion, four hours. Prerequisite: consent of the instructor. The study of the philosophy and theology of one or several medieval philosophers such as Augustine, Anselm, Abelard, Aquinas, Scotus, or Ockham; or the study of a single area such as logic or theory of knowledge in several medieval philosophers. Consult the department for topic to be treated in a given quarter. May be repeated for credit with the consent of the instructor. Mrs. Adams

**207. Seminar: History of Medieval and Renaissance Philosophy.** (Formerly numbered 251B.) Prerequisite: consent of the instructor. Selected problems and philosophers. May be repeated for credit with the consent of the instructor. Mrs. Adams

**208. Hobbes.** (Formerly numbered 203.) Prerequisite: consent of the instructor. Hobbes' political philosophy, especially the *Leviathan*, with attention to its relevance to contemporary political philosophy. Mr. Kavka

**209. Descartes.** Prerequisite: consent of the instructor. Selected topics in the philosophy of Descartes. Mr. Yost

**210. Spinoza.** Prerequisite: consent of the instructor. Selected topics in the philosophy of Spinoza. May be concurrently scheduled with course 110, in which case there will be a two hour biweekly discussion meeting for graduates only, and additional readings and a longer term paper will be required of graduates. Mr. Adams

**211. Leibniz.** Prerequisite: consent of the instructor. Selected topics in the philosophy of Leibniz. May be concurrently scheduled with course 111, in which case there will be a two hour biweekly discussion meeting for graduates only, and additional readings and a longer term paper will be required of graduates. Mr. Adams

**212. Locke and Berkeley.** Prerequisite: consent of the instructor. Selected topics in the philosophy of Locke and Berkeley. May be offered concurrently with course 112. May be repeated for credit with the consent of the instructor. Mr. Donnellan, Mr. Hills

**214. Hume.** Prerequisite: consent of the instructor. Selected topics in the philosophy of Hume. May be offered concurrently with course 114. May be repeated for credit with the consent of the instructor. Mr. Donnellan

**215. Kant.** (Formerly numbered 207.) Prerequisite: consent of the instructor. An intensive study of selected writings of Immanuel Kant. Mr. Hill

**216. Nineteenth Century Philosophy.** (Formerly numbered 211.) Prerequisite: consent of the instructor. Topics in nineteenth century philosophy. May be repeated for credit with the consent of the instructor. The Staff

**219. Seminar: History of Modern Philosophy.** (Formerly numbered 251C.) Prerequisite: consent of the instructor. Selected problems and philosophers. May be repeated for credit with the consent of the instructor. The Staff

### GROUP II

**221A. Topics in Set Theory.** Prerequisites: Mathematics 112A or consent of the instructor. Sets, relations, functions, partial and total orderings; well-orderings. Ordinal and cardinal arithmetic,

finiteness and infinity, the continuum hypothesis, inaccessible numbers. Formalization of set theory: Zermelo-Fraenkel; von Neumann-Gödel Theory. May be repeated for credit with the consent of the instructor. Mr. Kalish

**221B. Non-Neumannian Set Theory.** Prerequisites: course 221A or consent of the instructor. Standard (so-called Z-F) set theory relies on a principle of limitations of size as a means of avoiding antinomy. As this principle was first formulated explicitly as an axiom of set theory by von Neumann, set theories in which it fails may appropriately be spoken of as non-Neumannian. In this course, possibilities in regard to non-Neumannian set theories will be explored; proposed axiomatizations and relative consistency proofs based on the assumed consistency of Z-F set theory or of Z-F set theory plus a strong axiom of infinity. Mr. Church

### 222A-222B-222C. Gödel Theory.

**222A.** Prerequisites: several courses in logic, preferably including course 135. First in a series of three courses leading up to Gödel's incompleteness theorem and Tarski's definition of truth.

**222B.** Prerequisite: course 222A. Second-order arithmetic. Second in series of three courses leading up to Gödel's incompleteness theorem and Tarski's definition of truth.

**222C.** Prerequisites: courses 222A and 222B. Gödel numbering and Gödel theory. Final course in the Gödel Theory series. Mr. Church

**224. Philosophy of Physics.** Prerequisite: consent of the instructor. Selected philosophical topics related to physical theory, depending on interests and background of the participants. Might include: space and time; observation in quantum mechanics; foundations of statistical mechanics. May be repeated for credit with the consent of the instructor.

**225. Probability and Inductive Logic.** Prerequisite: course 134 or Mathematics 112A-112B or consent of the instructor.

**226. Topics in Mathematical Logic.** Prerequisite: consent of the instructor. Content will vary from quarter to quarter. Consult the department for topic to be treated in a given quarter. May be repeated for credit with the consent of the instructor. Mr. Kalish, Mr. Kaplan

**227. Philosophy of Social Science.** Prerequisite: consent of the instructor. An examination of philosophical problems concerning concepts and methods used in the social sciences. Topics considered may include: the relation between social processes and individual psychology, the logic of explanation in the social sciences, determinism and spontaneity in history, the interpretation of cultures radically different from one's own. Students with a primary interest, and advanced preparation, in a social science are encouraged to enroll. May be repeated for credit with the consent of the instructor. The Staff

**230. Seminar: Logic.** (Formerly numbered 261.) Prerequisite: consent of the instructor. May be repeated for credit with the consent of the instructor. Mr. Church, Mr. Kaplan

**231. Seminar: Intensional Logic.** (Formerly numbered 260.) Prerequisite: consent of the instructor. Topics may include the logic of sense and denotation, modal logic, the logic of demonstratives, epistemic logic, the intensional logic of *Principia Mathematica*, possible worlds semantics. May be repeated for credit with the consent of the instructor. Mr. Church, Mr. Kaplan

**232. Philosophy of Science.** Prerequisite: consent of the instructor. Selected topics in the philosophy of science. May be repeated for credit with the consent of the instructor.

**233. Seminar: Philosophy of Physics.** (Formerly numbered 263.) Prerequisite: consent of the instructor. May be repeated for credit with the consent of the instructor. The Staff

### GROUP III

**241. Topics in Political Philosophy.** (Formerly numbered 236.) Prerequisites: courses 150, 156, or 157; or any two courses in philosophy; or consent of the instructor. An examination of one or more topics in political philosophy; e.g., justice, democracy, human rights, political obligation, alienation. May be repeated for credit with the consent of the instructor. Mr. Boxill

**245. Seminar: History of Ethics.** (Formerly numbered 270.) Prerequisite: consent of the instructor. Selected topics. May be repeated for credit with the consent of the instructor. Mr. Hill

**246. Seminar: Ethical Theory.** (Formerly numbered 271.) Prerequisite: consent of the instructor. Selected topics. Content will vary from quarter to quarter. May be repeated for credit with the consent of the instructor. Mr. Hill, Mr. Kavka, Mr. Quinn

**247. Seminar: Political Theory.** (Formerly numbered 272.) Prerequisite: consent of the instructor. May be repeated for credit with the consent of the instructor. Mr. Boxill, Mr. Kavka

**248. Problems in Moral Philosophy.** (Formerly numbered 273.) Prerequisite: consent of the instructor. An intensive study of some leading current problems in moral philosophy. May be repeated for credit with the consent of the instructor. Mrs. Foot

**255. Seminar: Aesthetic Theory.** (Formerly numbered 277.) Prerequisite: consent of the instructor. Selected topics. May be repeated for credit with the consent of the instructor. Mr. Quinn

**M256. Topics in Legal Philosophy.** (Same as Law M256.) Prerequisite: consent of the instructor. An examination of topics such as the concept of law, the nature of justice, problems of

punishments, legal reasoning, and the obligation to obey the law. For the specific topic to be examined in any particular offering of the course consult the instructor. The course may be repeated for credit with the consent of the instructor.

Mr. Morris, Mr. Wasserstrom

**M257. Seminar: Philosophy of Law.** (Same as Law M307.) Prerequisite: consent of the instructor. Selected topics in the philosophy of law. May be repeated for credit with the consent of the instructor. Mr. Morris, Mr. Wasserstrom

### GROUP IV

**275. Human Action.** (Formerly numbered 241.) Prerequisites: two upper division philosophy courses or consent of the instructor. An examination of theories, concepts and problems concerning human actions. Topics might include: analysis of intentional actions; determinism and freedom; the nature of explanations of intentional actions. May be repeated for credit with the consent of the instructor. Mr. Albritton, Mr. Donnellan

**280. 20th Century Continental Philosophy.** Prerequisite: consent of the instructor. Selected topics in 20th century continental European philosophy. May be repeated for credit with the consent of the instructor.

**282. Seminar: Metaphysics.** Prerequisite: consent of the instructor. May be repeated for credit with the consent of the instructor.

**283. Seminar: Theory of Knowledge.** Prerequisite: consent of the instructor. May be repeated for credit with the consent of the instructor. Mr. Donnellan, Mr. Yost

**284. Seminar: Philosophy of Perception.** Prerequisite: consent of the instructor. May be repeated for credit with the consent of the instructor. Mr. Yost

**286. Philosophy of Psychology.** Relevance of computer simulation to accounts of thinking and meaning; relations between semantical theory and learning theory; psychological aspects of theory of syntax; behaviorism, functionalism and alternatives; physiology and psychology. Mr. Burge

**287. Seminar: Philosophy of Language.** Prerequisite: consent of the instructor. May be repeated for credit with the consent of the instructor. Mr. Burge, Mr. Donnellan, Mr. Furth

**288. Seminar: Wittgenstein.** Prerequisite: consent of the instructor. Mr. Albritton

**289. Seminar: Philosophy of Religion.** Prerequisite: consent of the instructor. May be repeated for credit with the consent of the instructor. Mr. Adams, Mrs. Adams, Mr. Albritton

## Professional Course

**495. Teaching of College Philosophy. (½ to 1 course)** Prerequisite: consent of the instructor. Seminars, workshops, and apprentice teaching. Selected topics including evaluation scales, various teaching strategies and their effects, and other topics in college teaching. May be repeated for credit. Graded only on a satisfactory/unsatisfactory basis. The Staff

## Individual Study and Research

The courses in the 500 series do not apply toward the course requirement for the master's degree.

**596A-596B. Directed Individual Studies. (½ to 2 courses)** Any properly qualified graduate student who wishes to pursue a problem through reading or advanced study may do so if his proposed project is acceptable to a member of the staff. May be repeated for credit. Course 596A offered only on a graded basis; 596B only on a satisfactory/unsatisfactory basis. The Staff

**599. Research for Doctoral Dissertation. (½ to 2 courses)** Prerequisite: advancement to candidacy for the doctoral degree. May be repeated for credit. Offered on a satisfactory/unsatisfactory basis only. The Staff

## PHYSICS

(Department Office, 3174 Knudsen Hall)

Ernest S. Abers, Ph.D., *Professor of Physics.*  
Rubin Braunstein, Ph.D., *Professor of Physics.*  
Nina Byers, Ph.D., *Professor of Physics.*  
Marvin Chester, Ph.D., *Professor of Physics.*  
W. Gilbert Clark, Ph.D., *Professor of Physics.*  
John M. Cornwall, Ph.D., *Professor of Physics.*  
John Dawson, Ph.D., *Professor of Physics.*  
Robert J. Finkelstein, Ph.D., *Professor of Physics.*  
A. Theodore Forrester, Ph.D., *Professor of Physics and Engineering.*  
Burton Fried, Ph.D., *Professor of Physics.*  
Christian Fronsdal, Ph.D., *Professor of Physics.*  
Roy P. Haddock, Ph.D., *Professor of Physics.*  
Theodore Holstein, Ph.D., *Professor of Physics.*  
George J. Igo, Ph.D., *Professor of Physics (Chairman of the Department).*  
Charles Kennel, Ph.D., *Professor of Physics.*  
Leon Knopoff, Ph.D., *Professor of Physics and Geophysics and Earth and Space Sciences.*  
Kenneth R. MacKenzie, Ph.D., *Professor of Physics.*  
Steven A. Moszkowski, Ph.D., *Professor of Physics.*

Bernard M. K. Nefkens, Ph.D., *Professor of Physics*.  
 Richard E. Norton, Ph.D., *Professor of Physics*.  
 Raymond L. Orbach, Ph.D., *Professor of Physics*.  
 Philip A. Pincus, Ph.D., *Professor of Physics*.  
 J. Reginald Richardson, Ph.D., *Professor of Physics*.  
 Isadore Rudnick, Ph.D., *Professor of Physics*.  
 J. J. Sakurai, Ph.D., *Professor of Physics*.  
 Robert A. Satten, Ph.D., *Professor of Physics*.  
 David S. Saxon, Ph.D., *Professor of Physics*.  
 Peter Schlein, Ph.D., *Professor of Physics*.  
 Julian Schwinger, Ph.D., *Professor of Physics*.  
 William E. Slater, Ph.D., *Professor of Physics*.  
 Donald H. Stork, Ph.D., *Professor of Physics*.  
 Harold K. Ticho, Ph.D., *Professor of Physics*.  
 Alfred Y. Wong, Ph.D., *Professor of Physics*.  
 Chun Wa Wong, Ph.D., *Professor of Physics*.  
 Eugene Wong, Ph.D., *Professor of Physics*.  
 Byron T. Wright, Ph.D., *Professor of Physics*.  
 Alfredo Baños, Jr., Dr.Eng., Ph.D., *Emeritus Professor of Physics*.  
 Hans E. Bommeil, Ph.D., *Emeritus Professor of Physics*.  
 Joseph Kaplan, Ph.D., Sc.D., L.H.D., *Emeritus Professor of Physics*.  
 Norman A. Watson, Ph.D., *Emeritus Professor of Physics*.  
 Charles D. Buchanan, Ph.D., *Associate Professor of Physics*.  
 Paul M. Chaikin, Ph.D., *Associate Professor of Physics*.  
 Ferdinand V. Coroniti, Ph.D., *Associate Professor of Physics and Astronomy*.  
 Seth J. Putterman, Ph.D., *Associate Professor of Physics*.  
 Reiner Stenzel, Ph.D., *Associate Professor of Physics*.  
 Charles A. Whitten, Jr. Ph.D., *Associate Professor of Physics*.  
 Gary A. Williams, Ph.D., *Assistant Professor of Physics*.

S. Merton Burkhard, M.S., *Lecturer in Physics*.

#### Preparation for the Major in Physics

*Required:* Physics 8A-8E; Chemistry 11A-11B-11BL and 11C required; Chemistry 11CL is recommended but not required; Mathematics 31A-31B-31C, 32A-32B-32C.

#### The Major in Physics†

†A mimeographed brochure giving more detailed information than is contained in this bulletin is obtainable from the Office of Undergraduate Affairs, Department of Physics.

The following courses are required: Physics 105A, 105B, 110A, 110B, 112A, 115A, 115B, 131A, three courses from the Physics 180 series; three additional upper division physics lecture courses selected from Physics 108, 112B, 114, 122, 123, 124, 126, 131B and 140. An upper division course in Mathematics may be substituted for Physics 131B upon approval of an adviser. A "C" average is required in the above courses. A reading knowledge of Russian, German or French is recommended. This major leads to the Bachelor of Science degree. Junior transfer students should preferably have completed 1) a two year calculus-analytic geometry sequence or equivalent and 2) the calculus based physics course at their previous college, but in no case should less than 3 semesters or 4 quarters of the mathematics and 1 year of the physics sequence be completed before transferring to UCLA. At least C grades in all mathematics and physics courses taken are required.

Students preparing for graduate school should take additional courses in physics and mathematics. Physics 122, 123, 124, 126, and 140 are recommended.

#### The Major in General Physics

This major leads to the degree "B.A. in General Physics." It is intended to provide the necessary flexibility for those students who are interested in fields which can benefit from a strong background of knowledge of physics. Those students who intend to continue work in the Ph.D. in physics are advised to work for the B.S. in physics as described under the "Major in Physics." The course requirements for the B.A. in General Physics are as follows: Physics 105A, 110A, 110B, 112A, 115A, 131A, one course from the 180 series, two upper division physics electives (excluding 185, and 199), and five upper division courses in no more than two departments other than physics. A "C" average in the upper division physics courses is required.

#### Teaching Credentials

Students may earn credentials for teaching physical sciences and other subjects in California elementary and secondary schools. Some majors are more advantageous than others for professional preparation. Completion of the Teacher Credential Program in the Teacher Education Laboratory is required. Consult with the Graduate School of Education (201 Moore Hall) for information.

#### Requirements for the Degree of Master of Science †

†A brochure giving additional information of interest to graduate students in physics is obtainable from the Office of Graduate Affairs, Department of Physics.

*Prescribed Courses.* The University requires a total of nine courses for the M.S. degree. The Physics Department requires that a minimum of six of the nine be graduate courses in physics of which the student must pass any four of the five fundamental courses: 231A, 220, 210A, 215A, and 221A. The remaining three courses may be satisfied by upper division or graduate courses, not necessarily in physics, which are acceptable to the Physics Department. No more than two of the three courses may be chosen from Physics 596 or

seminar courses. Physics 597 and Physics 598 are not acceptable courses for the M.S. degree.

*Comprehensive Examination.* A passing grade on a written comprehensive examination is required. It is required that it be taken during the first year by UCLA graduates in physics or not later than the fourth quarter of residence by other students. This examination is given twice a year in the Fall and Spring Quarters.

Although this Department operates under the "comprehensive examination plan," rather than the "thesis plan," arrangements generally can be made for a student to write a master's thesis, provided he has a particularly interesting research problem, and provided some professor is willing to undertake the guidance of his work. In this case the student must petition the Departmental Committee of Graduate Advisers for permission to pursue the "thesis plan." The comprehensive examination requirement is waived if the petition is approved.

*Scholarship Requirements.* A B average is required in physics as well as an overall B average in all courses taken in graduate status.

#### The Master of Arts, Teaching (M.A.T.) Degree

This degree leads to qualification for teaching credentials at the secondary school or junior college level. The program consists of at least five graduate physics courses, four of which are chosen from 231A, 220, 215A, 210A, or 221A; five additional graduate or upper division courses in physics and education; and a special physics teaching laboratory, Physics 370. For those who have not completed credential requirements, the five additional courses will include Education 100 or 112, 312, 315, and 330 (supervised teaching at the secondary or junior college level). In addition, the student must pass a comprehensive physics examination. A brochure which describes the program is available on request to the Department of Physics.

#### Requirements for the Degree of Doctor of Philosophy †

For the general requirements see the Graduate Division. The qualifying examinations for candidates for the Ph.D. degree in physics include (1) a written comprehensive examination; (2) the final written examinations in each of the courses 220, 210A, 221A, 215A, and 231A; (3) a comprehensive departmental oral examination; and (4) a qualifying oral examination in the student's chosen field conducted by a committee appointed by the Graduate Council upon nomination by the Department Chairman. The same committee guides the candidate's research, approves his dissertation, and conducts a final examination.

*Normal Progress for Graduate Students.* The normal schedule of progress toward the Ph.D. degree is as follows: the written comprehensive examination should be taken by the fourth quarter in residence at UCLA; examinations in the five fundamental courses should be completed no later than the end of the fifth quarter; a specialized course of study should begin during the second year; the comprehensive oral examination should be completed no later than the eighth quarter, and the oral qualifying examination (advancement to candidacy) no later than the end of the eleventh quarter; the dissertation and final oral examination should be finished during the fourth and fifth years.

#### Lower Division Courses

Physics 1Q, Contemporary Physics, is intended for entering freshmen physics majors, and will normally be taken in the first quarter of residence. There are no course prerequisites. Although it is not a required course or a part of or prerequisite to any general physics sequence of courses, it serves a purpose which general introductory courses do not fulfill adequately, if at all, namely to indicate the nature of current research problems in physics.

Physics 8A-8E form a sequence of courses in general physics for majors in physics. All or part of the sequence is also required or recommended as first choice for major students in: astronomy, atmospheric sciences, chemistry, engineering, geology, mathematics, and certain interdepartmental fields of concentration. Physics 8A-8E covers (at a slower pace) the material formerly covered in 7A-7D.

Physics 8AH-8DH is an honors sequence intended for students with an outstanding record in high school science courses and a deep interest in physics. This sequence covers the same material as the Physics 8A-8D sequence but in greater depth.

The Department desires to take into account prior preparation in physics. Students who feel their background would permit acceleration may be exempted from courses 8A-8E, by taking the final examination with a class at the end of any quarter. These will serve as placement examinations. Qualified students are urged to discuss such possibilities with their advisers.

Physics 3A, 3B-3C form a one-year sequence of courses in general physics (with laboratory) primarily for students in the biological and health sciences but open to any student who meets the prerequisites. In this sequence only algebra and trigonometry are used in providing a mathematical description of physical phenomena: calculus is not used.

Physics 6A-6B-6C form a one-year sequence of courses in basic physics for students in the biological and health sciences. However, unlike Physics 3A-3B-3C, calculus is used throughout and satisfactory completion of basic calculus courses is a prerequisite for admission to this sequence. Individual departments will, on an individual basis, advise students as to which physics sequence is required for each major. After an interim period, it is expected that

all biology and bacteriology majors will be required to complete the physics 6A-6B-6C sequence.

Physics 10 is a one-quarter, non-laboratory course which surveys the whole field of physics. It is designed for the liberal arts student and satisfies in part the College of Letters and Science E requirement in the Physical Sciences for non-physical science majors. Any two or more courses from Physics 10, 3A, 6A, and 8A shall be limited to six units credit.

#### Lower Division Courses

**1Q. Contemporary Physics. (½ course)** Prerequisite: a major in physics. A review of current problems in physics with emphasis on those being studied in our research laboratories at UCLA. The significance of the problems and their historical context. (F)

**3A. General Physics: Mechanics of Solids and Fluids.** Lecture and demonstration, three hours; discussion, one hour; laboratory, two hours. Prerequisite: three years of high school mathematics including trigonometry, or two years of high school mathematics and a one-term college course in mathematics with trigonometry included in the group of courses; or the equivalent courses: Physics 3A is not open for credit to students who have credit for Physics 8A or the equivalent. The fundamentals of classical mechanics: Newton's Laws; conservation of momentum, angular momentum, energy; Kepler's Laws; dynamics of systems of particles; fluid mechanics. (F,W)

**3B. General Physics: Heat, Sound and Electricity and Magnetism.** Lecture and demonstration, three hours; discussion, one hour; laboratory, two hours. Prerequisite: course 3A or equivalent. Temperature, heat and the laws of thermodynamics. Introduction to wave motion, resonance. Sound and acoustics. Electric and magnetic fields. Electric power. Elements of DC and AC circuits. (W,Sp)

**3C. General Physics: Light, Relativity, and Modern Physics.** Lecture and demonstration, three hours; discussion, one hour; laboratory, two hours. Prerequisite: course 3B or equivalent. Light, optical instruments. Introduction to relativity. The electron and the atom. Matter waves. Nuclear and particle physics. (F,Sp)

**6A. Physics for Life Science Majors: Mechanics and Wave Motion.** Lecture and demonstration, three hours; discussion, one hour; laboratory, two hours. Prerequisite: Mathematics 3A, 3B and 3C or the equivalent. Mathematics 3C may be taken concurrently. (F,W)

**6B. Physics for Life Science Majors: Electricity and Magnetism.** Lecture and demonstration, three hours; discussion, one hour; laboratory, two hours. Prerequisite: Physics 6A. (W,Sp)

**6C. Physics for Life Science Majors: Thermodynamics, Light and Modern Physics.** Lecture and demonstration, three hours; discussion, one hour; laboratory, two hours. Prerequisite: course 6B. (F,W)

**8A. General Physics: Mechanics of Solids.** (Formerly numbered 7A.) Lecture and demonstration, four hours; discussion, one hour. Prerequisites: high school physics or chemistry, preferably both; Mathematics 31A completed and 31B concurrent with Physics 8A; or equivalent courses. (F,W,Sp)

**8AH. General Physics: Mechanics of Solids-Honors Sequence.** Lecture and demonstration, four hours; discussion, one hour. This course, intended for students with an outstanding record in high school science courses and a deep interest in physics, covers the same material as Physics 8A but in greater depth. Prerequisites: Mathematics 31A (or preferably 31AH) completed and 31B (or preferably 31BH) concurrent with Physics 8AH; or equivalent courses. Enrollment in Physics 8AH rather than 8A is left to the judgment of the student. In case of doubt, consult the instructor scheduled to give the course.

**8B. General Physics: Vibration, Wave Motion, Sound, Fluids, Heat, and Kinetic Theory.** (Formerly numbered 7C.) Lecture and demonstration, three hours; discussion, one hour; laboratory, two hours. Prerequisites: course 8A; Mathematics 31B completed and 31C concurrent with Physics 8B; or equivalent courses. (F,W,Sp)

**8BH. General Physics: Vibration, Wave Motion, Sound, Fluids, Heat, and Kinetic Theory-Honors Sequence.** Lecture and demonstration, three hours; discussion, one hour; laboratory, two hours. This course covers the same material as 8B but in greater depth. Prerequisites: course 8AH, or course 8A with a grade of A, or the recommendation of the 8A instructor; Mathematics 31B (or preferably 31BH) completed and 31C (or preferably 31CH) concurrent with 8BH; or equivalent courses. (Sp)

**8C. General Physics: Electricity and Magnetism.** (Formerly numbered 7B.) Lecture and demonstration, four hours; discussion, one hour; laboratory, two hours. Prerequisites: course 8B; Mathematics 31A completed and 32A concurrent with Physics 8C. (F,W,Sp)

**8CH. General Physics: Electricity and Magnetism - Honors Sequence.** Lecture and demonstration, four hours; discussion, one hour; laboratory, two hours. Prerequisites: course 8BH, or course 8B with a grade of A, or the recommendation of the 8B instructor; Mathematics 31C (or preferably 31CH) completed and 32A (or preferably 32AH) concurrent with Physics 8CH; or consent of the instructor. (F)

**8D. General Physics: Electromagnetic Waves, Light, and Relativity.** (Formerly numbered 7D.) Lecture and demonstration, three hours; discussion, one hour; laboratory, two hours. Prerequisites: course 8C; Mathematics 32A completed and 32B concurrent with Physics 8D; or equivalent courses. (F,W,Sp)

**8DH. General Physics: Electromagnetic Waves, Light, and Relativity - Honors Sequence.** Lecture and demonstration, three hours; discussion, one hour; laboratory, two hours. This course covers the same material as 8D but in greater depth. Prerequisites: course 8CH, or course 8C with a grade of A, or the recommendation of the 8C instructor; Mathematics 32A (or preferably 32AH) completed and 32B (or preferably 32BH) concurrent with 8DH; or the consent of the instructor. (W)

**8E. General Physics: Modern Physics.** Lecture and demonstration, three hours; discussion, one hour; laboratory, two hours. Prerequisites: course 8D; Mathematics 32B completed and 32C concurrent with Physics 8E; or equivalent courses. (F,W,Sp)

**10. Physics.** Lecture and demonstration, three hours; quiz and discussion, one hour. No special mathematical preparation is required beyond that necessary for admission to the University with Freshman standing. This course satisfies in part the College of Letters and Science requirements in the physical sciences for non-physical science majors. Topics will be selected from: Planetary motion, Newton's Laws, gravitation, electricity and magnetism, wave motion, light, sound and heat, relativity, quantum mechanics, atoms, and subatomic particles. As time permits, the development of physical ideas will be placed in their cultural and historical perspective. (F,W,Sp)

**11. Modern Physics for Non-Science Majors.** Prerequisite: course 10. A sequel to course 10. Lecture and demonstration, three hours; quiz and discussion one hour. Topics will be selected from: the concept of energy, quantum theory, nuclear physics, relativity.

#### Upper Division Courses

Prerequisite for all upper division courses: Physics 8A 8E; Mathematics 31A-31B-31C, 32A-32B, and (except for Physics 105A and 116) 32C; or consent of the instructor. Students must complete one quarter of upper division physics before enrolling in the 180 laboratory series.

**105A. Analytic Mechanics.** Newtonian mechanics and conservation laws, gravitational potentials, calculus of variations, Lagrangian and Hamiltonian mechanics, central force motion, linear oscillations.

**105B. Analytic Mechanics.** Prerequisite: course 105A. Relativity with four-vectors, non-inertial reference frames, dynamics of rigid bodies, coupled oscillators, normal modes of oscillation, vibrating strings, and wave propagation.

**108. Optical Physics.** Prerequisite: course 110B. Interaction of light with matter; dispersion theory, oscillator strength, line widths, molecular scattering. Coherence theory, Kirchhoff formulation of diffraction theory, crystal optics, optical rotation, electro and magneto optical effects. Additional topics of fundamental or current interest.

**110A. Electricity and Magnetism.** Prerequisite: course 131A. Electrostatics and magnetostatics.

**110B. Electricity and Magnetism.** Prerequisite: course 110A. Faraday's law and Maxwell's equations. Propagation of electromagnetic radiation. Multipole radiation and radiation from an accelerated charge. The special theory of relativity.

**112A. Thermodynamics.** Fundamentals of thermodynamics including the first, second, and third laws. The statistical mechanical point of view and its relation to thermodynamics. Some simple applications of the foregoing.

**\*112B. Thermodynamics.** Applications of thermodynamics and statistical mechanics to particular systems.

**114. Mechanics of Wave Motion and Sound.** Vibrating systems and wave propagation in gases, liquids and solids including elements of hydrodynamics and elasticity. Applications in ultrasonics, low temperature physics, solid state physics, architectural acoustics.

**115A. Elementary Quantum Mechanics.** Prerequisite: course 131A and 105B (the latter may be taken concurrently). The classical background, basic ideas and methods of quantum mechanics.

**115B. Elementary Quantum Mechanics.** Prerequisite: course 115A. Development of the methods and concepts of quantum mechanics.

**116. Electronics.** Three hours of lecture and three hours of laboratory. Alternating current circuits, vacuum tube characteristics and parameters, transistor characteristics and parameters, amplifiers, oscillators, non-linear tube and transistor circuits.

**M122. Plasma Physics.** (Same as Engineering M118.) Prerequisite: course 100B for Engineering students only; or course 110A. Atomic processes and particle motions; equilibrium and shielding; fluid and kinetic descriptions; transport properties; m waves and instabilities; electromagnetic interaction. Production, confinement, heating and diagnostics. Application to fusion and space.

**123. Atomic Structure.** (Formerly numbered 113.) Prerequisite: course 115B. The theory of atomic structure. Interaction of radiation with matter.

**124. Nuclear Physics.** Prerequisite: course 115A. Nuclear charge, mass, radius, spin, and moments; nuclear models; nuclear forces; alpha, beta, and gamma emission.

**126. Elementary Particle Physics.** Prerequisite: course 115B. Experimental determination of the properties of elementary particle states. Relativistic kinematics and phase space; angular momentum and isotopic spin formalism; elastic and inelastic scattering; invariance principles and conservation laws; strong, electromagnetic, and weak interactions. Survey of important experiments.

**131A. Mathematical Methods of Physics.** Matrix algebra and eigenvalue problems, vector differential operators and curvilinear coordinates, ordinary and partial differential equations, special functions, Sturm-Liouville Problem, Fourier series and integrals.

**131B. Mathematical Methods of Physics.** Prerequisite: course 131A. Green's functions and boundary value problems, complex variables and selected topics from: Tensors, Laplace transforms, probability theory, perturbation theory, approximation techniques.

**140. Introduction to Solid State Physics.** Prerequisite: course 115B or equivalent. Introduction to the basic theoretical concepts of solid state physics with applications. Crystal symmetry; cohesive energy; diffraction of electron, neutron, and electromagnetic waves in a lattice; the reciprocal lattice; phonons and their interactions; free electron theory of metals; energy bands.

**\*1480A. Nuclear Physics Laboratory.**

**\*1480B. Physical Optics and Spectroscopy Laboratory.**

**\*1480C. Solid State Physics Laboratory.**

**\*1480D. Acoustics Laboratory.**

**\*1480E. Plasma Physics Laboratory.**

**\*1480F. Elementary Particle Physics Laboratory.**

**\*1485. Foundations of Physics.** Prerequisite: senior standing in physics or consent of the instructor. The historical development and philosophical sources of classical and modern physics.

**199. Special Studies in Physics.** (½ to 1 course) May be repeated, but not more than three courses may be applied toward the bachelor's degree.

#### Graduate Courses

**210A. Electromagnetic Theory.** Boundary value problems in electrostatics and magnetostatics. Multipole expansions; dielectrics and macroscopic media. Maxwell's equations and conservation laws. Wave guides and resonators; simple radiating systems.

**210B. Electromagnetic Theory.** The electromagnetic potentials and the Hertz vectors. Cylindrical waves. Spherical waves. The Debye potentials. Multipole radiation. Classical relativistic electrodynamics. Radiation from moving charges.

**\*213A. Advanced Atomic Structure.** Group representation theory. Angular momentum and coupling schemes. Interaction of radiation with matter.

**\*213B. Advanced Atomic Structure.** The  $n_j$  symbols, continuous groups, fractional parentage coefficients,  $n$  electron systems.

**\*213C. Molecular Structure.** Application of group theory to vibrational and electronic states of molecules. Molecular orbital theory. Raman effect. Angular momentum and coupling in molecules.

**\*214A. Advanced Acoustics.** Propagation of waves in elastic and fluid media. Reflection, refraction, diffraction, and scattering of waves in fluids. Attenuation mechanisms in fluids.

**\*214B. Advanced Acoustics.** Propagation in nonhomogeneous fluids and in moving fluids. Radiation pressure, acoustic streaming, and attenuation in large amplitude sound fields. Propagation of sound in liquid helium. Mechanisms resulting in attenuation for elastic waves in solids.

**215A. Statistical Physics.** Thermodynamics and statistical mechanics with applications.

**215B. Nonequilibrium Statistical Mechanics.** Probability theory, Markov Processes, equations of change, BBGKY hierarchy and its consequences, Boltzmann equation, Chapman-Enskog method, transport coefficients, fluctuation-dissipation theorems, density matrix, H-theorems.

**215C. Quantum Statistical Mechanics and the Many Body Problem.** Classical Methods for interacting systems; quantum field theory techniques in statistical mechanics; Green's-function approach; the Coulomb gas; the imperfect Bose gas; electron-phonon interaction; superconductivity; phase transitions; theory of Fermi liquid.

**220. Foundations of Classical and Quantum Mechanics.** (Formerly numbered 220A.) An integrated presentation of the foundations of classical and quantum mechanics.

**221A. Quantum Mechanics with Applications.** Prerequisite: course 220 or consent of the instructor. Quantum Mechanics with

applications. Rotations and other symmetry operations, perturbation theory, scattering theory.

**221B. Quantum Mechanics with Applications.** Prerequisite: course 221A. Formal theory of collision processes. Introduction to relativistic quantum mechanics.

**221C. Quantum Mechanics.** Continuation of nonrelativistic quantum mechanics.

**222A-222B-222C. Plasma Physics.** Properties of a Coulomb gas, with and without a magnetic field: equilibrium, oscillations, instabilities, fluctuations, collective phenomena, transport properties, and radiation. Description via single-particle orbit theory, magnetohydrodynamics, and kinetic equations of various types.

**\*223. Advanced Classical Mechanics.** (Formerly numbered 220B.) Prerequisite: course 220. Topics such as nonlinear mechanics, ergodic theory, mechanics of continuous media.

**224. Introduction to the Strong Interaction.** Evidence concerning the strong interaction, particularly as exemplified in nucleon-nucleon and pion-nucleon systems. Isospin, the scattering matrix, the density matrix and polarization, the properties of pions, the one pion exchange potential, phase shift analysis.

**225A. Advanced Nuclear Physics.** An advanced course in the structure of complex nuclei, nuclear models, and nuclear reactions. Normally preceded by course 224.

**225B. Advanced Nuclear Physics.** Nuclear beta decay, neutrino experiments, parity violation, conserved vector current theory, interaction between nucleons and the electromagnetic field.

**226A-226B. Elementary Particle Physics.** Prerequisites: courses 221A, 221B, 224, concurrent enrollment in 230 recommended. Relativistic kinematics and phase space. Survey of elementary particle masses and lifetimes. Quantum number determination. Relativistic S-matrix. C, P, and T invariance. Weak interaction theory; decay rate and cross section calculations. Continuous symmetries and gauge theories. Electromagnetic structure of hadrons. Deep inelastic lepton scattering, SU(3), the quark model, Charm and higher symmetries;  $e^+e^-$  annihilations. Theory and phenomenology of high-energy hadron-hadron collisions.

**230A-230B-230C. Relativistic Quantum Theory.** Quantum electrodynamics, general quantum field theory, S-matrix theory.

**231A. Methods of Mathematical Physics.** Students may not receive credit for both Physics 231A and Mathematics 266A. Linear operators, review of functions of a complex variable, integral transforms, partial differential equations.

**231B. Methods of Mathematical Physics.** Students may not receive credit for both Physics 231B and Mathematics 266B. Ordinary differential equations, partial differential equations, and integral equations. Calculus of variations.

**231C. Methods of Mathematical Physics.** Students may not receive credit for both Physics 231C and Mathematics 266C. Perturbation theory. Singular integral equations. Numerical methods.

**\*232A-232B. Relativity.** The special and general theories with applications to elementary particles and astrophysics.

**232C. Special Topics in General Relativity.**

**233. Introduction to High Energy Astrophysics.** Introductory lectures on modern high energy astrophysics. High energy radiation processes. Neutron stars. Pulsars. X-ray sources. Black holes. Supermassive rotators and Quasars.

**235. Group Theory and Quantum Mechanics.** Prerequisite: course 221A. Group representation theory and applications to the quantum mechanics of atoms, molecules, and solids.

**241A. Solid State Physics.** Prerequisites: courses 215A, 221A and 140. Symmetry, free electrons, electrons in a periodic potential, experimental measurement of band structure and Fermi surface parameters, cohesive energy, lattice vibrations, thermal properties.

**241B. Solid State Physics.** Prerequisite: course 241A. Transport theory with applications, electron-electron interactions.

**241C. Solid State Physics.** Prerequisites: course 241B. Semiconductors, magnetism, phase transitions, superconductivity.

**242A-242B. Advanced Solid State Theory.** Prerequisites: courses 241A-241B-241C (may be taken concurrently). Many body methods in solid state physics.

**260. Seminar-Problems in Plasma Physics.**

**261. Seminar in Special Problems in Theoretical Physics.**

**262. Seminar in Physics of the Solid State.**

**264. Seminar in Advanced Physical Acoustics.**

**266. Seminar in Propagation of Waves in Fluids.**

**268. Seminar in Spectroscopy.**

**269A. Seminar in Nuclear Physics.**

**269B. Seminar in Elementary Particle Physics.**

**\*284. Advanced Laboratory in Acoustics and Cryogenics.** Selected advanced experiments in acoustics and cryogenics designed to train the student in the techniques and instrumentation used in acoustic research and low temperature physics.

**290. Research Tutorial in Plasma Physics.** Seminars and discussion by staff and students, directed toward problems of current research interest in the plasma physics group, both experimental and theoretical. Each graduate student doing research in plasma physics will be required to take three quarters of Physics 290, ordinarily during his second or third year.

**291. Research Tutorial in Elementary Particle Theory.** Prerequisite: courses 226A, 230A, and 230B. Seminars and discussion by staff, postdoctoral fellows, and graduate students enrolled in this course. Each graduate student doing research in elementary particle theory is required to take this course, ordinarily in his second or third year of study. May be repeated for credit.

**292. Research Tutorial in Spectroscopy, Low Temperature, and Solid State Physics.** Seminars and discussion by staff and students on problems of current research interest in spectroscopy, low temperature, and solid state physics. Each graduate student doing research in these fields is required to take this course, ordinarily during his second or third year. May be repeated for credit.

**295. Research Tutorial in Solid Earth Physics.** Seminars and discussions in solid earth physics. Each physics graduate student doing research in solid-earth physics is required to take this course, or Physics 292 if appropriate, ordinarily in his second or third year of study. May be repeated for credit.

**298. Research Tutorial in Experimental Elementary Particle Physics.** Seminars and discussions by staff and students on current problems in experimental elementary particle physics. Each graduate student doing research in this field is required to take this course students, ordinarily during his second or third year. May be repeated for credit. Enrollment limited to six students.

**299. Research Tutorial in Nuclear Physics.** Seminars and discussions in nuclear physics by staff and students, in both experiment and theory. Each graduate student doing research in nuclear physics is required to take this course, ordinarily during his second or third year. May be repeated for credit.

#### Professional Course in Method

**370. The Teaching of Physics.** Prerequisite: consent of the instructor. A study of the physics laboratory experiments and demonstrations available today for secondary school and community college physics courses. This course is part of the Master of Arts, Teaching (M.A.T.) program, but is open to other interested students also.

#### Individual Study and Research

**501. Cooperative Program. (½ to 2 courses)** Prerequisite: approval of UCLA Graduate Adviser and Graduate Dean. Approval of host campus Instructor, Department Chairman and Graduate Dean. The course is used to record the enrollment of UCLA students in courses taken under cooperative arrangements with neighboring institutions. To be Graded S/U.

**598. Directed Individual Studies. (½ to 2 courses)**

**597. Preparation for Master's Comprehensive Examinations and Doctoral Qualifying Examinations.**

**598. Master's Thesis Research and Writing.**

**599. Doctoral Research and Writing. (2 to 3 courses)**

## PHYSIOLOGY

(Department Office, 53-247 Center for the Health Sciences)

Francisco J. Bezanilla, Ph.D., *Professor of Neuroscience in Physiology.*  
 Allan J. Brady, Ph.D., *Professor of Physiology.*  
 Jennifer S. Buchwald, Ph.D., *Professor of Physiology.*  
 Michael H. Chase, Ph.D., *Professor of Physiology in Residence.*  
 Sergio Ciani, Ph.D., *Professor of Physiology.*  
 Jared M. Diamond, Ph.D., *Professor of Physiology.*  
 George Eisenman, M.D., *Professor of Physiology.*  
 Susumu Hagiwara, M.D., Ph.D., *Professor of Physiology.*  
 Glenn A. Langer, M.D., *Professor of Physiology and Medicine (Vice Chairman of the Department).*  
 Wilfried F.H.M. Mommaerts, Ph.D., *Professor of Physiology and Medicine (Chairman of the Department).*  
 Hiroharu Noda, M.D., Ph.D., *Adjunct Professor of Physiology.*  
 Gordon Ross, M.D., *Professor of Physiology and Medicine.*  
 Ralph R. Sonenschein, M.D., Ph.D., *Professor of Physiology.*  
 Bernice M. Wenzel, Ph.D., *Professor of Physiology and Psychiatry.*  
 Ernest M. Wright, Ph.D., *Professor of Physiology.*  
 Victor E. Hall, M.D., *Emeritus Professor of Physiology.*  
 Donald B. Lindsley, Ph.D., *Emeritus Professor of Physiology and Psychology.*  
 Earl Homsher, Ph.D., *Associate Professor of Physiology.*  
 Arthur Peskoff, Ph.D., *Adjunct Associate Professor of Physiology and Biomathematics.*  
 John McD. Tormey, M.D., *Associate Professor of Physiology.*  
 Brian Whip, Ph.D., *Associate Professor of Physiology and Medicine.*  
 Joy Frank, Ph.D., *Adjunct Assistant Professor of Physiology.*  
 Charles J.C. Kean, Ph.D., *Adjunct Assistant Professor of Physiology.*  
 Sally Krasne, Ph.D., *Assistant Professor of Physiology.*  
 Michael S. Letinsky, Ph.D., *Assistant Professor of Physiology.*

Paul M. Quinton, Ph.D., *Assistant Professor of Physiology and Medicine in Residence.*

Julio Vergara, Ph.D., *Assistant Professor of Physiology.*

Alan D. Grinnell, Ph.D., *Professor of Biology and Physiology.*

Morton I. Grossman, M.D., Ph.D., *Professor of Medicine and Physiology.*

William D. Odell, M.D., Ph.D., *Professor of Medicine and Physiology in Residence.*

Daniel H. Simmons, M.D., Ph.D., *Professor of Medicine and Physiology.*

Maria W. Seraydarian, Ph.D., *Professor of Nursing.*

Mary A.B. Brazier, Ph.D., D.Sc., *Emeritus Professor of Anatomy and Physiology in Residence.*

Charles Code, M.D., Ph.D., *Emeritus Professor of Medicine and Physiology in Residence.*

John Field, Ph.D., *Emeritus Professor of Medical History and Physiology.*

Douglas Junge, Ph.D., *Associate Professor of Oral Biology and Physiology.*

Eduardo H. Rubinstein, M.D., Ph.D., *Professor of Anesthesiology and Physiology in Residence.*

Jesse O. Washington, D.V.M., *Lecturer in Physiology.*

#### Admission to Graduate Status

Candidates for admission to graduate status in the Department of Physiology must conform to the general admission requirements set by the Graduate Division and have received the bachelor's degree in a biological or physical science or in the premedical curriculum. Candidates must also submit to the Department the scores achieved on the Graduate Record Examination (both the Aptitude Test and the Advanced Test). In general, at the time of admission, students must have completed courses in mathematics through calculus (equivalent to Mathematics 11A-11B-11C). Ideal course preparation for graduate study in the Department should also include 12 quarter units of physics, 16 quarter units of chemistry (including quantitative analysis, physical and organic chemistry), and 16 quarter units of biology or zoology (including comparative vertebrate anatomy) and 4-8 quarter units of Basic electrical circuit theory. In certain cases, at the discretion of the Department, students lacking some of this preparation but with a strong background in areas pertinent to physiology may be admitted to graduate status, provided that essential deficiencies are removed by appropriate courses within a specified time after admission.

#### Master of Science Degree

Students entering graduate study in the Department of Physiology will normally be expected to pursue the Ph.D. degree only. Exceptional cases may be considered for the Master of Science Degree. In those cases, candidates for the M.S. degree must meet the general requirements set by the Graduate Division for this degree. See the Graduate Division.

#### Requirements for the Doctor's Degree

*General University Requirements.* Candidates for the doctorate in physiology must conform to the general requirements set by the Graduate Division for this degree. See the Graduate Division.

*Departmental Requirements.* Course requirements ordinarily are: (1) Physiology 200; (2) Physiology 201; (3) Physiology 205; (4) Physiology 213, 214, 215; (5) Physiology 230A-230B-230C; (6) Biological Chemistry 101A-101B-101C or Chemistry 153 (Biochemistry); (7) Biology 154; (8) Introduction to APL Programming.

At the completion of the first year of study students will normally take the Department Written Exam at which time the student will be 1) recommended for continuation of his studies toward the Ph.D. degree, 2) recommended for further remedial study or 3) terminated. Near the completion of the second year of study the student may elect to take a Departmental Oral exam (optional) or to waive this exam and proceed directly to the University Qualifying Oral Examination (mandatory) administered by the student's graduate committee.

The student should begin his research work as soon as he has completed his basic program and selected a sponsor.

*Foreign Language Requirement.* No foreign languages are required for the completion of the Ph.D. or M.S. degree. The time usually ascribed to language studies will be devoted to a more detailed preparation in physical sciences and mathematics.

*Student's Responsibilities.* Prospective candidates for the doctor's degree are responsible for completion of all technical requirements for this degree. Careful study should be made of the requirements set by the Graduate Division (see the Graduate Division).

#### Upper Division Courses

**100. Elements of Human Physiology. (1½ courses)** Prerequisite: enrollment in School of Dentistry or consent of the instructor. Required course for first-year dental students. Lectures, laboratories, and demonstration-discussions concerning functional activities of the living body in terms of both cellular and systemic functions. Examples will be presented, where possible, on the basis of information relevant to oral function.

Mr. Kean and the Staff

**101. Neuromuscular and Cardiovascular Physiology. (1½ courses)** Prerequisites: Basic courses in chemistry, physics, and biology, at least one year each; organic chemistry; histology; gross anatomy, human or comparative. Primarily for first year medical students, but open to others with consent of the instructor. Lectures, laboratory and conferences. An analysis of the electrical properties of muscle and nerve, the contractility of muscle and the heart, and the cardiovascular system and its regulation.

Mr. Tormey and the Staff

**102. Renal, Respiratory and Gastrointestinal Physiology. (1½ courses)** Prerequisites: same as for course 101. Primarily for first year medical students but open to other students with consent of the instructor. Lectures, laboratory and conferences. A continuation of course 101, dealing with the respiration, and the distribution of water, electrolytes and metabolites by the renal and gastrointestinal systems, and the special physiology of certain organs.

Mr. Tormey and the Staff

**M103A-103B. Basic Neurology. (Same as Anatomy M103A-103B).** Prerequisite: medical school status or consent of instructor. Lectures, conferences, demonstrations and laboratory procedures necessary to an understanding of the function of the human nervous system. This course will be "In Progress" grading. 103A will be given the last three weeks of the Winter quarter. 103B will be given the entire Spring quarter.

**105N. Human Physiology.** Prerequisite: enrollment in the School of Nursing or consent of the instructor. Required course for third year nursing students. Lecture and discussion emphasizing a correlative approach to anatomy and physiology of the human body.

Ms. Seraydarian

**199. Special Studies. (¼ to 2 courses)** Prerequisite: consent of the instructor. Special studies in physiology, including either reading assignments or laboratory work or both, designed for appropriate training of each student who registers in this course.

The Staff

#### Graduate Courses

**200. Transport Phenomena in Membranes. (1½ courses)** Prerequisite: consent of instructor. The purpose of this introductory course is to provide a physical basis for the understanding of transport across biological membranes. A review of thermodynamic concepts will be followed by a discussion of simple model systems to illustrate basic permeation mechanisms. This will then be used as a background for a discussion of ions and non-electrolyte transport across natural membranes.

Mr. Ciani, Ms. Krasne, Mr. Wright

**201. Mathematics Applied to Problems in Physiology.** Prerequisite: calculus. Linear differential equations. Laplace transform. Series solutions of differential equations. Boundary-value problems, orthogonal functions, Fourier series. Partial differential equations. Applications to biochemical kinetics, electric potential distribution in cells, diffusion of O<sub>2</sub>, one-dimensional cable equation for axon, etc.

Mr. Peskoff

**202. Permeability of Biological Membranes to Ions. (1½ course)** Prerequisites: Chemistry 113B and 113C or the equivalent, or consent of the instructor. Topics include: ion permeation mechanisms, ion distribution, and physical basis of ion discrimination across cell membranes.

Mr. Diamond

**205. Physical Chemistry of Membrane and Cellular Systems.** Prerequisite: consent of the instructor. Survey of the principles of equilibrium and non-equilibrium thermodynamics, electrostatics and fluid mechanics, and their application to problems of electrochemistry, ionic process in solutions, electrode kinetics and transport in membranes.

Mr. Ciani

**207. Neurophysiology.** Prerequisite: consent of the instructor. Seminar and laboratory course designed to acquaint the student with behavioral techniques and concepts relevant to research problems encountered in modern neurophysiology, and to consider means of integrating them with neurophysiological methods.

The Staff

**210A-210B-210C. Basic Foundation in Endocrinology. (½ course each)** Prerequisites: courses 101, 102; Biological Chemistry 101A, 101B, and 101C or consent of the instructor. A consideration of recent advances in endocrinology. Biosynthesis, secretion, transport, action, metabolism and excretion of each of the hormones. Major emphasis on basic concepts of endocrine physiology with lesser emphasis on patho-physiology.

Mr. Odell and the Staff

**211A-211B-211C. Basic Foundation in Endocrinology. (½ course each)** Prerequisite: same as for courses 201A-201B-201C. In-depth seminar-lecture series on Endocrinology. Physiology 211 is a continuation of the Physiology 210 series, 210 and 211 are given on alternate years and the two courses do not have to be taken in sequence.

Mr. Odell and the Staff

**212A-212B-212C. Critical Topics in Physiology. (½ to 2 courses)** Prerequisite: consent of the instructor. Advanced treatment of critical topics in physiology by staff and guest lecturers for graduate and postdoctoral students in the biomedical sciences.

The Staff

**213. Electrical Properties of Cells. (1½ courses)** Prerequisite: consent of the instructor. Lectures and problems sets concerning circuit analysis of electrical analogues of biological systems, linear cable properties of cylindrical and spherical cells, excitation and conduction in excitable cells, microelectrodes,

operational amplifiers, volume regulation in cells, voltage clamping, voltage and time dependent conductances of excitable cells.  
Mr. Brady, Mr. Heath

**214. Cell Physiology: Transport and Electron Properties.** (½ to 1½ courses) Prerequisite: course 213 or consent of instructor. Introductory concepts of transport across cell membranes, models of permeation mechanisms, linear cable properties of cells and non linear conductance changes in excitation and impulse conduction.  
Mr. Bezanilla

**215. Cell Physiology: Cellular Interaction.** (1½ courses) Prerequisites: courses 213, 214. Synaptic transmission mechanisms and potential generation in the special senses receptors.

**221. Graduate Commentary: Excitation and Contraction.** (¼ course) Prerequisites: same as for course 101. For graduate students. An advanced supplementation of the topics being presented in course 101.  
Mr. Brady and Staff

**222. Graduate Commentary: Renal, Respiratory and Gastrointestinal Physiology.** (¼ course) Prerequisite: course 101. For graduate students. An advanced supplementation of the topics being presented in course 102.  
The Staff

**223. Graduate Commentary: Physiology of the Nervous System.** (¼ course) Prerequisites: same as for course 101; consent of the instructor. For graduate students. An advanced supplementation of the topics being presented in basic neurology.  
Ms. Buchwald

**225. Biological and Artificial Membranes.** (½ course) Prerequisite: consent of the instructor. Advanced lectures and seminars on the electrical properties of membranes of single cells and the molecular mechanisms for ion permeation in well-defined model membranes.  
Mr. Eisenman

**226. Bilayer Membranes.** Prerequisite: consent of the instructor. Advanced lectures and laboratory demonstrating physical and chemical principles that underlie the behavior of lipid bilayer membranes, both artificial and natural.  
The Staff

**227. Theoretical Problems in Membrane Permeation.** (½ course) Prerequisite: consent of the instructor. Tutorial directed to specific theoretical problems of interest to the student.  
Mr. Ciani

**228. Epithelia: Structure and Function.** (½ course) Prerequisite: consent of instructor. Lectures and seminars on the physiology of epithelia cells with particular emphasis on membrane transport.  
Mr. Wright

**230A-230B-230C. Selected Topics in Organ Physiology.** (1, 2, 2 courses) Prerequisite: consent of the instructor. 230A: Macroscopic, microscopic and ultrastructural correlates of tissue and organ function. 230B-230C: Advanced consideration of special topics in the physiology of the cardiovascular and gastrointestinal systems, as well as the respiratory, renal and central nervous systems. In progress grading.  
The Staff

**251A-251B-251C. Seminar in Physiology.** (¼ course each) Prerequisite: consent of the instructor. Review and discussion of current physiological literature, research in progress, and special topics.  
The Staff

**301. The Use of Laboratory Animals in Research.** (½ course) Prerequisite: consent of instructor. An introductory course of graduate students in the medical and biological sciences, covering principles and practical problems in the handling and use of common laboratory animal species.

### Individual Study and Research

**596. Directed Individual Study or Research.** (½ to 3 courses) Prerequisite: consent of the instructor.  
The Staff

**597. Preparation for the Doctoral Qualifying Examination or the Master's Comprehensive Examination.** (½ to 3 courses) Prerequisite: consent of the instructor.  
The Staff

**598. Thesis Research for Master's Candidates.** (½ to 3 courses) Prerequisite: consent of the instructor.  
The Staff

**599. Dissertation Research for Ph.D. Candidates.** (½ to 3 courses) Prerequisite: consent of the instructor.  
The Staff

## PLANETARY AND SPACE SCIENCE

(See Geophysics and Space Physics)

## PLANT SCIENCE

(See Department of Biology Sciences)

## POLITICAL SCIENCE

(Department Office 4289 Bunche Hall)

Hans H. Baerwald, Ph.D., *Professor of Political Science.*  
Richard D. Baum, Ph.D., *Professor of Political Science.*  
Irving Bernstein, Ph.D., *Professor of Political Science.*

John C. Bollens, Ph.D., *Professor of Political Science.*  
David T. Cattell, Ph.D., *Professor of Political Science.*  
James S. Coleman, M.D., *Professor of Political Science.*  
Mattei Dogan, Docteur ès Lettres, *Professor of Political Science.*  
Ernest A. Engelbert, M.P.A., Ph.D., *Professor of Political Science.*  
Leonard Freedman, Ph.D., *Professor of Political Science.*  
Robert C. Fried, Ph.D., *Professor of Political Science.*  
Edward Gonzalez, Ph.D., *Professor of Political Science.*  
Robert Jervis, Ph.D., *Professor of Political Science.*  
Malcolm H. Kerr, Ph.D., *Professor of Political Science.*  
Roman Kolkowicz, Ph.D., *Professor of Political Science.*  
Andrzej Karbowski, Ph.D., *Professor of Political Science (Chairman of the Department).*

Michael F. Lofchie, Ph.D., *Professor of Political Science.*  
Dwayne Marvick, Ph.D., *Professor of Political Science.*  
Charles R. Nixon, Ph.D., *Professor of Political Science.*  
David C. Rapoport, Ph.D., *Professor of Political Science.*  
John C. Ries, Ph.D., *Professor of Political Science.*  
David O. Sears, Ph.D., *Professor of Political Science and Psychology.*  
Foster H. Sherwood, Ph.D., LL.D., *Professor of Political Science.*  
John R. Sisson, Ph.D., *Professor of Political Science.*  
Richard L. Sklar, Ph.D., *Professor of Political Science.*  
Ezra N. Suleiman, Ph.D., *Professor of Political Science.*  
David O. Wilkinson, Ph.D., *Professor of Political Science.*  
David A. Wilson, Ph.D., *Professor of Political Science.*  
Charles E. Young, Ph.D., *Professor of Political Science.*  
Bernard Brodie, Ph.D., *Emeritus Professor of Political Science.*  
Winston W. Crouch, Ph.D., *Emeritus Professor of Political Science.*  
David G. Farrelly, Ph.D., *Emeritus Professor of Political Science.*  
J. A. C. Grant, Ph.D., LL.D., *Emeritus Professor of Political Science.*  
H. Arthur Steiner, Ph.D., *Emeritus Professor of Political Science.*  
Richard E. Ashcraft, Ph.D., *Associate Professor of Political Science.*  
L. Blair Campbell, Ph.D., *Associate Professor of Political Science.*  
Robert S. Gerstein, LL.B., Ph.D., *Associate Professor of Political Science.*  
Douglas S. Hobbs, Ph.D., *Associate Professor of Political Science.*  
Stephen D. Krasner, Ph.D., *Associate Professor of Political Science.*  
Karen J. Orren, Ph.D., *Associate Professor of Political Science.*  
Susan Kaufman Purcell, Ph.D., *Associate Professor of Political Science.*  
Duane E. Smith, Ph.D., *Associate Professor of Political Science.*  
Leo M. Snowiss, Ph.D., *Associate Professor of Political Science.*  
Steven L. Spiegel, Ph.D., *Associate Professor of Political Science.*  
E. Victor Wolfenstein, Ph.D., *Associate Professor of Political Science.*  
Ciro Zoppo, Ph.D., *Associate Professor of Political Science.*  
Paul Jabber, Ph.D., *Assistant Professor of Political Science.*  
John R. Petrocchi, Ph.D., *Assistant Professor of Political Science.*  
Raymond A. Rocco, Ph.D., *Assistant Professor of Political Science.*  
Arthur A. Stein, Ph.D., *Assistant Professor of Political Science.*

Thad A. Brown, Ph.D., *Lecturer in Political Science.*  
James G. Fisk, B.S., *Adjunct Professor of Political Science.*  
Pierre-Michel Fontaine, Ph.D., *Acting Associate Professor of Political Science.*  
Marvin Hoffenberg, M.A., *Professor of Political Science in Residence.*  
Laura M. Lake, Ph.D., *Adjunct Assistant Professor of Political Science.*  
Stephen H. Linder, Ph.D., *Lecturer in Political Science.*  
Michael S. Lund, Ph.D., *Lecturer in Political Science.*  
M. Stephen Weatherford, Ph.D., *Lecturer in Political Science.*  
Robert C. Welsh, M.A., *Lecturer in Political Science.*

### Goals of the Undergraduate Program in Political Science

The undergraduate program aims to provide an understanding of basic political processes and institutions as these operate in different national and cultural contexts, of the interaction between national states, of the changing character of the relations between citizens and governments, and of the values and criteria by which the quality of political life is judged. This program may be individually focused to serve the needs of the liberal arts major, the student seeking preparation for graduate work in Political Science, Public Administration, Law, and other professional fields, and the student preparing for specialized roles in political and public organizations.

Inquiries about the program and any possible recent changes should be addressed to the Undergraduate Counselor, Department of Political Science.

### Preparation for the Major

Two lower division courses (8 units): Political Science 1; and Political Science 2, 3, 4, or 6. These courses must be taken for a letter grade.

### The Major

*Requirements I.* For those students who had less than 84 quarter units at the beginning of the fall quarter 1975 the following requirements apply (all other students, see Requirements II below).

Ten upper division political science courses (for a total of 40 units) numbered from 102 to 199 must be taken for a letter grade. The student is also required to complete 4 upper division courses (for a total of 16 units) in one or more of the following social sciences: Anthropology, Communication Studies (only 160), Economics, Geography, History, Management (only 150, 180, 190A-190B), Psychology (except 115, 116, 117), Sociology. These courses must also be taken for a letter grade. In addition to requirements for graduation prescribed by the College of Letters and Science, the student is expected to maintain a 2.0 overall grade point average in all upper division political science courses. Upper division political science courses are organized into six fields: (I) Political Theory,

(II) International Relations, (III) Politics, (IV) Comparative Government, (V) Public Law, and (VI) Public Administration and Local Government.

In fulfilling the requirement of 10 upper division political science courses, the student must satisfy the following: A concentration in one field by completing at least four upper division courses in that field. It is recommended that one of these courses be an Undergraduate Seminar, 197A - F. (See field concentration requirements below).

A distribution of two courses in each of two other fields. Political Science 110, introduction to Political Theory, is required of all political science majors. The Political Science 110 requirements may be met by taking two quarters of the Political Science 111 series. Political Science 110 may count for either the concentration or the distribution requirement.

Two additional elective courses in political science to comprise the total of ten. Political Science 110 may be counted as one of these if it is not used to satisfy the concentration or distribution requirement.

*Field Concentration Requirements.* Specific requirements for field concentration are as follows:

(I) *Political Theory:* Political Science 110 and 3 additional courses in Field I.

(II) *International Relations:* Political Science 2 and any 4 upper division courses in Field II. Four units from 175A-175B may be counted as one of the 4 courses in Field II. Only one of the defense studies courses - 138A, 138B, and 138C - may be counted toward field concentration requirement.

(III) *Politics:* Any four courses in Field III. Political Science 182A may also be counted toward concentration in this field.

(IV) *Comparative Government:* Political Science 168 and any 3 additional courses in Field IV. Political Science 115, 188A or 188B - but not more than one of them - may also be counted toward concentration in this field. Political Science 3 is recommended as the second lower division course.

(V) *Public Law:* Political Science 170 or 171 and any 3 additional courses in Field V. Political Science 171 is a prerequisite for Political Science 172A or 172B. Political Science 117 or 187 - but not more than one of them - may also be counted toward concentration in this field.

(VI) *Public Administration and Local Government:* Any 4 courses in Field VI. Political Science 138C, 173 or 174 - but not more than one of them - may also be counted toward concentration in this field.

*Note:* No course may be counted toward both concentration and distribution requirements.

Also, courses 119, 139, 149, 169, 179 and 189 may be applied no more than twice toward the field concentration requirement. No more than 3 of these courses may be applied toward the major.

Political Science 195 and 199 may not apply to fulfill either the concentration or distribution requirement.

*Requirements II.* Those students who had more than 84 quarter units at the beginning of the fall quarter 1975 are required to complete nine upper division political science courses (for a total of 36 units) numbered from 100 to 199 for a letter grade. In addition the student is required to complete 4 upper division social sciences (for a total of 16 units) as outlined in Requirements I. These courses must also be taken for a letter grade.

Each political science major will be required to complete successfully Political Science 110, *Introduction to Political Theory*. Each major must also concentrate in one field by successfully completing at least three (3) upper division courses in that field. These courses count toward satisfaction of the requirement for nine upper division courses in the department. (See below for special field concentration requirements.) In addition the student must satisfy a distribution requirement by successfully completing at least one (1) course in each of three (3) other fields. Political Science 110 counts as one course in Political Theory (Field I) for either the concentration or the distribution requirement. Political Science 197 and 199 are not applicable to fulfillment of either the concentration or the distribution requirement. Only one of the defense studies courses - 138A, 138B, and 138C - may be counted toward field distribution requirements.

Specific requirements for field concentration are as follows: (I) *Political Theory:* Political Science 110 and any 2 additional courses in Field I; (II) *International Relations:* Political Science 2 and any 3 courses in Field II. Four units from 175A-175B may be counted as one of the three courses in Field II; (III) *Politics:* Any 3 courses in Field III. Political Science 182A may also be counted toward concentration in this field; (IV) *Comparative Government:* Political Science 168 and any 2 additional courses in Field IV. Political Science 115, 188A, or 188B - but not more than one of them - may also be counted toward concentration in this field; (V) *Public Law:* Political Science 170 or 171 and any 2 additional courses in Field V. Political Science 117 or 187 - but not more than one of them - may also be counted toward concentration in this field; (VI) *Public Administration and Local Government:* Any 3 courses in Field VI. Political Science 138C, 173, or 174 - but not more than one of them - may also be counted toward concentration in this field.

Courses 119, 139, 149, 169, 179, and 189 may be applied no more than twice toward the field concentration requirement. No more than three of these courses may be applied toward the major.

No course may be counted toward both concentration and distribution requirements.

#### Undergraduate Seminars

Each quarter the department will offer a series of seminars, limited to 20 students, offered in each field and open to students studying under either Requirements I or II. The prerequisites will be two upper division courses in the field in which the seminar is offered, a 3.25 average at the upper division level in political science or discretion of the instructor.

The courses will be numbered: 197A-Theory, 197B-International Relations, 197C-Politics, 197D-Comparative Government, 197E-Public Law and 197F-Public Administration and Local Government.

These courses may count for either the concentration or distribution requirement and students who qualify are encouraged to take them.

#### The Honors Program

**Qualifications.** The honors program in political science is open to seniors or students who have completed five upper division courses in political science, two of which are in one field, and have at least a 3.40 average at the upper division level in political science.

**The Program.** Students wishing to qualify for graduation with Departmental Honors must maintain a 3.40 grade point average in upper division political science and complete the following: (1) A one-year seminar (Political Science 195A, 195B, 195C). The first quarter of the seminar, Political Science 195A, is a general seminar on political science and involves research. The second and third quarters, P.S. 195B and 195C, are devoted to writing a senior thesis under the direction of a faculty member. The honors thesis will be read by the respective field committees and judged for its quality and graded as to high honors, honors, pass, no pass, which is equivalent to A,B,C,F on the grade scale. (2) Eight upper division courses, excluding the courses 119, 139, 149, 169, 179 and 189 distributed as follows: Political Science 110, three courses in one field and four additional courses, two in each of two other fields. These eight courses plus the one-year seminar will comprise the eleven upper division courses required for Honors in Political Science. (3) Four upper division courses in the social sciences other than political science.

**Note:** Those students who are studying under Requirements II may take two courses from the 197A-F Undergraduate Seminars series for Honors credit. The instructor will designate whether the student's work in the course qualifies for Honors.

#### Related Curricula

For the curricula in international relations and public service, see the College of Letters and Science.

#### Admission to Graduate Status

In addition to the requirements of the Graduate Division described in this announcement, the Department requires three letters of recommendation, GRE score (Aptitude Test only) or Law School aptitude scores. The Department deadline for receipt of all materials is December 15 for the following fall quarter, and for the winter and spring quarters following that fall.

#### Financial Assistance

The fellowship-assistantship application is separate from the admissions application, and may be obtained either from the UCLA Fellowship Office or from Graduate Admissions. In order to be eligible for a fellowship or teaching assistantship students must make sure their file is complete and be admitted to the Department of Political Science. The Graduate Division deadline for receipt of all materials pertaining to a fellowship-assistantship application is December 15.

Since sources of financial assistance are limited, applicants should be aware that chances of receiving any support for their first year here are very small, and will remain small thereafter. Some graduate students find employment with individual professors as readers and research assistants; these jobs are arranged between the student and professor after a quarter is in session, and are entirely separate from the fellowship-assistantship application.

**Political Science Teaching Assistantships.** Teaching Assistantships are ordinarily awarded only to students who have been graduate students in the Department for at least one year. They are not automatically renewable and must be reapplied for each year. The Department does not ordinarily offer teaching assistantships to students who have (1) held teaching assistantships for three years in the Department or (2) held University administered fellowships and/or teaching assistantships for four years.

**Departmental Regulations Concerning Retention of Teaching Assistantships in Cases of Terminal M.A.'s:** (1) Graduate students holding teaching assistantships who receive terminal M.A. degrees as a result of the M.A. examining sequence will lose the teaching assistantships effective the end of the quarter in which they complete their M.A. degree requirements. (2) Graduate students holding teaching assistantships who fail the M.A. evaluation sequence and are not allowed to receive the M.A. degree will have their status as graduate students in the Department terminated effective the end of the quarter in which they took the M.A. examinations. Their teaching assistantships will be terminated at the same time.

#### Graduate Fields of Study

Six fields of study are offered to graduate students in the Political Science Department: *Political Theory; International Relations; Politics; Comparative Government; Public Law; Public Administration and Local Government.*

A Ph.D. candidate, with the help of his/her advisor, may develop a special program in Political Science. Further information is contained in the section on the Ph.D. Preliminary Evaluation Sequence.

The Department offers three types of graduate courses in each of six fields of study: (1) the 210 series of general courses; (2) the 220 through 240 series of specialized substantive courses; (3) the 250 through 270 series of seminars. Seminars will ordinarily be taken by advanced graduate students.

#### The M.A. Program

The Department normally operates under Plan II (a one-field examination and overall evaluation), although Plan I (thesis) may be followed in rare cases with the approval of the Department.

**Course Requirements.** (1) A student must take a minimum of five graduate courses in Political Science at UCLA distributed among three fields of study, and four other courses to fulfill the M.A. course requirements. 203A and 203B together may be used as one field. The latter four courses will normally be taken in the Social Sciences or related areas. Lower division courses may not be used for credit. The course P.S. 596 will not normally be counted toward the five graduate course requirement for the M.A. The course P.S. 597 cannot be used for credit for any of the course requirements for either the M.A. or the Ph.D. (2) There is no language requirement for the M.A. degree. (3) The minimum course load for M.A. candidates is six courses during the first three quarters in residence. The minimum course load for all graduate students who have not completed their Ph.D. requirements is two courses (8 units) per quarter. M.A. candidates may, however, include 4 units of Political Science 597 as part of this 8-unit requirement in the quarter of their examination.

**Graduate Work at Other Campuses of the University of California.** Work completed while in graduate standing on other campuses of the University of California may be used to satisfy part of the total course requirement; up to four courses may be transferred toward the nine courses required for the M.A. Two graduate courses completed at another U.C. campus may be used toward the requirement of five graduate courses. Transferring courses requires departmental approval.

**Graduate Work Completed at Schools Other than University of California.** With the approval of the Department and the Graduate Division, credit for a maximum of two quarter courses completed while in graduate standing at another institution (other than a U.C. campus) can be applied toward the nine course requisite for the M.A. These courses may not be used to satisfy the five graduate course requirement for the M.A. University Extension courses are not accepted for graduate credit by the department.

**M.A. Examination Sequence.** By the end of the fourth quarter of graduate study the M.A. candidate will take a written examination in one of the six fields of Political Science, plus an oral screening examination covering his/her general knowledge of Political Science. The M.A. written examination will be distinct from the Ph.D. preliminary examination and at a different level. The oral examining committee will evaluate the student's entire record, including performance in the M.A. examinations and evaluations of course work taken, and recommend one of the following: a) that the student receive the M.A. degree and be encouraged to proceed toward the Ph.D.; b) that the student receive the M.A. degree (when all departmental and University requirements are met) and that his/her status as a graduate student in the Department be thereafter terminated; c) that the student not be awarded the M.A. degree and that his/her status as a graduate student in the Department be terminated at the end of the current quarter. Students are encouraged to request an oral evaluation of their academic work in the Department prior to taking the M.A. evaluation sequence. This should be done early in the quarter in which the student takes the examination, with the Graduate Advisor, the chairperson of their field committee, or another faculty member of their choice serving as evaluator. M.A. candidates may defer taking the examination sequence only with the permission of the Graduate Studies Committee.

**Candidates are allowed to take the M.A. examination sequence one time only.** Graduate students who receive terminal M.A. degrees as a result of the examination sequence will be expected to complete their course requirements for the M.A. degree as soon as possible, and no later than the quarter following notification of termination. Students receiving the terminal M.A. are not allowed to continue registering in the Department once they have completed the M.A. degree course requirements.

**M.A. Thesis Plan.** Students wishing to write an M.A. thesis (Plan I) instead of taking the M.A. comprehensive examinations (Plan II) may do so by selecting a faculty committee willing to oversee the thesis. This committee must consist of three faculty members, two from Political Science and one from another UCLA department, and must be approved by the Political Science Department chairperson. The thesis must be submitted by the third quarter of residence, and must be approved by the thesis committee. Students opting for the thesis plan will not normally be recommended for continuation in the departmental Ph.D. program. If they wish to continue for the Ph.D. they must take the regularly scheduled M.A. comprehensive

examination and be given approval at that time to continue for the Ph.D. in the Department.

#### The Ph.D. Program

An M.A. in Political Science or the equivalent is a prerequisite. A student entering with an M.A. from another university must first pass the M.A. screening examinations during the first three quarters in residence before being considered a Ph.D. candidate in the Department. (This is the same examination given to entering M.A. candidates.) Any deferral of the screening examination beyond the first three quarters requires the approval of the Graduate Studies Committee. During the fall quarter each field examining committee will hold a meeting for graduate students in order to acquaint them with the faculty, the scope of the field and the preparations for the screening and Ph.D. preliminary examinations in the field.

**Foreign Language or Research Methodology Requirement.** For the Ph.D. graduate students must fulfill one of the following requirements: (1) demonstration of advanced proficiency in one foreign language suitable for field research. This level and the manner of examination will be determined for each language by the Department of Political Science. Ordinarily advanced proficiency is demonstrated by passing the E.T.S. examination with a minimum score of 650. Where judged by the student's advisor as necessary for the successful conduct of research, the student choosing this option shall be required to demonstrate proficiency in that language through an oral examination conducted by a competent member of the Department of Political Science, or the equivalent; (2) demonstration of advanced proficiency in a research methodology. Such methods are to include statistics and computer language and technology. This requirement can be satisfied by the demonstration of proficiency in examinations established by a competent committee of the Political Science faculty. Each graduate student is required to get the approval of his/her doctoral advisor regarding the choice between these two options. Students in the Ph.D. program are expected to have completed this requirement prior to taking the Ph.D. evaluation sequence.

**Course Requirements.** Before taking the Ph.D. preliminary examination sequence, a student must have completed satisfactorily the basic graduate courses (or their equivalent) in four fields (three written examination fields and one writeoff field). Each Political Science field committee will specify the courses the student must take as basic preparation for the preliminary examination in its field. A minimum of two graduate courses will be required by each field, and fields may specify a third course as part of the basic preparation for the exam sequence. For the Ph.D. degree a candidate must satisfy a two-quarter research requirement in each of two fields. This research requirement will be defined by each individual field. The research requirement cannot be counted toward the two-course minimum field requirement. Students admitted to the Department with graduate work completed elsewhere may petition the Graduate Committee for permission to apply course credits to the Department requirements. The course P.S. 597 cannot be used for credit for any course requirements for the Ph.D. Students may not fulfill their required courses with lower division courses.

**Ph.D. Preliminary Evaluation Sequence.** (1) Field requirements. Within three years after entrance to the graduate program the student shall be expected to demonstrate competence in four fields (three major fields and one "writeoff" field); (2) Soon after entering into the Ph.D. program, and no later than the end of the second year of graduate study, each student shall have a doctoral chairperson appointed who shall advise, assist and supervise his/her preparation for the comprehensive examinations. This chairperson may be drawn from any field in political science, but will normally represent the student's principal field; (3) Writeoff field. The student shall present for approval to the Graduate Advisor his/her program of study for the write-off field. This field, if it is to be taken in the Department, shall consist of a minimum of two graduate courses. The field requirement is met when the student has successfully passed these courses with a grade of A or B. If the field is to be taken outside the Department, it shall be defined as in 4, below; (4) Outside field. A student may petition to be examined in one field outside the Department. The student together with his/her advisor and the instructor under whom he/she wishes to do the work outside the Department will submit a written proposal for this field. The proposal must state the substantive material to be covered, the course program and why the outside field is being proposed. A minimum of three courses, including two graduate courses, must be taken in the outside field. The proposal must be signed by the student's advisor and the outside instructor and submitted to the Department graduate office six months in advance of the time the student expects to take the preliminary examinations. Whether or not the outside field is a writeoff, the outside instructor shall be nominated to serve on the student's doctoral committee. (5) Special field. A student may work out with one or more faculty members special programs in Political Science which cross traditional field lines, such as a program in public policy. Such a program, however, may not be used to circumvent the breadth requirements for the Ph.D. Any individual program must be approved by the Graduate Studies Committee of the Department. (6) The Ph.D. examinations. Within two years after completing the M.A. examinations or M.A. screening sequence the student continuing for the Ph.D. will take the Ph.D. preliminary examination sequence. The Ph.D. preliminary examinations to certify that the student is ready for the University oral examination will consist of a written comprehensive examination

in three fields, or a written comprehensive examination in two fields and in the major field a research paper plus a comprehensive departmental oral examination. Each written examination will be comprehensive and general rather than specialized. The examinations will be prepared and graded by the departmental field examination committees, or, in the case of outside fields and special fields, by an ad hoc committee of three. The examination sequence is given twice a year, in November and in May. Students must complete all three written examinations during a single examination period. The Graduate Studies Committee will decide when a student is ready to go on to the University oral. No student will be allowed to go on to the University oral until he/she has passed the examinations in three fields. Upon successful completion of the University oral examination, the student is eligible for advancement to candidacy and for the C. Phil. degree. If the student chooses to go on to the Ph.D. degree the student will submit to his/her Doctoral Committee for its approval a research proposal for the dissertation. The dissertation must be approved within seven years after being advanced to candidacy.

#### Master of Public Administration Program

The Master of Public Administration Program has been suspended by the Department of Political Science effective the end of Spring Quarter, 1977, and is not accepting further applications.

#### Lower Division Courses

**1. Introduction to American Government.** Lecture, three hours; discussion, one hour. An introduction to the principles and problems of government with particular emphasis on national government in the United States. This course fulfills the requirement of American History and Institutions, and is required of all students majoring in political science. The Staff

**2. World Politics.** Lecture, three hours; discussion, one hour. There are no prerequisites for this course. An introduction to problems of world politics. This course is required of all students concentrating in Field II and may be used to fulfill one of the two requirements for the Preparation for the Major. Mr. Jervis, Mr. Wilkinson

**3. Introduction to Comparative Government.** Lecture, three hours; discussion, one hour. Prerequisite: course 1. A comparative study of constitutional principles, governmental institutions, and political processes in selected contemporary states, with emphasis on the major European governments. This course may be used to fulfill one of the two course requirements for the Preparation for the Major. The Staff

**4A-4Z. Current Problems in Political Science.** Prerequisite: Successful completion of or concurrent enrollment in Political Science 1 and consent of the instructor. Proseminars will be offered each quarter dealing with selected political problems. Topics will be announced during the preceding quarter. Enrollment will be limited. Preference will be given to declared freshman majors. This course may be used to fulfill one of the two course requirements for the Preparation for the Major. The Staff

**6. Introduction to Quantitative Research.** Prerequisite: one previous course in political science, e.g. Political Science 1, 2, or 3. An introduction to the collection and analysis of political data. The course emphasizes the application of statistical reasoning to the study of relationships among political variables. Students use the computer as an aid in analyzing data from various fields of political science, among them comparative politics, international relations, American politics, and public administration. Will serve as a prerequisite for Political Science 102, 103, and 104A. This course may be used to fulfill one of the two course requirements for the Preparation for the major. The Staff

#### Upper Division Courses

Prerequisite for all upper division courses: upper division standing or consent of instructor.

#### UNGROUPED

**102. The Statistical Analysis of Political Data.** Prerequisite: course 6. An introduction to statistical inference. Topics will include measures of central tendency, elementary probability theory, common probability distributions, least-squares and maximum likelihood estimation, confidence intervals and statistical tests, comparison of means, the analysis of variance, and multiple regression and correlation. Statistical techniques and topics will be illustrated with applications to a variety of political data. The Staff

**M103. Economic Models of the Political Process.** (Same as Economics M135.) (Formerly numbered Political Science 103.) Prerequisites: Economics 101A and a basic course in Political Science and junior-senior status. This seminar is jointly offered by the Economics and Political Science Departments, and permission of the instructor is required. The course examines conceptions and applications of two different processes of political interaction, the cooperative (as in public choice) and the conflictual (as in warfare, making use of economic models of choice and equilibrium. The Staff

**104A-104B. Introduction to Survey Research.** Prerequisite: course 6 for undergraduates or course 203C for graduates. Course 104A is prerequisite to course 104B. A two-quarter course in the fundamentals of survey research as a method. The first quarter will cover sampling theory and methods, the writing of questions, questionnaire construction, and interviewing. In addition, students

will be introduced to attitudes, attitude measurement, and attitude change. Students will participate in the formulation of a research problem. The second quarter will involve conducting a survey. Students will be responsible for developing a survey questionnaire, designing a sample, collecting interviews, maintaining quality control, and coding the interviews for machine tabulation. The final requirement for the course is that the student perform a computer-aided analysis of some part of the data and submit a written report of that research. Both quarters must be taken to receive credit. The Staff

#### FIELD I. POLITICAL THEORY

**110. Introduction to Political Theory.** (Formerly numbered 101.) Lecture, three hours; discussion, one hour. An exposition and analysis of selected political theorists and concepts from Plato to the present. This course is required of all majors. The Staff

**111A. History of Political Thought: Ancient and Medieval Political Theory.** An exposition and critical analysis of the major political philosophers and schools from Plato to Machiavelli. The Staff

**111B. History of Political Thought: Early Modern Political Theory.** An exposition and critical analysis of the major political philosophers and schools from Hobbes to Bentham. Mr. Ashcraft

**111C. History of Political Thought: Late Modern and Contemporary Political Theory.** An exposition and critical analysis of the major political philosophers and schools from Hegel to the present. Mr. Ashcraft, Mr. Wolfenstein

**112. Nature of the State.** A systematic analysis of modern concepts and problems of political association. The Staff

**113. Problems in Twentieth Century Political Theory.** A study and interpretation of theorists who have focused their analyses on the social and political problems of the twentieth century. Mr. Rocco

**114A-114B. American Political Thought.** Prerequisite: 114A or consent of instructor is prerequisite to 114B.

**114A.** An exposition and critical analysis of American political thinkers from the Puritan period to 1865.

**114B.** An exposition and critical analysis of American political thinkers from 1865 to the present. Mr. Smith

**115. Theories of Political Change.** Prerequisite: course 101 or consent of the instructor. A critical examination of theories of political change, the relation of political change to changes in economic and social systems, and the relevance of such theories for the experience of both western and nonwestern societies. This course may be counted in either Field I or IV. Mr. Lofchie, Mr. Nixon

**116. Marxism.** A critical analysis of the origins, nature, and development of Marxist political theory. Mr. Ashcraft, Mr. Wolfenstein

**117. Jurisprudence.** Development of law and legal systems; consideration of fundamental legal concepts; contributions and influence of modern schools of legal philosophy in relation to law and government. This course may be counted in either Field I or V. Mr. Gerstein, Mr. Sherwood

**119A-119Z. Special Studies in Political Theory.** Prerequisites: course 101, one additional course in Field I, and consent of the instructor. Intensive examination of one or more special problems appropriate to political theory. Sections will be offered on a regular basis with topics announced in the preceding quarter. Courses 119, 139, 149, 169, 179 and 189 may be applied no more than twice toward the field concentration requirement. No more than three of these courses may be applied toward the major. The Staff

#### FIELD II. INTERNATIONAL RELATIONS

**120. Foreign Relations of the United States.** Lecture, three hours; discussion, one hour. A survey of the factors and forces entering into the formation and implementation of American foreign policy, with special emphasis on contemporary problems. Mr. Jabber, Mr. Spiegel, Mr. Stein

**121. Studies in Formulation of American Foreign Policy.** A study of the formation of American foreign policy with respect to individual cases. Specific topics will be announced in the Schedule of Classes each quarter. The Staff

**123. International Organization and Administration.** A general survey of the institutions, political and administrative, of international organization, with emphasis on the United Nations. The Staff

**124. International Political Economy.** A study of the political aspects of international economic issues. Mr. Krasner

**126. Peace and War.** Theory and research on the causes of war and the conditions of peace. Mr. Wilkinson

**127. The Atlantic Area in World Politics.** A contemporary survey of the foreign policies of the North Atlantic countries and of cooperative efforts to attain political, economic, and military coordination on a regional basis. Mr. Zoppo

**128. The Soviet Sphere in World Politics.** A contemporary survey of the foreign policies and aspirations of the Soviet Union and other states in the Soviet bloc; analysis of content and effects of Communist doctrine affecting relations between the Soviet and democratic spheres. Mr. Cattell, Mr. Kolkowicz, Mr. Korbonksi

**131. Latin American International Relations.** The major problems of Latin American international relations and organization in recent decades. Mr. Gonzalez, Ms. Purcell

**132A-132B. International Relations of the Middle East.** Prerequisite: course 132A is prerequisite to 132B, or consent of instructor for 132B.

**132A.** Contemporary regional issues and conflicts, with particular attention to inter-Arab politics, the Arab-Israeli problem, and the Persian Gulf area.

**132B.** Role of the Great Powers in the Middle East, with emphasis on American, Soviet and West European policies since 1945. Mr. Jabber

**135. International Relations of China.** The relations of China with its neighbors and the other powers, with emphasis on contemporary interests and policies of China vis-a-vis the United States and the Soviet Union. Mr. Baum

**136. International Relations of Japan.** The foreign policies of Japan, and the interests and policies of other countries, particularly the United States, as they relate to Japan. Mr. Baerwald

**137. International Relations Theory.** An examination of various theoretical approaches to international relations and their application to a number of historical cases and contemporary problems. Mr. Krasner, Mr. Stein

#### 138A-138B-138C. Defense Studies.

**138A. Defense Strategy and Policies.** Theories on the causes of war and the national and international security problems created by the threat of war. Special emphasis on the United States, concerning both its own military policy and its role in an international alliance structure. Mr. Jervis

**138B. The Conduct of Modern War.** A study of recent and contemporary wars with special emphasis on political and strategic problems. The Staff

**138C. Military Policy and Organization.** A study of the institutional and policy framework in the national military field. This course may be counted in either Field II or IV. Mr. Ries

**139A-139Z. Special Studies in International Relations.** Prerequisite: Two courses in Field II, or course 2 and one course in Field II, and consent of the instructor. Intensive examination of one or more special problems appropriate to international relations. Sections will be offered on a regular basis with topics announced in the preceding quarter. Courses 119, 139, 149, 169, 179 and 189 may be applied no more than twice toward the field concentration requirement. No more than three of these courses may be applied toward the major. The Staff

#### FIELD III. POLITICS

**M140. Political Psychology.** (Same as Psychology M138.) Prerequisite: Psychology 10. Examination of political behavior, political socialization, personality and politics, racial conflict, and the psychological analysis of public opinion on these issues. Mr. Sears

**141. Public Opinion and Voting Behavior.** Lecture, three hours; discussion, one hour. A study of the character and formation of political attitudes and public opinion. The role of public opinion in elections, the relationship of political attitudes to the vote decision, and the influence of public opinion on public policy formulation will be emphasized. Mr. Petrocik

**142. The Politics of Interest Groups.** A systematic investigation of the role of political interest groups in the governmental process, with attention directed to the internal organization, leadership, and politics of such groups; to the goals and functions of various types of groups, and to the strategy and tactics of influence. Ms. Orren

**143. Legislative Politics.** A study of those factors which affect the character of the legislative process and the capacity of representative institutions to govern in contemporary society. Mr. Marvick, Mr. Snowiss

**144. The American Presidency.** A study of the nature and problems of presidential leadership, emphasizing the impact of the bureaucracy, congress, public opinion, interest groups, and the party system upon the presidency and national policy-making. Ms. Orren, Mr. Snowiss

**145. Political Parties.** The organization and activities of political parties in the United States. Attention is focused upon the historical development of the parties, the nature of party change, campaign functions and the electoral role of the parties, membership problems and party activists, political finance, and policy formulation practices. Mr. Marvick, Mr. Petrocik

**146. Political Behavior Analysis.** Prerequisite: course 141. The use of quantitative methods in the study of political behavior, especially in relation to voting patterns, political participation, and techniques of political action. The Staff

**147. Minority Group Politics.** Lecture, three hours; discussion, one hour. Prerequisites: course 1, plus one of the following: one additional 140-level course; or one upper-division course on race or ethnicity from History, Psychology, or Sociology; or consent of the instructor. A systematic evaluation of the functioning of the American polity, related to problems of race and ethnicity. Topics include: leadership, organization, ideology, conventional versus unconventional political behavior, inter-minority relations, co-optation, symbolism, and repression. Mr. Rocco

**149A-149Z. Special Studies in Politics.** Prerequisites: Two courses in Field III and consent of the instructor. Intensive examination of one or more special problems appropriate to politics. Sections will be offered on a regular basis with topics announced in the preceding quarter. Courses 119, 139, 149, 169, 179 and 189 may be applied no more than twice toward the field concentration requirement. No more than three of these courses may be applied toward the major. The Staff

See also course 182A.

#### FIELD IV. COMPARATIVE GOVERNMENT

**152. British Government.** The government and politics of the United Kingdom; the British constitution, parliament, parties and elections, foreign policies, administrative problems, and local governments. The Staff

**153. Governments of Western Europe.** The constitutional and political structure and development of France and other states of continental Western Europe, with particular attention to contemporary problems. Mr. Dogan, Mr. Suleiman

**154. Governments of Central Europe.** The constitutional and political structure and development of Germany and other Central European states, with particular attention to contemporary problems. The Staff

**156. The Government of the Soviet Union.** An intensive study of the political and institutional organization of the Soviet Union and its component parts, with special attention to contemporary political issues, as well as party and governmental structures. Mr. Cattell, Mr. Kolkowicz, Mr. Korbonski

**157. Governments of Eastern Europe.** A study of the political and governmental organization of the Communist countries of Eastern and Central Europe (exclusive of the U.S.S.R.) with special reference to the institutions, practices and ideologies including interregional relations. Mr. Korbonski

**159. Chinese Government and Politics.** Organization and structure of Chinese government with particular attention to the policies, doctrines, and institutions of Chinese Communism; political problems of contemporary China. Mr. Baum

**160. Japanese Government and Politics.** The structure and operation of the contemporary Japanese political system, with special attention to domestic political forces and problems. Mr. Baerwald

**161. Government and Politics in Southeast Asia.** The institutional and political processes and problems of states in Southeast Asia (Burma, Thailand, Malaya, Laos, Cambodia, Vietnam, Indonesia, and the Philippines). The Staff

**162. Government and Politics in South Asia.** The political experiences and institutions of the Indian subcontinent since 1947, with particular attention to the Republic of India, but also with reference to Pakistan and Ceylon. Mr. Sisson

**163A. Government and Politics in Latin America.** (Formerly numbered 168A.) A comparative study of governmental and political development, organization and practices in the states of Middle America. Mr. Gonzalez, Ms. Purcell

**163B. Government and Politics in Latin America.** (Formerly numbered 168B.) A comparative study of governmental and political development, organization and practices in the states of South America. Mr. Gonzalez, Ms. Purcell

**164. Government and Politics in the Middle East.** A comparative study of government in the Arab States, Turkey, Israel and Iran. Mr. Jabber, Mr. Kerr

**165. Government and Politics in North Africa.** A comparative study of the government and politics of the North African states, including the relationship between political development, political organization and social structure. Mr. Kerr

**166A-166B-166C. Government and Politics in Sub-Saharan Africa.** Patterns of political change in Africa south of the Sahara with special reference to nationalism, nation-building and the problems of development. (Course is offered in three parts.)

166A. Western Africa.

166B. Eastern Africa.

166C. Southern Africa.

Mr. Lofchie, Mr. Sklar

**167. Ideology and Development in World Politics.** A comparative study of the major modes of political and economic development in the world today. Relations between industrial and non-industrial societies are examined in light of the current debate about imperialism. Mr. Sklar

**168L. Comparative Political Analysis.** Lecture. Prerequisites: two courses in Field IV, or Political Science 3 and one course in Field IV. Major approaches to the study of comparative politics. Concepts and methodology of comparative analysis. 168L or 168S is required of all students concentrating in Field IV. This course will be conducted as a lecture course. Either 168L or 168S can be taken for credit: credit will not be given for both. The Staff

**168S. Comparative Political Analysis.** Seminar. Prerequisite: two courses in Field IV, or Political Science 3 and one course in Field IV. Consent of instructor. Major approaches to the study of comparative politics. Concepts and methodology of comparative analysis. Either 168L or 168S is required of all students concentrating in Field IV. This course will be conducted as a seminar. Either

168L or 168S can be taken for credit: credit will not be given for both. The Staff

**169A-169Z. Special Studies in Comparative Government.** Prerequisites: Two courses in Field IV, or course 3 and one course in Field IV, and consent of the instructor. Intensive examination of one or more special problems appropriate to comparative government. Sections will be offered on a regular basis with topics announced in the preceding quarter. Courses 119, 139, 149, 169, 179 and 189 may be applied no more than twice toward the field concentration requirement. No more than three of these courses may be applied toward the major. The Staff

See also Courses 115, 188A, 188B.

#### FIELD V. PUBLIC LAW

**170. The Anglo-American Legal System.** Lecture, four hours; discussion, one hour. Evolution of the English common law courts and their legal system, with emphasis on the development of the basic concepts of law which were received from that system in the United States, and remain relevant today. Either this course or Political Science 171 is required of all students concentrating in Field V. Mr. Gerstein

**171. The Supreme Court.** Lecture, four hours, discussion, one hour. The history, procedures, and role of the Supreme Court in its legal-constitutional and political aspects. Emphasis will be given to the current and recent activities of the Court. Decisions of the Court, historical and current commentaries, and judicial biography will be utilized. Either this course or Political Science 170 is required of all students concentrating in Field V. Mr. Gerstein, Mr. Hobbs

**172A. American Constitutional Law.** Prerequisite: course 171. Constitutional questions concerning the separation of powers, federalism, and the relationship between government and property. Mr. Gerstein, Mr. Hobbs

**172B. American Constitutional Law.** Prerequisite: course 171. The protection of civil and political rights and liberties under the Constitution. Mr. Gerstein, Mr. Hobbs

**173. Government and Business.** The nature of the corporation; the regulation of competition; government promotion of economic interests; regulation of industries clothed with a public interest; government ownership and operation. This course may be counted in either Field V or VI. Mr. Bernstein, Ms. Orren

**174. Government and Labor.** The labor force and the nature of the trade union; regulation of labor relations; programs to encourage full employment and to mitigate unemployment; protective labor legislation. This course may be counted in either Field V or VI. Mr. Bernstein

**175A-175B. International Law.** A study of the nature and place of international law in the conduct of international relations. 175A and 175B may be offered in consecutive terms or simultaneously. If offered consecutively, 175A is prerequisite to 175B, and a student may take 175A alone for four units credit. If they are offered simultaneously, a student must take both courses for 8 units. A maximum of 4 units (1 course) may be counted in Field II. The Staff

**179A-179Z. Special Studies in Public Law.** Prerequisites: course 170 or 171, one additional course in Field V, any special requirements, and consent of the instructor. Intensive examination of one or more special problems appropriate to public law. Sections will be offered on a regular basis with topics announced in the preceding quarter. Courses 119, 139, 149, 169, 179 and 189 may be applied no more than twice toward the field concentration requirement. No more than three of these courses may be applied toward the major. The Staff

See also Courses 117, and 187.

#### FIELD VI. PUBLIC ADMINISTRATION AND LOCAL GOVERNMENT

**180. State and Local Government.** A study of state political systems, including their administrative and local sub-systems; intergovernmental relationships; and their policy outputs, with specific attention being given to California. Mr. Bollens

**181. Introduction to Public Administration.** An introduction to the study of the processes and structures designed to convert citizen demands and public decisions into collective action and achievement. Particular attention is devoted to the capacity of American administrative systems to respond effectively to citizen expectations within the restraints of due process. Mr. Fried

**182A. Metropolitan Area Government and Politics.** An overview of the political and social organization, decision-making processes, policy problems, and conflicts of metropolitan areas and their central cities and suburbs. Attention is also given to the impact on these areas of the national and state political systems and racial, ethnic, and protest movements. This course may be counted in either Field III or VI. Mr. Bollens

**182B. City Government and Politics.** Prerequisite: course 182A or consent of the instructor. Intensive analysis of contemporary urban governance in the United States. Emphasis is given to such student participatory activities as field-work, research, and gaming of urban politics and policy problems. Mr. Bollens

**183. Administration of International Agencies and Programs.** An examination of the administrative patterns and practices of the United Nations agencies and overseas development programs, including distinctive characteristics of organization and

management selection of personnel, and methods of financing. The Staff

**185. Public Personnel Administration.** The process of formulating and administering public personnel policies; concepts and principles utilized in selected governmental personnel systems. Focus will be primarily upon governmental systems in the United States (national, state, local, foreign service, military) but also comparisons will be made with selected other governmental systems. The Staff

**186. National Policy and Administration.** A study of the major policies and programs of the national government and their administration as illustrated in such areas as national defense, social welfare, agriculture, etc. Particular attention will be paid to the role of the President and other administrators in formulating public policy and in maintaining a responsible bureaucracy. Mr. Engelbert, Mr. Fried

**187. Law and Administration.** Legal controls of administration action. Substantive and procedural limits on administrative discretion imposed by legislation, executive and judicial agencies and the sources of legal powers of administrative bodies within these limits. This course may be counted in either Field V or VI. The Staff

**188A. Comparative Public Administration.** An analysis of bureaucratic structures and function in the United States, other industrialized, and less developed countries, primarily at the national level. Special attention is paid to methods of comparative analysis and the utility of various models. This course may be counted in either Field IV or VI. Mr. Fried, Mr. Suleiman

**188B. Comparative Urban Government.** A cross-cultural examination of the forms and processes of urban government. Particular attention will be paid to the role of urbanization in political development. This course may be counted in either Field IV or VI. Mr. Fried

**189A-189Z. Special Studies in Public Administration.** Prerequisites: Two courses in Field VI and consent of the instructor. Intensive examination of one or more special problems appropriate to public administration. Sections will be offered on a regular basis with topics announced in the preceding quarter. Courses 119, 139, 149, 169, 179 and 189 may be applied no more than twice toward the field concentration requirement. No more than three of these courses may be applied toward the major. The Staff

**190. Theories of Organization.** Prerequisite: courses 181 or 186. An examination of the theoretical frameworks for studying public and private bureaucracies, with emphasis upon ideologies, values, behavioral patterns, and concepts of organization. Mr. Engelbert

**191. Urban and Regional Planning and Development.** A comparative study of governmental policies, procedures, and agencies involved in the planning and development of urban and regional communities and areas. Mr. Engelbert, Mr. Hoffenberg  
See also Courses 138C, 173, and 174.

#### UNGROUPED

**195A-195B-195C. Honors Seminar and Thesis.** Prerequisites: senior standing or completion of five upper division courses in political science, two of which are in one field and 3.40 grade-point average at the upper division level in political science and eligibility for College of Letters and Science Honors Status. Political Science 195A is prerequisite for 195B, and Political Science 195B is prerequisite for 195C.

Political Science 195A-195B-195C is a one-year honors seminar and thesis-writing sequence. Students entering 195A are expected to have some experience in writing research papers, and to have in mind a research topic suitable for treatment at length and in depth.

During the first quarter (195A) students will define their research topic, select a suitable research method, determine appropriate sources of information, prepare a research proposal, find a thesis director, begin their research, and submit progress reports or preliminary drafts.

Class sessions in 195A will emphasize critical and constructive discussions of students' topics, methods, and problems in research, as well as general consideration of political science research topics and methods of current or continuing interest. Students will also meet privately with the instructor to discuss the progress of their research. The second and third quarters (195B-195C) are devoted to writing an honors thesis under the direction of a faculty member. The honors thesis will be read by the appropriate field committee and graded High Honors, Honors, or No Honors. The Staff

**197A-197F. Seminars for Majors.** Prerequisites: major in political science and upper division standing; a 3.25 grade-point average at the upper division level in political science courses; and two upper division courses in the field in which the seminar is offered.

197A. Political Theory

197B. International Relations

197C. Politics

197D. Comparative Government

197E. Public Law



197F. Public Administration and Local Government. Seminars may be offered concurrently with various graduate courses. The Staff

**199. Readings in Political Science.** (½ to 1 course) Prerequisites: upper division standing, consent of the instructor and approval by the Chairman of the Department. May be repeated for a total of four full courses. Individual study. See additional information in statement of requirements for the major in political science. The Staff

## Graduate Courses

### GENERAL

#### 203. Introduction to Political Inquiry.

203A. Problems of Scientific Inquiry and Normative Discourse.

203B. Major Conceptual Frameworks and Approaches to Political Science.

Normally, 203A or its equivalent will be taken prior to 203B.

203C. Quantitative Research Methods in Political Science.

An introduction to the analysis of political data. The relationships among theory, concepts, measurements, and inference will be stressed. The nature of measurement will be discussed and there will be an introduction to scaling, index construction, and the measurement of political variables. The student will become familiar with such ideas as: variables, relationships, association and correlation, controls and causal ordering. Students will be introduced to basic techniques of data collection and analysis. They will also engage in computer-aided interpretation of political data. The Staff

**211. Political Theory.** An analysis of the central problems of political inquiry and their relation to political philosophy. The Staff

**212. International Relations.** An examination of contemporary theories and methodologies in international relations, with applications to contemporary international politics. Mr. Jervis

**215A-215B. Comparative Government.** Prerequisites: course 215A or consent of instructor is prerequisite for 215B. Approaches to the study of comparative politics and problems of comparative political analysis. The Staff

**216. Public Law.** A systematic analysis of the scope and nature of public law, with particular attention given to its materials and methods as illustrated in concepts and doctrines drawn from various of its subject fields. The Staff

**218A. Public Administration and Democratic Government.** An analysis of the nature and scope of public administration and its role in modern political systems. Mr. Engelbert

**218B. Approaches to Organizational Analysis.** Analysis of several of the major conceptual alternatives for the study of organizations, with emphasis given to public administrative organizations. Among the topics covered are structural-functional and systemic approaches to organization, rational-choice models, and social psychological analyses. Each alternative is critically evaluated for its strengths and weaknesses as a guide to understanding organizational analysis. May be concurrently scheduled with Political Science 197F. The Staff

**218C. The Administrative System.** A behavioral analysis of the processes of public administrative structures in the American political system. Emphasis on the possibilities for and limits on rational decision-making and program innovation and on the problems of maintaining public responsibility. The Staff

### SUBSTANTIVE COURSES

**221. Selected Texts in Political Theory.** A critical examination of major texts in political theory with particular attention to their philosophic system, their relations to the contemporary political and intellectual currents, and the importance of the system for present-day political analysis. May be concurrently scheduled with Political Science 197C. The Staff

**222. Selected Topics in Political Theory.** A critical examination of a major problem in political theory. May be concurrently scheduled with Political Science 197A. The Staff

#### 224A-224K. Studies in Politics.

224A. Quantitative Applications. A survey of quantitative research techniques and their application to the study of political phenomena. May be concurrently scheduled with Political Science 102. Mr. Marvick, Mr. Petrock

224B. Political Recruitment. A critical evaluation of the literature concerned with the backgrounds of public men, and with the screening and sponsoring mechanisms affecting their careers and political perspectives. May be concurrently scheduled with 197C. Mr. Marvick, Mr. Snowiss

224C. Politics and Society. The application of selected classical and contemporary sociological theories to politics. May be concurrently scheduled with Political Science 197C. The Staff

224D. Group Theories of Politics. Critical appraisal of "group theory" approaches to the study of political decision-making, with special attention to empirical research problems and findings. Ms. Orren

224E. Legislative Behavior. The analysis of the major approaches to the study of representative institutions, with special emphasis upon

the assumptions, concepts, methods, and theoretical implications associated with each approach. Mr. Marvick, Mr. Snowiss

224F. Executive Politics and the Presidency. An analysis of executive organization and leadership with emphasis on the American Presidency. Special attention to theories of organization and personality and the relationship between the executive and other institutions and groups. May be concurrently scheduled with course 197C. Mr. Snowiss

M224G. Political Psychology. (Same as Psychology M228.) A survey of psychological approaches to political analysis; topics include personality, small group analysis, experimental social-psychology, and cognitive psychology. Mr. Orren

224H. Comparative Community Political Systems. Critical evaluation of the literature on community power and secondary analysis of data from extant research (primarily American, but increasingly comparative). Special attention to power distributions, leadership recruitment, and public and private decision making. The Staff

224I. Political Parties. A critical examination of the literature on party systems and organization. Special attention will be given to political functions, electoral campaigns, and party cadres. Mr. Marvick

224J. Mass Political Attitudes and Behavior. An analysis of the development and change of political attitudes in mass publics, and their relationship to voting, protest, and violence. Mr. Marvick, Mr. Sears

224K. Polity and Economy. An analysis of the theoretical and practical relationships between economic organization and governmental institutions. Study will include the development and political implications of the market system, banking and finance, corporate enterprise, and organized labor. Ms. Orren

**228A. Personnel and Human Relations.** An analysis of the policies, processes, organizations, and interrelationships involved in manning the public services. The Staff

**228B. Public Planning, Programming, and Budgeting.** Public budgeting processes within a political and organizational framework. Special emphasis on the Federal program-budgeting system and the interplay between contemporary bureaucratic and decision theory of rational allocation of resources. Mr. Hoffenberg, Mr. Ries

**228C. Political and Administrative Aspects of Planning.** A study of the political constraints on and support for effective planning. To be explored are the relationships between planning performance on the one hand, and forms of government, distribution of power, political culture, law and social structure on the other. Mr. Engelbert, Mr. Fried

**228D. The National Administrative System.** An examination of the formulation and implementation of policy at the federal level. The consequences of administrative performance for American political and social life will be explored. Mr. Engelbert

**228E. State Administrative Systems.** An analysis of state administrative systems, their local sub-systems, and their outputs. May be concurrently scheduled with Political Science 197F. Mr. Fried

**M229. Urban Government.** (Same as Architecture and Urban Planning M205C.) An analysis of the policies, processes, interrelations, and organization of governments in heavily populated areas. May be concurrently scheduled with Political Science 197F. Mr. Bollens

**230. Comparative Development Administration.** An analysis of the administration of development programs and the development of administrative institutions, with special attention to ecology. Comparisons are made both between countries and within countries. Mr. Fried, Mr. Sisson

#### 231A-231D. Studies in International Relations.

231A. Contemporary Problems in United States Foreign Policy. An intensive analysis of the policy-formulation process and the substance of selected contemporary problems in foreign policy. Political and institutional factors affecting foreign policies will be stressed along with the analysis of policy options. May be concurrently scheduled with Political Science 197B. The Staff

231B. National and International Defense Problems. This course analyzes various national security problems in both their military-technical and political dimensions. It seeks to develop in some depth issues likely to be raised in Political Science 138A, which, however, is not a prerequisite. May be concurrently scheduled with Political Science 197B. The Staff

231C. International Law and Organization. This course emphasizes the role of law and organization in the conduct of contemporary international politics. International organization is considered as an integral process within the contemporary international legal system whose characteristics are explored in depth. The Staff

231D. International Relations Theory. An introduction to contemporary problems in international relations theory. May be concurrently scheduled with Political Science 197B. Mr. Stein, Mr. Wilkinson

**235. Selected Topics in Comparative Politics.** (Formerly numbered 225.) A critical examination of a major problem in comparative politics. The Staff

**236A-236B. The Foundations of Representative Government.** An analysis of the factors affecting the development and functions

of representative institutions in the United States, Europe, and selected political systems of Africa, Asia, and Latin America. Comparative Government or Politics field credit.

236A. An introduction to the literature on the development of elective institutions and their performance. The course takes an interdisciplinary approach, emphasizing historical as well as contemporary cases and modes of analysis.

236B. Prerequisite, either 236A or consent of the instructors. A research seminar devoted to the analysis of particular problems and countries. Mr. Sisson, Mr. Snowiss

#### 238A-238D. Studies in Public Law.

238A. Evolution of Anglo-American Law Books. Surviving early records. Case reporting, from the year books to the modern reports. Legal treatises from Glanvill to today. Statutes and how to find them. The language of the law. Although emphasis will be placed upon American materials the entire English speaking world will be covered. May be concurrently scheduled with Political Science 197E. Mr. Gerstein

238B. Making of the Constitution. An examination of the development of constitutional law during selected periods of American history, such as Founding, the Marshall and Taney eras, and the New Deal. The focus will be on both judicial and non-judicial materials. Mr. Hobbs

238C. The Bill of Rights and the States. An examination of the problems surrounding the application to the states of Amendments 1-9. Mr. Hobbs

238D. Current Problems in Public Law. A discussion of selected contemporary problems in jurisprudence, the judicial process, judicial behavior, and legal controls on social conduct. May be concurrently scheduled with Political Science 197E. Mr. Gerstein

### Graduate Seminars

Prerequisite for all graduate seminars: advance consent of instructors.

#### 250A-250L. Seminars in Regional and Area Political Studies.

250A. Latin-American Studies. Mr. Gonzalez, Ms. Purcell

250B. Russian and Slavic Studies. May be concurrently scheduled with Political Science 197C. Mr. Cattell, Mr. Kolkowicz, Mr. Korbonski

250C. Chinese and East Asian Studies. May be concurrently scheduled with Political Science 197D. Mr. Baum

250D. Japanese and Western Pacific Studies. May be concurrently scheduled with Political Science 197D. Mr. Baerwald

250E. Seminar in African Studies. May be concurrently scheduled with Political Science 197D. Mr. Lofchie, Mr. Sklar

250F. Middle Eastern Studies. Mr. Jabber, Mr. Kerr

250G. Commonwealth Studies. The Staff

250H. Seminar in Western European Studies. May be concurrently scheduled with Political Science 197D. Mr. Suleiman

250J. Southeast Asian Studies. The Staff

250K. North African Studies. Mr. Kerr

250L. South Asian Studies. Mr. Sisson

**252. Seminar in Public Law.** May be concurrently scheduled with Political Science 197E. The Staff

**253. Seminar in International Relations.** May be concurrently scheduled with Political Science 197B, section 2. The Staff

**254. Seminar in Public Administration.** May be concurrently scheduled with Political Science 197F. Mr. Engelbert, Mr. Hoffenberg

**256A-256B. Seminar in Comparative Government.** Prerequisite: course 256A is prerequisite to 256B. The Staff

**257. Seminar in Political Theory.** The Staff

**259. Seminar in Political and Electoral Problems.** Prerequisite: two graduate courses in Politics. The Staff

**262. Seminar in Municipal Government.** May be concurrently scheduled with Political Science 197F. Mr. Bollens

**271. Seminar in Political Change.** An interdisciplinary seminar directed toward the analysis of political change. To be offered by members of the Department of Political Science. May be concurrently scheduled with Political Science 197D. The Staff

**280A-280B. Advanced Practicum in Administrative Research.** Prerequisite: At least five courses (20 units) at the graduate and upper division level in political science and consent of the instructor. An advanced laboratory/seminar in applied research over a two-quarter sequence on public agency operational and service delivery problems. The seminar will provide an integrated case-study approach to task-force studies dealing with such problems as: legislative and policy issues in mandated and nonmandated public functions; program and management organization; budget and finance performance measures; information systems; evaluation of outcomes; political impact analysis; and related problems in administrative decision-making. The Staff

**495. Teaching Political Science.** A workshop in teaching techniques, including evaluation of each student's own performance

as a Teaching Assistant. Normally to be taken by all new Teaching Assistants in the first quarter of their assistantships; may be taken by students only in a quarter in which they are Teaching Assistants; cannot be used to fulfill M.A. or Ph.D. course requirements. Graded Satisfactory/Unsatisfactory. The Staff

**501. Cooperative Program. (½ to 2 courses)** Prerequisites: Approval of UCLA Graduate Adviser and Graduate Dean. Approval of host campus Instructor, Department Chairman and Graduate Dean. The course is used to record the enrollment of UCLA students in courses taken under cooperative arrangements with neighboring institutions. To be graded S/U. The Staff

### Individual Study and Research

**596. Directed Individual Study or Research. (½ to 1 course)** A letter grade (A, B, C, D, or F) will be assigned by the professor supervising the study or research. May apply toward the minimum course requirement for the master's degree, and it ordinarily may be used for this requirement only once.

**597. Preparation for the Comprehensive Examination for the Master's Degree or the Qualifying Examinations for the Ph.D. (½ to 2 courses)** This course is ordinarily taken only during the quarter in which the student is being examined. A grade of Satisfactory (S) or Unsatisfactory (U) will be assigned by the Department on the basis of the student's performance in the examination(s).

**598. Research for and Preparation of the Master's Thesis. (½ to 2 courses)** A grade of Satisfactory (S) or Unsatisfactory (U) will be assigned by the professor supervising the master's thesis. (This course will rarely be taken in the Department because students normally receive their master's degree under the Comprehensive Examination Plan.)

**599. Research for and Preparation of the Doctoral Dissertation. (½ to 2 courses)** A grade of Satisfactory (S) or Unsatisfactory (U) will be assigned by the professor supervising the dissertation.

There is no restriction on the number of times an individual student may enroll in any of the 590 series courses.

## PSYCHIATRY AND BIOBEHAVIORAL SCIENCES

(Department Educational Activities Office, B7-349 NPI)

Ransom J. Arthur, M.D., *Professor of Psychiatry (Executive Vice-Chairman of the Department).*  
 T. George Bidder, M.D., *Professor of Psychiatry in Residence.*  
 Norman Q. Brill, M.D., *Professor of Psychiatry.*  
<sup>16</sup>W. Jann Brown, M.D., *Professor of Pathology and Psychiatry.*  
<sup>16</sup>Nathaniel A. Buchwald, Ph.D., *Professor of Biobehavioral Sciences and Anatomy in Residence.*  
 Kenneth M. Coby, M.D., *Professor of Psychiatry.*  
 Joseph W. Cullen, Ph.D., *Adjunct Professor of Biobehavioral Sciences (Public Health).*  
<sup>16</sup>Wilfrid J. Dixon, Ph.D., *Professor of Biostatistics, Biostatistics, and Biobehavioral Sciences.*  
 Robert B. Edgerton, Ph.D., *Professor of Biobehavioral Sciences and Anthropology in Residence.*  
 Bernice T. Eiduson, Ph.D., *Professor of Biobehavioral Sciences (Medical Psychology) in Residence.*  
<sup>16</sup>Samuel Eiduson, Ph.D., *Professor of Biobehavioral Sciences and Biological Chemistry in Residence.*  
<sup>16</sup>Frank R. Ervin, M.D., *Professor of Psychiatry in Residence.*  
 Richard K. Eymann, Ph.D., *Adjunct Professor of Biobehavioral Sciences (Psychology).*  
 Barbara Fish, M.D., *Professor of Psychiatry.*  
 Arvan L. Fluharty, Ph.D., *Adjunct Professor of Biobehavioral Sciences (Biological Chemistry).*  
 Steven R. Forness, Ed.D., *Professor of Biobehavioral Sciences (Special Education) in Residence.*  
<sup>16</sup>Joaquin M. Fuster, M.D., *Professor of Psychiatry in Residence.*  
 Rosslyn Gaines, Ph.D., *Professor of Biobehavioral Sciences (Medical Psychology) in Residence.*  
 Gary C. Galbraith, Ph.D., *Adjunct Professor of Biobehavioral Sciences (Medical Psychology).*  
 Ronald G. Gallimore, Ph.D., *Professor of Biobehavioral Sciences (Psychology) in Residence.*  
 John Garcia, Ph.D., *Professor of Psychology and Biobehavioral Sciences.*  
 Harold Garfinkel, Ph.D., *Professor of Sociology and Biobehavioral Sciences.*  
 Walter R. Goldschmidt, Ph.D., *Professor of Anthropology and Biobehavioral Sciences.*  
 Milton Greenblatt, M.D., *Professor of Psychiatry in Residence.*  
 Herbert J. Grossman, M.D., *Professor of Psychiatry in Residence.*  
 Donald Guthrie, Ph.D., *Adjunct Professor of Biostatistics and Biobehavioral Sciences.*  
<sup>16</sup>John Hanley, M.D., *Professor of Psychiatry in Residence.*  
 Christoph M. Heinicke, Ph.D., *Adjunct Professor of Biobehavioral Sciences (Medical Psychology).*  
 Frank M. Hewett, Ph.D., *Professor of Education and Biobehavioral Sciences.*  
<sup>16</sup>Chester D. Hull, Ph.D., *Professor of Biobehavioral Sciences (Neuropsychology) in Residence.*

Lissy F. Jarvik, Ph.D., M.D., *Professor of Psychiatry.*  
 Murray E. Jarvik, M.D., Ph.D., *Professor of Psychiatry and Pharmacology.*  
 Harry J. Jensen, Ph.D., *Professor of Biobehavioral Sciences and Psychology in Residence.*  
 Hayato Kihara, Ph.D., *Adjunct Professor of Biobehavioral Sciences (Biological Chemistry).*  
 Lewis L. Langness, Ph.D., *Professor of Biobehavioral Sciences and Anthropology in Residence.*  
<sup>16</sup>Robert E. Litman, M.D., *Adjunct Professor of Psychiatry.*  
<sup>16</sup>Horace W. Magoun, Ph.D., *Emeritus Professor of Anatomy and Biobehavioral Sciences.*  
<sup>16</sup>James T. Marsh, Ph.D., *Professor of Biobehavioral Sciences (Medical Psychology).*  
<sup>16</sup>David S. Maxwell, Ph.D., *Professor of Anatomy and Biobehavioral Sciences.*  
 Philip R.A. May, M.D., *Professor of Psychiatry in Residence.*  
 Michael T. McGuire, M.D., *Professor of Psychiatry.*  
 Ivan N. Mensh, Ph.D., *Professor of Biobehavioral Sciences (Medical Psychology).*  
 William H. Oldendorf, M.D., *Professor of Neurology and Psychiatry in Residence.*  
 Morris J. Paulson, Ph.D., *Professor of Biobehavioral Sciences (Medical Psychology) in Residence.*  
<sup>16</sup>Michel Philippart, M.D., *Adjunct Professor of Psychiatry, Pediatrics and Neurology.*  
<sup>16</sup>George J. Popjak, M.D., *Professor of Psychiatry and Biological Chemistry.*  
 Douglass R. Price-Williams, Ph.D., *Professor of Biobehavioral Sciences and Anthropology in Residence.*  
 Richard H. Rahe, M.D., *Adjunct Professor of Psychiatry.*  
 Fredrick C. Redlich, M.D., *Professor of Psychiatry in Residence.*  
 Edward R. Ritvo, M.D., *Professor of Psychiatry in Residence.*  
<sup>16</sup>Robert T. Rubin, M.D., *Professor of Psychiatry in Residence.*  
 George Saslow, M.D., *Professor of Psychiatry in Residence.*  
<sup>16</sup>Richard J. Schain, M.D., *Professor of Pediatrics, Neurology, and Psychiatry.*  
<sup>16</sup>Arnold B. Scheibel, M.D., *Professor of Anatomy and Psychiatry.*  
 Donald A. Schwartz, M.D., *Adjunct Professor of Psychiatry.*  
<sup>16</sup>Eustace A. Serafetinides, M.D., Ph.D., *Professor of Psychiatry in Residence.*  
 David Shapiro, Ph.D., *Professor of Biobehavioral Sciences (Medical Psychology).*  
 Edwin S. Shneidman, Ph.D., *Professor of Biobehavioral Sciences (Thanatology) in Residence.*  
 Arthur B. Silverstein, Ph.D., *Adjunct Professor of Biobehavioral Sciences (Medical Psychology).*  
 James Q. Simmons, M.D., *Professor of Psychiatry in Residence.*  
 S. Stefan Soltysik, M.D., Ph.D., *Professor of Biobehavioral Sciences (Neuropsychology) in Residence.*  
 Robert S. Sparkes, M.D., *Professor of Medicine, Pediatrics, and Psychiatry.*  
<sup>16</sup>Maurice B. Serman, Ph.D., *Professor of Anatomy and Biobehavioral Sciences in Residence.*  
 Robert J. Stoller, M.D., *Professor of Psychiatry.*  
 Manuel Straker, M.D., *Professor of Psychiatry in Residence.*  
 Frank F. Tallman, M.D., *Emeritus Professor of Psychiatry.*  
 George Tarjan, M.D., *Professor of Psychiatry.*  
 Charles W. Tidd, M.D., *Emeritus Professor of Psychiatry.*  
 Jaime R. Villablanca, M.D., *Professor of Biobehavioral Sciences (Neuropsychology) in Residence.*  
 Richard D. Walter, M.D., *Professor of Neurology and Psychiatry.*  
<sup>16</sup>Bernice M. Wenzel, Ph.D., *Professor of Physiology and Biobehavioral Sciences.*  
<sup>16</sup>Louis Jolyon West, M.D., *Professor of Psychiatry (Chairman of the Department).*  
<sup>16</sup>Charles D. Woody, M.D., *Professor of Anatomy and Psychiatry in Residence.*  
 Ralph E. Worden, M.D., *Professor of Medicine and Psychiatry.*  
 Joe Yamamoto, M.D., *Professor of Psychiatry in Residence.*  
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 Anthony M. Adinolfi, Ph.D., *Associate Professor of Anatomy and Biobehavioral Sciences.*  
 John P. Blass, Ph.D., M.D., *Associate Professor of Biobehavioral Sciences and Biological Chemistry.*  
 Alexander B. Caldwell, Ph.D., *Adjunct Associate Professor of Biobehavioral Sciences (Medical Psychology).*  
 Dennis P. Cantwell, M.D., *Associate Professor of Psychiatry.*  
 Stephen D. Cederbaum, M.D., *Associate Professor of Psychiatry and Pediatrics in Residence.*  
 Barbara F. Crandall, M.D., *Associate Professor of Pediatrics and Psychiatry in Residence.*  
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 Charles V. Ford, M.D., *Adjunct Associate Professor of Psychiatry.*  
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 Elizabeth Galton, M.D., *Adjunct Assistant Professor of Psychiatry.*  
 Robert H. Gerner, M.D., *Assistant Professor of Psychiatry in Residence.*  
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 Robert S. Hoffman, M.D., *Assistant Professor of Psychiatry in Residence.*  
 Gabrielle M. Hosey, M.D., *Adjunct Assistant Professor of Psychiatry.*  
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 Timothy W. Keller, M.D., *Assistant Professor of Psychiatry in Residence.*  
 James S. Ketchum, M.D., *Assistant Professor of Psychiatry in Residence.*  
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 Vallabhaneni K. Meenakshi, M.D., *Assistant Professor of Psychiatry in Residence.*  
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- Edwin J. Olsen, M.D., *Assistant Professor of Psychiatry in Residence.*  
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 C. Scott Saunders, M.D., *Assistant Professor of Psychiatry in Residence.*  
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 Joseph R. Signano, M.D., *Adjunct Assistant Professor of Psychiatry.*  
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 Miriam Tasini, M.D., *Assistant Professor of Psychiatry in Residence.*  
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 Jimmie L. Turner, Ph.D., *Assistant Professor of Biobehavioral Sciences (Anthropology) in Residence.*  
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 David K. Wellisch, Ph.D., *Assistant Professor of Biobehavioral Sciences (Medical Psychology) in Residence.*  
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 Byron J. Wittlin, M.D., *Assistant Professor of Psychiatry in Residence.*  
 Gail E. Wyatt, Ph.D., *Assistant Professor of Biobehavioral Sciences (Medical Psychology) in Residence.*
- George Y. Abe, M.D., *Assistant Clinical Professor of Psychiatry.*  
 Louise Abrams, M.S.W., *Associate in Social Work.*  
 Barnett Addis, Ph.D., *Academic Administrator.*  
 Philip B. Alexander, M.D., *Assistant Clinical Professor of Psychiatry.*  
 Richard P. Alexander, M.D., *Assistant Clinical Professor of Psychiatry.*  
 Nancy H. Allen, M.P.H., *Associate in Health Education.*  
 George Anderson, M.S.W., *Lecturer in Social Work.*  
 Gerald J. Aronson, M.D., *Assistant Clinical Professor of Psychiatry.*  
 Eric D. Auerbach, M.D., *Assistant Clinical Professor of Psychiatry.*  
 Bernard W. Bail, M.D., *Assistant Clinical Professor of Psychiatry.*  
 Lailee B. Bakhtiar, M.D., *Associate Clinical Professor of Psychiatry.*  
 Alina M. Barakonski, M.D., *Assistant Clinical Professor of Psychiatry.*  
 Cyril Barnett, M.D., *Assistant Clinical Professor of Psychiatry.*  
 Norman I. Barr, M.D., *Assistant Clinical Professor of Psychiatry.*  
 Barbara A. Bass, M.S.W., *Lecturer in Social Work.*  
 Diane J. Bass, M.S.W., *Lecturer in Social Work.*  
 Curt G. Batiste, M.D., *Assistant Clinical Professor of Psychiatry.*  
 Bryce R. Bednar, M.D., *Assistant Clinical Professor of Psychiatry.*  
 Arnold R. Beisser, M.D., *Clinical Professor of Psychiatry.*  
 Fay F. Benbrook, M.D., *Assistant Clinical Professor of Psychiatry.*  
 David J. Bender, M.D., *Associate Clinical Professor of Psychiatry.*  
 Irving Berent, M.D., *Assistant Clinical Professor of Psychiatry.*  
 Leonard Bergantino, Ed.D., *Assistant Clinical Professor of Biobehavioral Sciences (Educational Psychology).*  
 Sidney H. Bergman, M.D., *Assistant Clinical Professor of Psychiatry.*  
 Irving H. Berkowitz, M.D., *Associate Clinical Professor of Psychiatry.*  
 Basil G. Bernstein, M.D., *Assistant Clinical Professor of Psychiatry.*  
 Bruce W. Bielski, M.D., *Assistant Clinical Professor of Psychiatry.*  
 Stephen S. Bindman, Ph.D., *Assistant Clinical Professor of Biobehavioral Sciences (Medical Psychology).*  
 Seymour E. Bird, M.D., *Assistant Clinical Professor of Psychiatry.*  
 Samuel Black, M.D., *Assistant Clinical Professor of Psychiatry.*  
 Stephen M. Blain, D.D.S., *Lecturer in Biobehavioral Sciences (Dentistry).*  
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#### Program

The Department of Psychiatry and Biobehavioral Sciences offers interdisciplinary courses related to the mental health professions of the biobehavioral sciences in addition to its programs for psychiatry interns and residents and for medical students (courses for medical students are listed in the School of Medicine Announcement and the School of Medicine Handbook of Clinical Courses). Information on clinical practicums which are offered in conjunction with other educational institutions and UCLA departments may be obtained from the department. The following courses are open to qualified students.

#### Upper Division Courses

**M112. A Laboratory for Naturalistic Observations: Developing Skills and Techniques.** (Same as Anthropology M176 and Psychology M155.) Prerequisite: consent of instructor. The skill of observing and recording behavior in natural settings will be taught, emphasizing field training and practice in observing behavior. Group and individual projects will be included. Some of the uses of observations and their implications for research in the social sciences will also be discussed. Mr. Gallimore, Mr. Wesner

**199. Special Studies in Psychiatry.** (½ to 1 course) Prerequisite: consent of instructor and Department Chairman. Consent is based on a written proposal outlining the course of study. The proposal is to be structured by instructor and student at time of initial enrollment. Additional information and course proposal forms are available in the Educational Activities Office, B7-349 NPI.

#### Graduate Courses

**200. Colloquium on Biobehavioral Sciences.** (¼ course) Prerequisite: consent of instructor. The colloquium establishes a vehicle for continuing education on recent advances in various scientific fields relevant to behavior in its biobehavioral and biosocial contexts. It provides a forum for pertinent interdisciplinary discussion. Each speaker is asked to present information from the area of his/her competence and to express his/her ideas on the relevance of this material to the broader issues of behavior. Mr. West

**204A-204B-204C. Psychiatric Theory and Practice.** (¼ course each) Prerequisite: consent of instructor. The theory of psychoanalytic psychotherapeutic technique is discussed. Comparative grids of the classical analytic, Kleinian, and Eriksonian theories are demonstrated in segment A. Segments B and C concentrate on historical Freudian theory compared to current daily clinical practice and theory. The Staff

**205. Advanced Psychiatric Theory Seminar.** (¼ course) Prerequisite: consent of instructor. Seminar and discussion on topics of current psychiatric interests led by leaders of local psychiatric community. Mr. Gorney

**207. Hypnosis Seminar.** (¼ course) Prerequisite: training in psychotherapy, education in psychodynamics and psychopathology, and consent of instructor. Experiential seminar with guided reading and training in inductions, anesthesia, age regression, imagery techniques, distortion of time and space, therapeutic applications (including direct symptom removal, behavioral methods and hypnoanalysis), and training patients for self-hypnosis. Emphasis is on developing skill for application in clinical practice. Ms. Holroyd

**208A-208B. Neuropsychology: Assessment of Brain Damage.** (½ course each) Prerequisite: graduate or post-graduate standing and consent of instructor. The aim of the course is to introduce and review neuropsychological concepts, including functional neuroanatomical systems of the brain, localizing signs of organic brain damage, analytic and synthetic activities of the brain, and neuropsychological test instruments. Mr. Marsh

**209A-209B-209C. Behavior Therapy Practicum.** (½ course each) Prerequisite: consent of instructor. Course provides clinical supervision and experimental learning of skills needed to do effective behavior therapy. Emphasis is on practical, clinical techniques and on measuring therapeutic progress by specifying goals, observing, and recording behavior change. Mr. Miller and the Staff

**M222. Transcultural Psychiatry.** (½ course) (Same as Anthropology M244.) Prerequisite: consent of instructor. Consideration of psychiatric topics in cross-cultural perspective, such as studies of drug use, defiance, suicide, homicide, behavioral disorders, "culture specific" syndromes, non-Western psychiatries, and the question of "sick" societies. Mr. Kennedy

**224. Seminar on Aging and Psychopathology.** (½ course) Prerequisite: consent of instructor. The format will be a combination of patient interviews and case discussions. Students will review and discuss pertinent literature in gerontology and geriatrics, including psychology, sociology, clinical medicine, pharmacology, neurology, and psychiatry. The course will include a survey of psychopathology as seen among the aged, including a discussion of OBS, affective disorders and schizophrenia spectrum disorders. Ms. Jarvik, Mr. Straker

**231. Mental Health of the Mexican American.** (¼ course) Prerequisite: consent of instructor. Course will highlight mental health needs of Mexican Americans through seminars dealing with: historical comparison of psychiatry in Mexico and United States, an analysis of the various theoretical perspectives regarding biopsychosocial behavior; distinguishing psychodynamic from cultural factors in the treatment of the Mexican-American patient; mental health impact of the criminal justice system and urban disorder. Mr. Morales

**232A-232B-232C. Human Sexual Dysfunction.** (½ course each) Prerequisite: consent of instructor. One year training and research course in the direct behavioral treatment of human sexual dysfunction. A combination of didactic material and supervised experience. Mr. Golden

**233. Alcoholism and Drug Abuse Among Women.** Prerequisite: consent of instructor. Discussion of the psychosocial aspects of abuse of alcohol and other drugs among women. Topics will include etiology, prevention, treatment, hormonal influences, and the role of the family. Emphasis will be placed upon current theoretical perspectives and research findings. Ms. Beckman

**234A-234B-234C. Affective Disorders.** (¼ course each) Prerequisites: graduate standing and consent of instructor. Seminar will cover general topics related to the primary affective disorders (depression, manic depressive illness) including diagnosis, pharmacology, epidemiology, psychology, phenomenology, biology, and treatment. Ms. Jamison

**M235. A Laboratory for Naturalistic Observations: Developing Skills and Techniques.** (Same as Anthropology M260.) Prerequisite: consent of instructor. The skill of observing and recording behavior in natural settings will be taught, emphasizing field training and practice in observing behavior. Some of the uses of observations and their implications for research in the social sciences will also be discussed. Students will be expected to integrate observational work into their current research interests. Mr. Gallimore, Mr. Wesner

**236A-236B-236C. Psychology Interns' Seminar.** (¼ course each) Prerequisite: consent of instructor. Current topics in clinical psychology. The initial quarter of the seminar focuses on the psychodiagnostic and clinical study of schizophrenic disorder. Clinical and research literature on schizophrenia and concepts from cognitive developmental psychology are reviewed and integrated in a conceptual model of object representations and their structural impairment in psychosis. Case presentations illustrate how this formulation serves to discriminate levels of psychopathology and the extent of cognitive disruption in schizophrenia. In subsequent quarters, the group will select additional topics for discussion pertaining to psychopathology, diagnostic evaluation and modalities of treatment. Ms. Holroyd, Mr. Strober

**M239. Psychopharmacology.** (Same as Pharmacology M239.) Prerequisite: consent of instructor. A presentation of the effects of drugs upon behavior with special attention to drugs used in psychiatry and drug seeking behavior. Physiological and biochemical

mechanisms underlying such actions will be analyzed. Reports on relevant current research will be made.  
Mr. Jarvik

**240ABC. Assessment and Treatment of Afro-American Families. (¼ course each)** Prerequisites: graduate standing and consent of instructor. The course aids mental health professionals and trainees in the evaluation and treatment of Afro-American families in terms of their cultural milieu, historical background and economic status. Didactic presentations by instructors and invited guests form the basis for a supervised evaluation and case management with an Afro-American child and family.  
Ms. Bass, Ms. Powell, Ms. Wyatt

**241A-241B-241C. Observation of Group Psychotherapy. (½ course each)** Prerequisite: consent of instructor. Principles of adult psychotherapy will be explored through observation of an on-going group, lectures and discussion. Major theoretical emphasis will be on humanistic-group dynamic approaches.  
Mr. Rosen

**242A-242B-242C. Child Psychotherapy Seminar. (¼ course each)** (Formerly numbered 242.) Prerequisites: current experience with psychoanalytically-oriented child psychotherapy and consent of instructor. Videotaped sessions of treatment of a child and family will provide a framework for discussing such topics as: diagnostic assessment, the beginning of treatment, the overdetermined nature of the symptom, transference phenomenon related to parental conflict, initial recovery of psychological reactions to past events, factors enhancing further working relationships with child and family and various other technical issues including the handling of terminations. Student presentations will be encouraged in order to amplify clinical and theoretical issues.  
Mr. Heinicke

**243A-243B-243C. Mental Retardation Interdisciplinary Core Curriculum. (¼ course each)** Prerequisite: consent of instructor. A survey series on major topic areas of mental retardation covering epidemiology, nosology, assessment, health care delivery systems, basic genetics, nutrition, direct care, and special deficits. Presented in an interdisciplinary framework as generic information independent of discipline.  
Mr. Cantwell

**244. Computers in Mental Retardation Research.** Prerequisite: consent of instructor. An introduction to the basic nature of digital computer systems, with emphasis on their impact on society. The course is directed toward providing the student with a broad general understanding of applications and limitations of computers. Specific examples are drawn from clinical, research, and administrative applications within the Mental Retardation and Child Psychiatry Program.  
Mr. Guthrie, Mr. Hull

**M246. Psychological Aspects of Mental Retardation.** (Same as Psychology M246.) Prerequisite: consent of instructor. Discussion of the psychological aspects of mental retardation to include: classification, description, etiology, theory, prevention, treatment, assessment, modern and future developments, and input from other disciplines (ethics, law, religion, welfare systems).  
Mr. Tymchuk

**247A-247B. Neurophysiological and Neuropsychological Bases of Mental Retardation and Human Development. (¼ course each)** Prerequisite: graduate standing and consent of instructor. Involves discussion of advances in neurophysiology and neuropsychology with particular reference to modern developmental studies. Faculty members or advanced students present results of their research work in the context of available literature; intense discussion occurs during and after presentation.  
Mr. Levine, Mr. Soltysik

**248. Research Rounds in Mental Retardation and Developmental Disabilities. (¼ course)** Prerequisite: consent of instructor. Monthly session will consist of presentation of a patient and discussion of research approaches relevant to that patient. Staff members from various disciplines and invited speakers will participate.  
Mr. de Vellis

**249A-249B. Language Disorders of Childhood. (¼ course each)** Prerequisite: consent of instructor. Course reviews language disabilities in children, their relationship to normal maturational patterns and to other aspects of behavior, the critical period hypothesis, universals of language development, environmental factors affecting language acquisition, neural mechanisms underlying speech and language, diagnostic methods, and approaches to remedial language training.  
Ms. Baltaxe

**250. Introduction to the Principles and Techniques of Mammalian-Cell Culture. (½ course)** Prerequisite: graduate or medical student status and consent of the instructor. This course provides a background in the physiology and biochemistry of mammalian cells through lecture and selected readings in the classical field. Designed to be taken concurrently with 251.  
Mr. Haggerty

**251. Laboratory Exercises in the Techniques of Mammalian-Cell Culture.** Prerequisite: graduate or medical student status and consent of the instructor. This course provides a working knowledge of the physiology and biochemistry of mammalian cells in culture through laboratory exercises involving the propagation and manipulation of differentiated and undifferentiated continuous mammalian-cell lines. Designed to be taken concurrently with 250.  
Mr. Haggerty

**252. Clinical Child Psychiatry. (¼ course)** Prerequisite: consent of instructor. Weekly seminars covering the basic clinical aspects of child psychiatry. Assigned readings are presented by students and used as a basis for discussion of a particular topic. Topics covered include interviewing of parents and children, diagnosis in child

psychiatry, and the clinical child psychiatric syndrome.  
Mr. Cantwell

**253. Seminar: Child Development. (¼ course)** Prerequisite: consent of instructor. The seminar is divided into three sections: theories of development, systems of child development, and chronological aspects of child development. Presentation of assigned readings by the student plays a major role in each of the seminar sessions.  
Mr. Cantwell

**M254. Counseling Families of Handicapped Children. (½ course)** (Same as Social Welfare M242.) Prerequisite: consent of instructor. Techniques and issues in counseling families through evaluation, feedback, and treatment. Social and psychological stresses on family unit, professional's reactions, community resources, and issues of genetic counseling, placement, and developmental crises.  
Ms. Shima

**M255. Comparative Psychopathology.** (Same as Psychology M285.) Prerequisite: some background in psychopathology, comparative psychology, zoology or comparative genetics and consent of instructor. This course will explore those animal models of psychopathology most relevant to human clinical problems (i.e., schizophrenia, depression, phobias, anxiety states, drug abuses, aggression, sexual dysfunction, etc.). The interaction or convergence of social, biological, and environmental processes in determining these states will be emphasized. The relevance of the model to the understanding of homologous human conditions will be analyzed.  
Mr. Ervin, Mr. Garcia

**256. Basic Clinical Child Psychopathology. (¼ course)** Prerequisite: consent of instructor. Weekly seminars covering the basic clinical aspects of child psychopathology. Readings will be provided for a basis of discussion on topics including interviewing of parents and children, diagnosis, and related syndromes.  
Mr. Cantwell

**257A-257B-257C. Diagnostics and Therapeutics of Language Disabilities. (¼ course each)** Prerequisite: consent of instructor. This course is directed toward the language specialist seeking training in the developmental disabilities of language. The course includes training in diagnostic techniques and therapy approaches. Linguistic disabilities are placed within the framework of total behavior. The clinical practicum includes individual case supervision, a review of the pertinent literature, and a discussion of research topics. Students are required to complete a clinical research project in psycho- and neuro-linguistics.  
Ms. Baltaxe

**259. Legal and Ethical Issues in Developmental Disabilities. (¼ course)** Prerequisite: consent of instructor. Discussion of current laws in mental retardation/developmental disabilities, philosophies, ethics, ethical codes, issues, how to resolve them, videotape, discussion of cases.  
Mr. Tymchuk

**M261A-261B. Seminar on Law, Medicine and Human Values. (¼ course)** (Same as Law M357; formerly numbered M261.) Prerequisite: consent of instructor. The seminar will deal with legal, philosophical and psychological issues arising in the context of the doctor-patient relationship. Emphasis will be placed upon an analysis of the value conflicts underlying and manifested in medical practices and legal policies. Course material will be taken from legal, medical, and philosophical literature, legislation, case law, and medical case histories. In progress grading.  
Mr. Winslade

**M262. Law and Psychiatry. (¼ course)** (Same as Law M247.) Prerequisite: consent of instructor. Introduction to the ethical and legal implications of the orientation, premises, functioning, and potential contributions of psychiatry. Review of the practical and theoretical aspects of collaboration between law and psychiatry.  
Mr. Winslade

**263. Biologic Psychiatry. (½ course)** Prerequisite: consent of instructor. This course will discuss the correlation of neuro-anatomy, neuro-physiology, and neuro-chemistry with behavioral disorders and pharmacologic therapy. The course is designed to give an appreciation of the central nervous system as an organ that regulates the internal milieu of the body, interacts with the external environment and continuously modulates the internal-external interface. Current mechanisms of brain function and theories of how disease and drugs disrupt its functions will be explored.  
Mr. Ervin

**264A-264B-264C. Biofeedback and Biobehavioral Medicine. (½ course each)** Prerequisite: consent of instructor. Course explores biofeedback and related behavioral techniques and their application to various clinical disorders (hypertension, pain and anxiety, asthma, headache, sexual dysfunction, neuro-muscular rehabilitation, etc.). Patients are presented and follow-up reporting is done on their treatment. In-progress grading.  
Mr. Shapiro

**M265. Mind and Brain in Evolution. (½ course)** (Same as Psychology M211.) Prerequisite: consent of instructor. This course reviews the fossil evidence on the organic evolution of the brain and the implications of that evidence for the evolution of mind and intelligence. Quantitative approaches are emphasized. Although some implications for cognitive psychology and individual differences are considered, the evolutionary analysis is "above the species level."  
Mr. Jerison

**266. Psychophysiology Seminar. (¼ course)** Prerequisite: consent of instructor. Seminar presentations and discussions of research in psychophysiology. Possible topics include basic research on biofeedback and self-regulation of physiological processes, clinical research on applications of biofeedback to psychophysiological disorders, autonomic-central nervous system interactions, and the study of consciousness.  
Mr. Shapiro

**267. Program Evaluation Laboratory.** Prerequisite: consent of instructor. Directed individual program evaluation research experience at the graduate level. Skills in program evaluation will be taught, emphasizing field setting and practice. Some of the uses of evaluation material will be discussed, also their implications for program development in health care systems.  
Mr. Keller, Mr. May

**268. Program Evaluation Research Conference. (1/8 course)** Prerequisite: consent of instructor. A multi-disciplinary program evaluation group focuses on specific program evaluation projects in the planning stage and at intervals during the process of the project. The emphasis is on design of program evaluation research relevant to a particular program and on techniques and procedures to ensure that the evaluation is successfully carried out.  
Mr. Keller

**269. Changing Patterns in Family Organization. (¼ course)** Prerequisite: consent of instructor. The emphasis will be on modern family groupings in terms of trends in marriage and other arrangements. Some historical and archaeological perspectives will be included.  
Mr. Cantwell

**270. Experimental Primatology.** Prerequisite: consent of instructor. Examination of methodological and conceptual issues in the study of primate social behavior. Hypothesis formulation, data collection techniques and ways of analyzing data are examined. Attention is focused on aggression, communication and psychosexual development.  
Mr. Ervin

**271. Ethology of Motivation and Conditioning. (¼ course)** Prerequisite: graduate standing and consent of instructor. Basic facts and concepts of motivation and learning in animals will be presented in the framework of ethological and neurophysiological approach. Classical and instrumental conditioning procedures will be discussed with particular attention to the motivational variables.  
Mr. Soltysik

**M272. Culture and Personality.** (Same as Anthropology M269K.) Prerequisite: consent of instructor. The course will deal with theories of the relationship of personality to the context of cultural life; cultural aspects of individual growth and development and methodological problems in the study of cultural effects of individual character and personality. May be repeated for credit.  
The Staff

**274. Neurophysiology and Behavior. (¼ course)** Prerequisites: graduate standing and consent of instructor. The course will provide an analysis of strategies and approaches used to study behavior of mammalian organisms. Special emphasis will be placed on recent developments in electrophysiological recording techniques in behaving animals and how such developments relate to classical concepts of brain function.  
Mr. Levine

**275A-275B. Adult Bonding. (½ course each)** Prerequisite: consent of instructor. The course is designed to review in detail several theories dealing with adult bonding behavior: kin-selection theory, reciprocal altruism theory, mate selection theory, and bond strategy theory. Bonds are reviewed primarily from a biological rather than a psychological perspective. In-progress grading.  
Mr. McGuire

**298. Current Topics in the Biobehavioral Sciences. (½ to 1 course)** Prerequisite: consent of instructor. Current issues in the biobehavioral sciences will be offered on a selective basis depending upon instructor interest and topical relevancy of problems. See Schedule of Classes for topics and instructors. May be repeated for credit.  
The Staff

## Professional Courses

**400A-400B. Introduction to Human Behavior. (¼ course each)** Prerequisite: graduate student in a behavioral science program and consent of instructor. Application of theories and findings of the behavioral sciences to the health professions.  
Ms. Jarvik

**403. Individual Case Supervision. (¼ to 1 course)** Prerequisite: consent of instructor and Department Chairman. One-to-one supervision of individual therapy cases. Includes analyses of patient data, supervision of ongoing treatment, informal didactic sessions on personality theory, and applications to patient management. Consent is based on a written proposal to be structured by instructor and student prior to enrollment. Additional information and proposal forms are available in the Educational Activities Office, B7-349 NPI.  
The Staff

**404. Group Therapy. (¼ course)** Prerequisite: consent of instructor. Section 1: Gestalt. Experiential and didactic seminar in Gestalt therapy and other humanistic group models. Case consultations are included when relevant.  
The Staff

Section 2: Dynamic Experience. This group experience has as its primary goal the attainment of significant usable insight by the trainee into his/her personality and attitudes so that his/her emotional conflicts will not interfere with his/her functioning as an effective group therapist. Will provide insights into how groups affect people and people affect groups - to help groups function more effectively.  
The Staff

**413. Community Meeting (2-West). (¼ course)** Prerequisite: assignment to Ward 2-West and consent of instructor. One hour course is devoted to individual experience in leading a large group of all patients and staff. Leadership is by rotation. A half-hour process didactic session follows.  
Mr. Robertson

**414. Emergency Treatment Attending Rounds.** (¼ course) Prerequisite: assignment to Emergency Treatment Unit and consent of instructor. Cases seen in the emergency room during the preceding night are reviewed by a consultant and the Emergency Treatment staff. Assessment techniques, methods of intervention and alternate modes of treatment are explored.

Mr. Slawson

**415. Emergency Treatment Case Conference.** (¼ course) Prerequisite: assignment to Emergency Treatment Unit and consent of instructor. Selected cases are presented by a resident, staff member or trainee to a consultant who reviews the diagnostic considerations and discusses implications for treatment and disposition. Trainees are expected to familiarize themselves with the disorder or personality type exemplified by their patient. They should be prepared to review the relevant literature and to cite recent contributions so as to form a basis for enlightened discussion.

Mr. Slawson

**416. Treatment Planning Meetings.** (¼ course) Prerequisite: consent of instructor. The course focuses on treatment and management problems posed by inpatient psychiatry. Clinical psychopathology, treatment plans and interdisciplinary skills are discussed. The emphasis is on formulating accurate diagnostic assessments and planning effective treatment programs utilizing the therapeutic methods of the milieu (somatic therapies, behavioral techniques, family therapy, group process, individual and dyadic treatment, etc.).

Section 1: 2-West Mr. Robertson  
Section 2: 2-South Mr. Gerner  
Section 3: A-South Mr. Strober  
Section 4: A-West Ms. Preston, Mr. Yager

**424. Ward Milieu Meeting.** (¼ course) Prerequisite: consent of instructor. Milieu course meetings are designed to explore experientially and didactically the multiple aspects of group process on a psychiatric inpatient ward.

Section 1: A-South Mr. Strober  
Section 2: A-West The Staff  
Section 3: 2-West Mr. Robertson

**425. Child Pre-Admission, Admission and Disposition Conference.** (¼ course) Prerequisite: consent of instructor. Child pre-admission is the case study of child and family prior to inpatient admission. Course deals with 1) interview techniques, 2) suitability for admission, and 3) goals for hospitalization. Admission and disposition includes presentation of problem cases, usually with combined physical and intellectual defects, for interdisciplinary problem solving.

Section 1: A-South Mr. Strober  
Section 2: A-West Mr. Yager  
Section 3: 4-West Mr. Valente  
Section 5: 6-West Mr. Russell

**426. Psychology Interns' Psychosomatic Liaison Case Conference.** Prerequisite: consent of instructor. Psychology interns' case conference of psychosomatic aspects of physical illness. Cases will be discussed with regard to management issues, psychotherapy issues, methods of psychodiagnosis, counter transference and relevant literature. In addition, participants will receive individual supervision on a weekly basis.

Mr. Wellisch

**429. Child Outpatient Team.** (¼ course) Prerequisite: consent of instructor. Weekly team meetings to coordinate the clinical activities of the trainees in the Child Outpatient Department. Discussion of literature and theories related to selected cases.

Section 1: First Year Child Fellows. Mr. Cantwell  
Section 2: Second Year Child Fellows. Mr. Simmons, Mr. Tanguay, Mr. Tarjan  
Section 3: Second Year Resident. Mr. Yager  
Section 4: Second Year Resident. Mr. Yager  
Section 5: Second Year Resident. Mr. Ritvo  
Section 6: UAF Trainees. Mr. Tymchuk

**445A-445B-455C. Family Therapy Seminar for Clinicians.** (½ course each) Prerequisite: prior clinical responsibility and treatment experience with individual families and consent of instructor. Conceptual and practical issues of family development and treatment are presented in the seminars. The emphasis is on structural family therapy. Alternative models may be reviewed during the year. Videotape is used extensively. Case supervision will be available. Participants must be treating one or more families.

Mr. Gottlieb and the Staff

**446. Structural Family Therapy.** (¼ course) Prerequisite: prior clinical experience in family therapy and consent of instructor. Intensive focus is on structural family treatment. Direct clinical experience is the primary mode of learning, with the student presenting videotape material for discussion and observing experienced clinicians' videotapes critically. The seminar/discussion format is used extensively.

Mr. Gottlieb

**462A-462B-462C. Advanced Mental Health Consultation.** Prerequisite: consent of instructor. This course provides knowledge of children in schools through: 1) field experience; 2) a didactic program; 3) group supervision. Each trainee chooses a local elementary or junior high school as the site of field experience in

consultation. Supervision focuses on assessing the needs of the school and initiating the consultation. Seminars consider theories of consultation, systems theory as applied to the schools, the organization of the school systems, the professional roles represented in the school (e.g., teachers, counselors, principals, etc.) and their special problems. In-Progress grading.

Mr. Cantwell

**463. Psychosocial Aspects of Oncology.** (¼ course) Prerequisite: clinical involvement with oncology patient and consent of instructor. Discussion of oncology cases. Clinical case conference of psychiatric care of oncology patients. Discussion includes reference to relevant literature. Presented in an interdisciplinary framework for health care professionals.

Mr. Fawzy

**471. Mental Retardation and Child Psychiatry Special Problems Conference.** Prerequisite: consent of instructor. Each month one clinical subdivision of the Mental Retardation and Child Psychiatry Program presents a major clinical problem. Senior faculty discussants preside. The presenting trainees are expected to cover the pertinent literature and to assemble the critical elements of information on the case or problem at hand.

Mental Retardation and Child Psychiatry Staff

**M472A-472B-472C. Nursing Care of the Developmentally Disabled.** (Same as Nursing M410A-401B-410C.) Prerequisite: enrollment in the Master's Program in School of Nursing. Study of the handicapping conditions of childhood and their effects upon the child and his/her family. This course combines didactic material and supervised clinical experience. Focus is on prevention, systematic assessment, planning, implementation and evaluation of nursing care. During the final quarter the student participates in the assessment, planning and delivery of health care to the developmentally disabled in the community.

Ms. Savino

**474. Training in Meditation: The Relaxation Response.** (¼ course) Prerequisite: consent of instructor. Review of the literature and research on meditation. Explanation of meditation techniques and training sessions to become proficient in practicing meditation: the relaxation response.

Mr. Marsh

**475. Developmental Disabilities Clinic.** Prerequisite: consent of instructor. Follow up clinic for children with developmental disabilities. Services and teaching involve genetic counseling, educational and behavioral assessment, school consultation and family child guidance.

Mr. Funderburk and the Staff

**478. Clinical Genetics Rounds.** Prerequisite: medical graduate and consent of instructor. A weekly clinical rounds on patients seen on the wards during the preceding week. House staff and others involved in clinical work may attend. Usually an indepth discussion of the medical and genetic aspects of one or more disorders is presented.

Ms. Crandall

**479. Genetics Clinic Presentation.** Prerequisite: consent of instructor. A weekly clinical teaching session on the patients seen in the preceding Genetics Clinic. An indepth discussion on the genetics of each disorder follows.

Ms. Crandall and the Genetics Staff

**480. Analysis of Human Chromosome Studies.** (¼ course) Prerequisite: consent of instructor. Chromosome karyotypes prepared in the cytogenetics laboratory during the preceding week are presented and discussed with reference to clinical findings. Teaching includes the interpretation of abnormal karyotypes and the technical aspects of routine and special chromosome stains.

Mr. Sparkes

**481. Chromatography Review.** Prerequisite: premedical course or biochemistry and consent of instructor. A weekly session in which amino acid chromatography carried out during the preceding week is presented. Teaching concerns the interpretation of abnormal chromatograms together with the technical aspects of the tests used.

Mr. Cederbaum

**482A-482B-482C. Psychology Intern's Group Process.** (¼ course each) Prerequisite: consent of instructor. The purpose of this course is to teach the students about group processes and dynamics. The course will involve an active learning experience whereby students study their own group interactions in order to examine group process variables such as: styles of leadership, verbal and nonverbal methods of communication, the development of trust, self-disclosure, and the effects on group process of stereotypes about ethnic and masculine-feminine characteristics of people.

Ms. Holroyd

**483. Group Therapy Seminar: Psychology Internship.** (¼ course) Prerequisite: consent of instructor. Students either act as group therapists or observe through one-way mirror other students doing group therapy. Emphasis is on "here and now" transference phenomena in the group. This is followed by seminar type supervision of the whole group.

Ms. Paul

**485. Medical Genetics Seminars.** Prerequisite: introductory course and consent of instructor. A weekly lecture series intended for those interested in genetics or in the specific topic to be presented. Speakers are invited for their expertise or research in some special area related to genetics and may be from UCLA or elsewhere. Discussion and questions from the audience are encouraged.

Genetics Staff

**486. Behavioral Analysis of Autism.** (½ course) Prerequisite: consent of instructor. Seminar on the role of operant techniques in the assessment, treatment and understanding problems of autism and mental retardation.

Mr. Frankel, Ms. Freeman

**488. Law Student Consultation Project.** (¼ course) Prerequisite: consent of instructor. Consultation to UCLA Law School to teach law students to be sensitive to the broader human problems of their clients and to help them to develop some specific interviewing skills.

Mr. McCreary

**489. Assertion Training Seminar.** (¼ course) Prerequisite: consent of instructor. An introduction to theory, techniques and research in the area of assertion training. Seminar is a workshop to learn basic techniques and how to teach them to clients.

Ms. Gellb

**596P. Individual Studies in Psychiatry.** (¼ to 2 courses) Prerequisite: consent of instructor and Department Chairman. Consent is based on a written proposal outlining the course of study. The proposal is to be structured by instructor and student at time of initial enrollment. Directed individual research and study in psychiatry at the graduate level. Additional information and course proposal forms are available in the Educational Activities Office, B7-349 NPI.

The Staff

## PSYCHOLOGY

(Department Office, 1283 Franz Hall)

Bruce L. Baker, Ph.D., *Professor of Psychology.*  
Peter M. Bentler, Ph.D., *Professor of Psychology.*  
Robert A. Bjork, Ph.D., *Professor of Psychology.*  
William E. Broen, Jr., Ph.D., *Professor of Psychology.*  
Edward C. Carterette, Ph.D., *Professor of Psychology.*  
Richard Centers, Ph.D., *Professor of Psychology.*  
James C. Coleman, Ph.D., *Professor of Psychology and Education.*  
Barry E. Collins, Ph.D., *Professor of Psychology.*  
Andrew L. Comrey, Ph.D., *Professor of Psychology.*  
Gaylord D. Ellison, Ph.D., *Professor of Psychology.*  
Seymour Feshbach, Ph.D., *Professor of Psychology (Chairman of the Department).*  
Morton P. Friedman, Ph.D., *Professor of Psychology (Vice Chairman of Undergraduate Affairs).*  
John Garcia, Ph.D., *Professor of Psychology and Psychiatry.*  
Harold B. Gerard, Ph.D., *Professor of Psychology.*  
Michael J. Goldstein, Ph.D., *Professor of Psychology.*  
John P. Houston, Ph.D., *Professor of Psychology.*  
Wendell E. Jeffrey, Ph.D., *Professor of Psychology.*  
F. Nowell Jones, Ph.D., *Professor of Psychology.*  
Harold H. Kelley, Ph.D., *Professor of Psychology.*  
Franklin B. Krasne, Ph.D., *Professor of Psychology.*  
John C. Liebeskind, Ph.D., *Professor of Psychology.*  
O. Ivar Lovaas, Ph.D., Litt.D., *Professor of Psychology.*  
Millard C. Madsen, Ph.D., *Professor of Psychology.*  
Irving Maltzman, Ph.D., *Professor of Psychology.*  
Albert Mehrabian, Ph.D., *Professor of Psychology.*  
Charles Y. Nakamura, Ph.D., *Professor of Psychology.*  
Donald Novin, Ph.D., *Professor of Psychology.*  
Allen Parducci, Ph.D., *Professor of Psychology.*  
Bertram H. Raven, Ph.D., *Professor of Psychology.*  
Eliot H. Rodnick, Ph.D., *Professor of Psychology.*  
David O. Sears, Ph.D., *Professor of Psychology and Political Science.*  
Joseph G. Sheehan, Ph.D., *Professor of Psychology.*  
Gerald H. Shure, Ph.D., *Professor of Psychology and Sociology.*  
James P. Thomas, Ph.D., *Professor of Psychology (Vice Chairman of Graduate Affairs).*  
Bernard Weiner, Ph.D., *Professor of Psychology.*  
S. Carolyn Fisher, Ph.D., *Emeritus Professor of Psychology.*  
Joseph A. Gengrelli, Ph.D., *Emeritus Professor of Psychology.*  
Milton E. Hahn, Ph.D., *Emeritus Professor of Psychology.*  
George F.J. Lehner, Ph.D., *Emeritus Professor of Psychology.*  
Donald B. Lindsley, Ph.D., Sc.D., *Emeritus Professor of Psychology and Physiology.*  
Laurence A. Petran, Ph.D., F.A.G.O., *Emeritus Professor of Music and Psychology.*  
Jessie L. Ruhlman, Ed.D., *Emeritus Professor of Psychology.*  
John P. Seward, Ph.D., *Emeritus Professor of Psychology.*  
Marion A. Wenger, Ph.D., *Emeritus Professor of Psychology.*  
Eugene Ziskind, M.D., *Visiting Professor of Psychology.*  
Howard S. Adelman, Ph.D., *Associate Professor of Psychology and Lecturer in Education.*  
Richard P. Barthol, Ph.D., *Associate Professor of Psychology.*  
Jackson Beatty, Ph.D., *Associate Professor of Psychology.*  
Larry L. Butcher, Ph.D., *Associate Professor of Psychology.*  
Jacqueline D. Goodchilds, Ph.D., *Adjunct Associate Professor of Psychology and Associate Research Psychologist.*  
Gerald M. Goodman, Ph.D., *Associate Professor of Psychology.*  
Patricia M. Greenfield, Ph.D., *Associate Professor of Psychology.*  
Barbara A. Henker, Ph.D., *Associate Professor of Psychology.*  
Eric W. Holman, Ph.D., *Associate Professor of Psychology.*  
Marion Jacobs, Ph.D., *Adjunct Associate Professor of Psychology.*  
Donald G. MacKay, Ph.D., *Associate Professor of Psychology.*  
Dennis J. McGinty, Ph.D., *Adjunct Associate Professor of Psychology and Associate Research Anatomist.*  
George E. Mount, Ph.D., *Associate Professor of Psychology.*  
Amado M. Padilla, Ph.D., *Associate Professor of Psychology.*  
Thomas D. Wickens, Ph.D., *Associate Professor of Psychology.*  
Paul R. Abramson, Ph.D., *Assistant Professor of Psychology.*  
Ted W. Allen, Ph.D., *Assistant Professor of Psychology.*  
Arthur P. Arnold, Ph.D., *Assistant Professor of Psychology.*  
Elizabeth L. Bjork, Ph.D., *Assistant Professor of Psychology.*  
Andrew Christensen, Ph.D., *Assistant Professor of Psychology.*  
Bradie B. Dooley, Ph.D., *Adjunct Assistant Professor of Psychology.*

Patrice L. French, Ph.D., *Assistant Professor of Psychology*.  
 Stephen S. Fugita, Ph.D., *Visiting Assistant Professor of Psychology*.  
 Barbara A. Gutek, Ph.D., *Assistant Professor of Psychology*.  
 Constance L. Hammen, Ph.D., *Assistant Professor of Psychology*.  
 Anna G. Heinrich, Ph.D., *Adjunct Assistant Professor of Psychology*.  
 Lewis M. King, Ph.D., *Assistant Professor of Psychology in Residence*.  
 Dennis K. Kinney, Ph.D., *Assistant Professor of Psychology*.  
 Manuel Leon, Ph.D., *Assistant Professor of Psychology*.  
 Sigrid R. McPherson, Ph.D., *Adjunct Assistant Professor of Psychology and Medical Psychology and Assistant Research Psychologist*.  
 Hector F. Myers, Ph.D., *Assistant Professor of Psychology*.  
 L. Anne Peplau, Ph.D., *Assistant Professor of Psychology*.  
 Nancy L. Rader, Ph.D., *Assistant Professor of Psychology*.  
 Linda L. Taylor, Ph.D., *Adjunct Assistant Professor of Psychology*.  
 Perry W. Thorndyke, Ph.D., *Adjunct Assistant Professor of Psychology*.  
 J. Arthur Woodward, Ph.D., *Assistant Professor of Psychology*.

Armand A. Alkire, Ph.D., *Associate Clinical Professor of Psychology*.  
 Dorothy V. Anderson, Ph.D., *Associate Clinical Professor of Psychology and Medical Psychology*.

Joseph A. Angelo, Ph.D., *Associate Clinical Professor of Psychology*.  
 Charles M. Bowdlear, Ph.D., *Associate Clinical Professor of Psychology*.  
 David E. Bresler, Ph.D., *Adjunct Assistant Professor of Psychology and Anesthesiology*.

Marcelline M. Burns, Ph.D., *Assistant Research Psychologist in Psychology and Engineering*.

Matthew W. Buttiglieri, Ph.D., *Clinical Professor of Psychology*.  
 Philip M. Carman, Ph.D., *Clinical Professor of Psychology*.

Jeremiah P. Collins, Ph.D., *Lecturer in Psychology and Assistant Research Psychologist in Medical Psychology*.

Edward M. Cummings, Ph.D., *Lecturer in Psychology*.  
 William E. Davis, Ph.D., *Associate Clinical Professor of Psychology*.

Darrell C. Dearmore, M.A., *Lecturer in Psychology*.  
 Jerome R. Evans, Ph.D., *Assistant Research Psychologist*.

Norma D. Feshbach, Ph.D., *Professor of Education and Psychology*.  
 Gilbert Freitag, Ph.D., *Lecturer in Psychology*.

Louis F. Friedman, Ph.D., *Lecturer in Psychology*.  
 Rosslyn Gaines, Ph.D., *Professor of Medical Psychology and Psychology in Residence*.

Ralph E. Geiselman, Ph.D., *Lecturer in Psychology*.  
 Desy S. Gerard, Ph.D., *Assistant Research Psychologist*.

Beverly Golden, Ph.D., *Associate Clinical Professor of Psychology*.  
 Thomas C. Greening, Ph.D., *Lecturer in Psychology*.

Henriette Groot, Ph.D., *Associate Clinical Professor of Psychology*.  
 Barbara W. Guggenheim, Ph.D., *Lecturer in Psychology and Assistant Research Psychologist*.

Robert L. Gunn, Ph.D., *Associate Clinical Professor of Psychology*.  
 Walter G. Hankins, Ph.D., *Assistant Research Psychologist*.

Richard W. Hanson, Ph.D., *Assistant Clinical Professor of Psychology*.  
 Barbara Hayes-Roth, Ph.D., *Adjunct Assistant Professor of Psychology*.

Charlyne T. Herbert, Ph.D., *Associate Clinical Professor of Psychology*.  
 Morris K. Holland, Ph.D., *Lecturer in Psychology*.

Elaine D. Holmes, Ph.D., *Assistant Clinical Professor of Psychology*.  
 Christiane M. Hoppe, Ph.D., *Lecturer in Psychology*.

George J. Huba, Jr., Ph.D., *Lecturer in Psychology and Assistant Research Psychologist*.

Harrington V. Ingham, M.D., *Senior Physician Diplomate in Student Health Service and Associate Clinical Professor of Psychiatry and Psychology*.

Harry J. Jerison, Ph.D., *Professor of Medical Psychology and Psychology in Residence*.

Paula B. Johnson, Ph.D., *Assistant Research Psychologist*.  
 Renee L. Kaplan, Ph.D., *Associate Clinical Professor of Psychology*.

George G. Katz, Ph.D., *Associate Clinical Professor of Psychology*.  
 Adam T. Kohler, Ph.D., *Assistant Clinical Professor of Psychology*.

Anne A. Lawrence, Ph.D., *Lecturer in Psychology*.  
 John R. Levee, Ph.D., *Associate Clinical Professor of Psychology*.

John H. Lyman, Ph.D., *Professor of Engineering and Psychology*.  
 Charles D. McCarthy, Ph.D., *Associate Clinical Professor of Psychology*.

John H. McCormack, Ph.D., *Associate Clinical Professor of Psychology*.  
 William H. McGlothlin, Ph.D., *Professor of Psychology in Residence and Assistant Research Psychologist in Psychiatry*.

John W. McKelligott, Ph.D., *Associate Clinical Professor of Psychology*.  
 Wilbur E. Morley, Ph.D., *Lecturer in Psychology*.

Herbert A. Moskowitz, Ph.D., *Associate Research Psychologist*.  
 Leslie Navran, Ph.D., *Clinical Professor of Psychology*.

Robert A. Niemann, Ph.D., *Assistant Research Engineer*.  
 Philip Oederberg, Ph.D., *Lecturer in Psychology*.

Esteban L. Olmedo, Ph.D., *Associate Research Psychologist*.  
 Kent M. Perryman, Ph.D., *Assistant Research Psychologist*.

Kenneth R. Pfeiffer, Ph.D., *Lecturer in Psychology and Engineering*.  
 Francis J. Pirozzolo, Ph.D., *Lecturer in Psychology*.

Frank Risch, Ph.D., *Clinical Professor of Psychology*.  
 Miles S. Rogers, Ph.D., *Research Psychologist*.

John W. Rohrbaugh, Ph.D., *Assistant Research Psychologist*.  
 Bruce D. Rubenstein, Ph.D., *Associate Clinical Professor of Psychology*.

Rene A. Ruiz, Ph.D., *Visiting Research Psychologist*.  
 Julia A. Saslow, Ph.D., *Assistant Clinical Professor of Psychology*.

Barbara N. Schaeffer, Ph.D., *Associate Clinical Professor of Psychology*.  
 George F. Seacat, Ph.D., *Clinical Professor of Psychology*.

Harold J. Segel, Ph.D., *Associate Clinical Professor of Psychology*.  
 David Shapiro, Ph.D., *Professor of Medical Psychology and Psychology*.

Satanand Sharma, Ph.D., *Assistant Research Psychologist in Psychology and Engineering*.

Edwin S. Shneidman, Ph.D., *Professor of Psychology, Sociology, and Thanatology in Residence*.

Ronald K. Siegel, Ph.D., *Adjunct Associate Professor of Psychology and Associate Research Psychologist in Medical Psychology*.

Margaret T. Singer, Ph.D., *Lecturer in Psychology*.  
 Manuel J. Smith, Ph.D., *Assistant Clinical Professor of Psychology*.

Zanwill Sperber, Ph.D., *Lecturer in Psychology*.  
 Joy K. Stapp, Ph.D., *Lecturer in Psychology*.

Dennis A. Vanderweele, Ph.D., *Assistant Research Psychologist*.  
 Arzelia G. Walker, Ph.D., *Assistant Research Psychologist*.

Robert S. Weinberg, Ph.D., *Lecturer in Psychology*.  
 Kathryn L. West, Ph.D., *Assistant Research Psychologist*.

Carol K. Whalen, Ph.D., *Associate Professor of Social Ecology and Associate Research Psychologist*.

Charles L. Wilson, Ph.D., *Assistant Research Psychologist*.  
 Joseph A. Wingard, Ph.D., *Lecturer in Psychology and Assistant Research Psychologist*.

Tamar Zelniker, Ph.D., *Assistant Research Psychologist*.  
 Kenneth Ziedman, Ph.D., *Assistant Research Psychologist in Psychology and Engineering*.

Training in Psychology at UCLA emphasizes the idea of Psychology as a biosocial laboratory science. To meet the diverse needs of students, there are three different major curricula: the Psychology Major, the Quantitative Psychology Major and the Psychobiology Major.

Students should note that all courses required for these majors (which include lower division courses and major courses), must be taken for a letter grade.

**PLEASE NOTE:** A student must have a 2.0 grade point average in the lower division preparation courses in order to declare a Psychology or Quantitative Psychology Major and a 2.0 in each preparation course in order to declare a Psychobiology Major. A 2.0 grade point average is required in all upper division major courses.

#### The Pre-Psychology Major:

While students are completing the lower division preparation courses for one of the majors listed above, they should be enrolled as Pre-Psychology Majors. Students may enroll in this pre-major at the Psychology Undergraduate Advising Office, Franz Hall 1531. Students must complete the preparation courses according to the rules set down in the major before they can enroll in that major. When students have completed the preparation courses for the major, they must petition to enter that major at the Psychology Undergraduate Advising Office.

#### The Psychology Major

**PLEASE NOTE:** Students must complete all pre-major courses with a 2.0 grade point average and petition for change of major by the time they attain 135 units. Students entering UCLA as freshmen can easily complete the nine preparation courses within 135 units. Transfer students who have a number of these preparation courses left to complete will have a more difficult time meeting this requirement. All transfer students must see a counselor in the Psychology Advising Office.

**Required Lower Division Courses for the Psychology Major.** Broad training in general science is required for the major in Psychology. The required lower division courses are as follows: Anthropology 11; Biology 2 or Biology 4A-B; Chemistry 2 or 11A; Engineering 10 (10S recommended, 10C and 10F acceptable); Mathematics 2 and 4A or 3A-B or 31A-B; Physics 10 or 3A or 6A or 8A; Psychology 10; Psychology 41 or Mathematics 50A, (Psychology 41 recommended). Students must complete all pre-major courses with a 2.0 grade point average and petition for change of major status by the time they attain 135 units.

It should be noted that the above are the minimum requirements in preparing for the major. More advanced courses in science and statistics would provide stronger preparation for the major.

**Required Upper Division Major Courses:** Admission to the major and to certain of the courses listed below is limited to students who have completed all of the above preparation courses with a 2.0 grade point average by the time they attain 135 units. See the section above entitled "The Pre-Psychology Major" for the procedures to follow to enroll in the Psychology Major. (1) All of the following content core courses: Psychology 110, 115, 120, 125, 135; (2) One of the following laboratory courses: Psychology 111, 116, 121, 143; (3) One of the following laboratory or field research courses: Psychology 126, 132B, 136, 137C, 170B, 174, 176; (4) An additional three upper division elective courses (12 units) in Psychology.

#### The Quantitative Psychology Major:

This major is an alternative to the Psychology Major. It provides students with basic training in both quantitative skills and in Psychology. Quantitative and computer skills are important in all fields of Psychology and are a very positive aspect in the student's preparation for a career in Psychology or related fields.

**Required Lower Division Courses for the Quantitative Psychology Major.** Biology 2 or Biology 4A-B; Chemistry 2 or 11A; Engineering 10S (recommended), or Engineering 10C, or Engineering 10F; Mathematics 31A-31B-31C, 32A-32B-32C; Physics 10, or 3A or 6A or 8A; Psychology 10.

It should be noted that the above are minimum requirements in preparing for the major. More advanced courses in science would provide stronger preparation for the major.

**Required Upper Division Quantitative Psychology Major Courses:** (Admission to the Quantitative Psychology Major is limited to the students who have completed the above preparation courses with a 2.0 grade-point average. See the section above entitled "The Prepsychology Major" for the procedures to follow to enroll in the Quantitative Psychology Major.) (1) One of the following sets of courses: Public Health 160A-160B or Mathematics 150A-150B or

Mathematics 152A-152B or Engineering 193A-193B; (2) All of the following courses: Psychology 110, 115, 120, 125, 135; (3) Seven additional upper division courses in Quantitative Psychology, Mathematics, Biostatistics, Computer Science, and Systems Science. Two of these courses must emphasize research methodology in Psychology.

Particular courses for the last requirement will depend on a student's needs and interests. Students will consult their adviser for prior approval of courses to meet these requirements. See the Psychology Advising Office for details.

#### The Psychobiology Major:

This major is an alternative to the Psychology major and is designed for students who plan to go on to postgraduate work in psychobiology or the health sciences.

**Required Lower Division Courses for the Psychobiology Major.** Biology 4A-B; Chemistry 11A-11B/BI-11C/CL, 21, 23, 25 (or 21, 22, 24); Engineering 10 (10S recommended, 10C and 10F acceptable); Mathematics 3A-3B-3C or 31A-31B-31C; Physics 6A-6B-6C or 3A-3B-3C; Psychology 10; Psychology 41 or Mathematics 50A (Psychology 41 recommended).

**Required Upper Division Psychobiology Major Courses:** Admission to the Psychobiology Major is limited to students who have completed the above preparation courses with a 2.0 in each course. See the section above entitled "The Pre-Psychology Major" for the procedures to follow to enroll in the Psychobiology Major. (1) All of the following courses: Biology 129 or Psychology 118A; Psychology 110, 111, 115, 116, 120; (2) One of the following courses: Psychology 125, 127, 130, 135; (3) Four courses from the following list with the noted conditions: Psychology 117 (only 1 section may be used); Biology 107, 112, 113, 114, 115 (no more than 1 from this group); Psychology 118B, 118C, Biology 105, 110, 111, 119, 120, 122, M132, 134, 135, 137, 138, 139, 144, 145A-B-C, 153, 158, 161, 166, 168, 169, 171, 172A-B, 173, 177, 179, Kinesiology 140, Chemistry 152 and Engineering 107A.

#### Preparation for Graduate Work in Psychology

Although requirements for admission to graduate programs in Psychology in most universities will be satisfied by the above major requirements, students should realize that both admission to graduate work and progress toward the degree will be impeded in certain areas of Psychology if additional preparation is not obtained at the undergraduate level. For this reason, students who plan to do graduate work in psychology are advised to take additional work in methodology and statistics, and to take advantage of the many advanced undergraduate courses in specific fields offered both by the Psychology Department and related departments.

Students should plan to give some time to the acquisition of a reading knowledge of one or two foreign languages which might be required for the Ph.D. The Department no longer requires a foreign language except in the area of Measurement/Psychometrics; but at some other universities one or two foreign languages are required.

Consult the Psychology Undergraduate Advising Office, Franz Hall 1531, for information concerning graduate programs at other institutions; consult the Graduate Admissions Assistant, Franz Hall 1283, for information concerning the graduate program at UCLA.

#### Honors Program in Psychology

The Psychology Honors Program is intended to provide exceptional students with an opportunity in the junior or senior year for advanced research and study under the tutorial guidance of a member of the faculty. (For information on College Honors, see *Honors Program*, College of Letters and Science.) Honors students participate in an Honors Seminar and work toward the completion of a formal bachelor's thesis. Students whose theses are judged acceptable by the Honors Committee are awarded the degree with Honors or Highest Honors in Psychology. Interested students should consult the Psychology Undergraduate Advising Office early in their educational planning for further information and application forms.

#### Graduate Program

The Department offers the Ph.D. degree, and the student may obtain the M.A. degree en route to the Ph.D. The Department does not admit candidates for the M.A. degree only. (See Requirements for the M.A. and Ph.D. Degrees below.) For the Ph.D. degree, all students are required to obtain thorough grounding in research methodology and psychological theory. Major specialized training is available in such areas of psychology as child development, clinical, cognitive (human perception, performance and engineering psychology, memory, verbal learning, language, and thought) learning and behavior, measurement and psychometrics, personality, physiological and social psychology. Further training is available in community psychology, drug abuse, industrial, psychopathology, and psychopharmacology.

#### Admission to the Graduate Program

In addition to meeting the general graduate requirements (for information on University requirements for admission to graduate status, see In Graduate Status), students must be admitted to the Department by a selection committee within the Department. Graduate enrollment is limited and candidates will be chosen on the following bases: (1) prior scholastic performance; (2) ratings and recommendations by professors and other individuals; (3) autobiographical material; (4) scores on the Graduate Record Examination (verbal, quantitative, and advanced test in Psychology)

and on the Miller Analogies Test. Application materials may be obtained by writing to the Department of Psychology, Admissions Committee, University of California, Los Angeles, California 90024. The completed departmental forms, transcripts, and test scores must be received by December 30 for consideration for the following fall quarter. Graduate students are admitted only once a year in the fall. Normally, all applicants will have had an undergraduate major in psychology, but outstanding students who have majored in other areas will be fully considered. Late applications are rarely considered. Preference must be given to those who meet the December 30 deadline.

#### Requirements for the M.A. and Ph.D. Degrees

All students should obtain from the departmental office a statement of the graduate requirements in psychology.

All entering graduate students during their first year must take certain core courses and otherwise prepare themselves for comprehensive examinations in a number of specified areas. Evaluation of the students' total performance during the first year or first four quarters will determine whether they will be permitted to continue their studies toward the Ph.D. degree. A student entering graduate work with an M.A. degree or advanced graduate standing from another university will not automatically be exempted from any part of the graduate program. The student may petition to substitute prior course work for departmental requirements; an examination may be required.

**M.A. Degree.** The Department does not admit candidates for the M.A. degree only, and the M.A. degree is not required of candidates for the Ph.D. degree; however, graduate students preparing for the Ph.D. normally qualify and apply for the M.A. degree after satisfactory completion of seven required courses in the core program, and two electives. The Department follows the Comprehensive Examination plan. (See Thesis or Comprehensive Examination.) A thesis is not required for the M.A. degree.

**Ph.D. Degree.** Eligibility for an oral qualifying examination and advancement to candidacy requires prior qualification in the departmental core courses; qualification in comprehensive examinations in areas of the candidate's specialization; and, for students in Measurement/Psychometrics, the passing of a reading comprehensive examination in one approved foreign language or a substitute program of courses in research methods. The oral qualifying examination is administered by a committee of not less than five persons, three from the Department and two from other departments. Each student must complete a satisfactory doctoral dissertation approved by an adviser and other members of the doctoral committee, after which the student must pass a final oral examination on the dissertation and its implications.

#### Fellowships, Scholarships, Assistantships, and Stipends

The Department of Psychology has a variety of stipends available. These include teaching and research assistantships, departmental traineeships, and several University fellowships. Financial aids and work-study awards are also available through the Financial Aids Office.

#### Lower Division Courses

**10. Introductory Psychology.** A general introduction including the topics of learning, perception, thinking, intelligence and personality. Mr. Holland, Mr. Houston, Mr. Jones

**15. Introductory Psychobiology.** A survey of genetic, evolutionary, physiological, pharmacological and experiential factors affecting behavior. Using the comparative approach where appropriate, the relevance of biological mechanisms to an understanding of man and his interaction with his environment will be emphasized. Not intended for Psychology majors. The Physiological Staff

**41. Psychological Statistics.** Prerequisites: Mathematics 2A-2B, or 3A, or 11A. Basic statistical procedures and their application to research and practice in various areas of psychology. Mr. Allen, Mr. Comrey, Mr. Mount

**95. Lower Division Seminars.** Prerequisite: course 10. Open only to Freshmen and Sophomores. Intensive analysis in seminar situations of selected topics of current psychological interest. See the Schedule of Classes for current topics and instructors. May be repeated more than once for credit. The Staff

#### Upper division Courses

The following courses have only Psychology 10 as the prerequisite plus the prerequisites listed with each course: 127, 130, 132A, 132B, 134, 135, 137A, 137B, 137C, 138, 139, 148, 149, 170A, 184A-184B. For special topics courses such as 195, prerequisites will depend upon the nature of the course. The prerequisites to other upper division courses are all courses listed under the *Psychology Major*.

**102. History and Systems of Psychology.** Prerequisite: senior standing or consent of the instructor. An historical and systematic analysis of psychological thought and points of view. Mr. Jones

**110. Fundamentals of Learning.** Prerequisite: course 41. Experimental findings on animal and human conditioning; retention and transfer of training; the relation of learning and motivation. The course is intended to provide an empirical basis for theory and research in this area. Mr. Bjork, Mr. Holman, Mr. Houston

**111. Learning Laboratory.** Prerequisite: course 41. Prerequisite or concurrent; course 110. Laboratory experience with techniques in the study of learning especially with animals. Mr. Allen, Mr. Holman

**112A. Human Learning.** Prerequisite: course 110. Acquisition, retention, and transfer of verbal and nonverbal human learning. Mr. Bjork

**112B. Theories of Learning.** Prerequisite: course 110. Critical discussion of the major theories in the light of experimental evidence. Mr. Padilla

**\*112C. Thinking.** Prerequisite: course 110. An analysis of experimental studies of problem solving, reasoning, insight, concept formation, and related topics.

**\*112D. Motivation.** Prerequisite: course 110. Theories and experimentally determined facts concerning drives, needs, preferences, and desires.

**\*112E. Current Topics in Learning.** Prerequisite: course 110. A study of related issues in the psychology of learning. Topics will vary with the interests of the instructor and the class. May be repeated for credit with permission of the instructor. The Learning Staff

**115. Physiological Psychology.** Prerequisite: Biology 2 and Psychology 41. For nonpsychology majors, Biology 1A, 1B and consent of the instructor. Integrative activities, receptor and effector processes in relation to neuromuscular structure and function. Facts, problems and methods. The Physiological Staff

**116. Physiological Psychology Laboratory.** Prerequisite: course 41. Prerequisite or concurrent: course 115. Laboratory experience with various topics in physiological psychology. Mr. Dearmore

**117. Seminar in Psychobiology.** Prerequisite: course 115. Advanced topics in brain and behavior. May be repeated for credit with permission of instructor. Only one section of 117 may be applied as an elective on the Psychobiology major. Mr. Beatty, Mr. Krasne, Mr. Liebeskind

**118A. Comparative Psychobiology.** Prerequisite: course 115. A survey of the determinants of species-specific behavior including genetic influences and learning. Mr. Arnold, Mr. Garcia, Mr. Krasne

**118B. Behavioral Pharmacology.** Prerequisite: course 115. Experimental and theoretical treatment of drug-behavior relationships. Particular emphasis on behavior and pharmacological mechanisms of drug action and drug interaction with neuronal function; drugs as tools to investigate various behavior processes such as mood, aggression, learning and motivation, experimental studies of addiction. Mr. Ellison

**\*118C. Psychophysiology of Motivation.** Prerequisite: course 115. The basic psychophysiology, including brain and endocrine mechanism, involved in the control of motivation. Discussion of homeostatic drives such as hunger and thirst and nonhomeostatic drives such as reproductive behavior will be emphasized. Mr. Novin

**\*118D. Feeling and Emotion.** Prerequisite: course 15 or equivalent. Studies of emotional behavior with particular emphasis on the critical evaluation of theories of emotion. Mr. Novin

**120. Perception.** Prerequisite: course 41. Methods and approaches to the study of perception. Experimental results, theoretical interpretations, and demonstrations. Mr. MacKay, Ms. Rader, Mr. Thomas

**121. Perception Laboratory.** Prerequisite: course 41. Prerequisite or concurrent: course 120. Laboratory experience with various topics in perception. Ms. Bjork, Mr. Bjork, Mr. Jones

**\*122. Language and Communication.** Prerequisite: course 41 or consent of the instructor. A survey of language behavior, communication and speech perception, including acquisition, sequential structure, and semantic aspects. Recent developments in linguistics, theory of information transfer, analysis and synthesis of speech. Social communication. Aphasia and speech pathology. Animal communication. Mr. Carterette

**123. Psycholinguistics.** A survey of current theory and research in psycholinguistics: the description of language in generative grammars; the acquisition of language by children; experiments on speech recognition, production and comprehension; errors in speech perception and production; speech physiology and pathology. Mr. MacKay

**\*124. Current Topics in Perception.** Prerequisite: course 120. Advanced consideration of special topics in perception. May be repeated for credit with consent of the instructor. Mr. Parducci

**125. Personality.** Prerequisite: course 41. A survey of the major topics in the field of personality, including personality theory, personality assessment, and the physiological, behavioral and cultural role of perception, learning and motivation in personality. Mr. Abramson

**\*126. Personality Laboratory.** Prerequisite: course 41. Prerequisite or concurrently with special permission: course 125. Laboratory experience with various topics in personality.

**127. Abnormal Psychology.** Study of the dynamics and prevention of abnormal behavior, including neuroses, psychoses, character disorders, psychosomatic reactions and other abnormal personality patterns. Mr. Christensen, Mr. Goldstein, Ms. Hammen

**\*129A. Personality Measurement.** Prerequisite: course 125. The rationale, methods and content of studies dealing with the problems of describing persons in terms of a limited set of dimensions. Detailed consideration of research literature dealing with a few representative personality dimensions. Mr. Mehrabian

**\*129B. Personality Dynamics.** Prerequisite: course 125. Detailed conceptual examination of one or two areas of personality in which the main and interactive effects of personality and situational variables have been investigated. Personality as related to the study of psychological processes, particularly motivation. Includes an examination of current research literature. Mr. Weiner

**129C. Personality and Cognition.** Prerequisite: course 125. Theoretical and experimental analyses of cognitive processes such as imagery, attention, language and memory and their implication for theories of personality. Mr. Weiner

**\*129D. Special Topics in Personality.** Prerequisite: course 125. Study of selected topics in the psychology of personality. Topics will vary with the interests of instructor and class. May be repeated for credit by consent of instructor. Personality Staff

**130. Developmental Psychology.** An elaboration of the developmental aspects of physical, mental, social, and emotional growth from birth to adolescence. Ms. Greenfield, Mr. Kinney, Mr. Leon

**131A-131B. Fieldwork in Child Psychopathology.** Prerequisites: course 133B or equivalent; course 170A or equivalent; experience with problem children, or consent of instructor. This course is designed to give undergraduate psychology students an opportunity to apply their knowledge in working with problem children including autistic, retarded, and school or behavior problem children. Experiences given in a variety of community agencies. There will be two four-hour sessions per week. The Staff

**132A. Learning Disabilities. (1 to 1 1/4 courses)** Prerequisite: upper division standing. Exploration of different orientations to persons with learning problems, emphasizing assessment and intervention approaches and the psychological impact of such approaches. Topics include the interaction of learner and environment, the socio-political nature of the classroom, the psychological impact of schooling, grades, and evaluations, process vs. goal focus in learning. The course may be taken for 4 or 5 units. The 5th unit is devoted to practicum experiences involving the Fernald School. All students planning to enroll subsequently in Psychology 132B must take the 5th unit option. Where possible, it is recommended that the course be taken on a passed/not passed basis. Mr. Adelman, Ms. Taylor

**132B. Learning Disabilities Laboratory.** Prerequisites: 5 units of course 132A and consent of instructor. Participation in special activities at the Fernald School is made available to University students to further explore by means of a laboratory experience the topics and issues discussed in 132A. The emphasis is on experiencing and evaluating the psychological and educational impact of research, training and service programs on learners, teachers, etc. Since a limited number of students can be accommodated, clarification of available alternatives and agreements regarding participations will be worked out during the fifth unit experience in Psychology 132A. A commitment of eight and a half hours per week is expected (1 1/2 hour meeting plus 7 hours of activity). Where possible it is recommended that the course be taken on a passed/not passed basis. Fernald Staff

**132C. Learning Disabilities Advanced Laboratory.** Prerequisites: courses 132A and 132B plus consent of instructor. A personalized laboratory participation experience designed to allow the advanced student to explore relevant topics in depth. Fernald Staff

**\*133A. Adolescence.** Prerequisite: course 130 and upper division standing. The physical, psychological and social development of the adolescent.

**\*133B. Exceptional Children.** Prerequisite: course 130. Study of the issues and research problems in the areas of mental retardation, giftedness, learning disorders, emotional disorders and childhood psychosis. The Staff

**133C. Psychological Development in the Adult Years.** Prerequisite: course 130 or consent of the instructor. Theory and research on changes in motivation, aptitudes and abilities as related to genetics, age, sex and socio-cultural variables. Mr. Jones

**\*133D. Psychological Development of the Minority Child.** Prerequisites: courses 127, 130, upper division Psychology standing and consent of the instructor. An examination of the theoretical issues and research problems relating to the development of minority children. Topics will include intelligence, identity, survival skills, family structure and community development. The Staff

**133E. Current Issues in Developmental Psychology.** Prerequisite: course 130 and upper division Psychology standing. A critical examination of current issues in developmental psychology. The specific issues of concern will vary depending on the interests of the class and instructor. May be repeated with permission of the instructor. Ms. Henker, Mr. Kinney

**\*134. Psychology and Education.** Prerequisites: course 130. Application of principles of cognitive development, learning and perception to educational problems; topics will include general instructional issues, psychology of reading and mathematics,



exceptional children, early childhood education, and education of the disadvantaged. Mr. Jeffrey

**135. Social Psychology.** Prerequisite: course 41. The interrelationships between the individual and his social environment. Social influences upon motivation, perception and behavior. The development and change of attitudes and opinions. Psychological analysis of small groups, social stratification and mass phenomena. Mr. Collins, Ms. Peplau, Mr. Raven

**136. Social Psychology Laboratory.** Prerequisite: course 41. Prerequisite or concurrent: course 135. Laboratory experience with such topics as small group behavior, attitude measurement, and interpersonal influence. Ms. Gutek, Mr. Kelley, Mr. Shure

**137A. Group Behavior.** Prerequisite: course 135. Psychology of interdependence, group membership, leadership, and social influence. Mr. Kelley

**137B. Attitude Formation and Change.** Prerequisite: course 135. Effects of propaganda, personal influence, socialization and social structure on private attitudes and public opinion. Mr. Gerard

**137C. Survey Methods in Psychology.** Prerequisite: course 135. The nature of attitudes and opinions, and their measurement by means of attitude scales and public opinion surveys. Class projects and field work. Mr. Centers

**137D. Special Topics in Social Psychology.** Prerequisite: course 135. Study of selected topics in social psychology. May be repeated for credit with permission of the instructor. Ms. Peplau, Mr. Raven, Mr. Shure

**M137E. Work Behavior of Women and Men.** (Same as Women's Studies M137E.) Prerequisites: Psychology 10 or Women's Studies 100 and junior or senior standing. Examination of work behavior of men, and especially women. Covers such topics as antecedents of career choice, job finding, leadership, performance evaluation, discrimination and evaluation bias, job satisfaction and interdependence of work and family roles. Ms. Gutek

**M138. Political Psychology.** (Same as Political Science M140.) Prerequisite: course 10. Examination of political behavior, political socialization, personality and politics, racial conflict, and the psychological analysis of public opinion on these issues. Mr. Sears

**\*139. Psychology of Social Issues.** Prerequisite: course 10. An analysis of the contribution of current psychological theory and research to the understanding of selected historical, social and political problems. Mr. Raven

**142. Advanced Statistical Methods in Psychology.** Prerequisite: course 41. Chi square, special correlation methods, multiple regression, non-parametric methods, analysis of variance, reliability and validity. Mr. Nihira

**143. Foundations of Psychological Investigation.** Prerequisite: course 41. Outline and examination of concepts associated with psychological investigation and the interpretation of results. Readings, discussions and reports, individual and class projects. Mr. Mount

**144. Psychological Tests and Evaluation.** Prerequisite: course 41. Further study of the principles of measurement, stressing basic concepts. Application to problems of test construction, administration and interpretation. Mr. Broen

**148. Personnel and Industrial Psychology.** Introduction to the applications of psychology in industry and business. Mr. Barthol

**\*149. Problems in Human Relations.** Understanding human relations problems and developing skills in interpersonal relations. Topics include the effective use of human resources; group management and leadership skills; interviewing, counseling, and conference techniques. Mr. Barthol

**\*150. Mathematical Models in Psychology.** Prerequisites: Mathematics 3C or 31C, Engineering 10, or consent of the instructor. Review of theoretical models and the experimental evidence for these models in various areas of Psychology. Topics will include: mathematical computer models of learning, perception, cognition and personality. Recommended for Quantitative Psychology Majors. Mr. Holman, Mr. Wickens

**\*151. Computer Applications in Psychology.** Prerequisite: Engineering 10 and consent of the instructor. Topics will include hardware and software computer problems in the design, control, and analysis of experiments; programming problems arising in the evaluation of models of psychological processes of the various content areas such as learning, perception, social, personality, and clinical. Recommended for Quantitative Psychology Majors. Mr. Carterette

**M155. A Laboratory for Naturalistic Observations: Developing Skills and Techniques.** (Same as Anthropology M176 and Psychiatry M112.) Prerequisite: consent of instructor. The skill of observing and recording behavior in natural settings will be taught, emphasizing field training and practice in observing behavior. Group and individual projects will be included. Some of the uses of observations and their implications for research in the social sciences will also be discussed. Mr. Gallimore, Mr. Turner, Mr. Weisner

**162. The Psychological Approaches of Henry Murray; The Study of Biography.** Prerequisite: consent of the instructor. The study of lives and the personality theory of Henry Murray, touching upon autobiographical writings and biographical materials; and personality as a dynamic system of growth and change. Creative,

proactive, normal and supernormal aspects of personality; the roles of values in the study of personality, society and culture. Mr. Shneidman

**M163. Death and Suicide: Psychological and Sociological Aspects.** (Same as Sociology M158.) The definition and taxonomy of death; the new permissiveness and taboos relating to death; the romanticization of death; the role of the individual in his own demise; the modes of death; development of ideas of death through the life span; ways in which ideas of death influence the conduct of lives; the impact of dying on the social structure surrounding the individual; preventive, interventive and postventive practices in relation to death and suicide; partial death; megadeath; lethality; the psychological autopsy; the death of institutions and cultures. Junior standing required. This course is offered on both a passed/not passed and letter grade basis. However, the instructor prefers that students selected the passed/not passed option. Mr. Shneidman

**165. The Psychology of Sex Differences.** This course considers psychological literature relevant to understanding contemporary sex differences. Some topics included are sex-role development and role conflict, physiological and personality differences between men and women, sex differences in intellectual abilities and achievement, and the impact of gender on social interaction. Ms. Peplau

**\*168. Environmental Psychology.** Prerequisites: course 41 and 125. A research-oriented course which surveys theoretical and methodological issues which comprise the area of environmental psychology. Discussion of basic dimensions of emotional response to physical and social environments, measurement of information of rate of situations, and personality variables that are relevant to environmental theory. Residential, therapeutic, work and recreational environments will be considered within a unified framework. Mr. Mehrabian

**170A. Behavior Modification.** Prerequisite: upper division standing. Applied behavior theory; a study of the application of principles derived from learning theory, especially modeling and reinforcement, to behavior problems of retarded and autistic children, adult psychotic disorders, reading disorders, etc. Lectures, discussions and demonstrations. Mr. Lovaas

**170B. Fieldwork in Behavior Modification.** Prerequisites: course 170A. Psychology Junior or Senior Major standing and permission of instructor. Advanced discussion and fieldwork in Applied Behavior Theory, especially to problems of retarded and autistic children, adult psychotic disorders, etc. Two hours discussion and eight hours fieldwork per week. May be repeated once for credit. Mr. Lovaas

**\*174. Interpersonal Process Analysis.** Prerequisites: course 41, 127, and Junior and Senior Psychology Major standing. An introduction to the conceptual tools for analyzing interpersonal structures and functions in goal-oriented human interaction such as psychotherapy, persuasion, courtship, etc. Class sessions will integrate small group exercises with lecture and discussion. Additional laboratory work to be arranged. Mr. Goodman

**\*175. Community Psychology.** Prerequisites: Junior or Senior Psychology Major standing and consent of the instructor. The application of psychological principles to the understanding and solution of community problems. Topics will include community development, community mental health problems, drugs, racism, and rehabilitation of prisoners. The Staff

**176. Experimental Community Psychology.** Prerequisites: course 127 and consent of the instructor. Examination and experimental application of concepts drawn from interpersonal and community psychology for understanding the behavior of individuals in structured social systems (communities, schools, mental hospitals, prisons, etc.). Mr. Myers

**177. Counseling Relationships.** Prerequisite: Junior or Senior Psychology major standing or consent of the instructor with the following prerequisites: courses 10, 41, 127, and junior or senior standing. The course examines conceptual and empirical foundations of psychological counseling and compares alternative models of counseling processes. Emphasis is on counseling approaches in community mental health areas such as drug abuse, suicide prevention, and crisis intervention. Ms. Henker and the Staff

**178. Human Motivation.** Prerequisite: upper division standing required. Examination of current theories of human motivation, the experimental findings supporting the theories, and their applied value. Motivation in the classroom will be emphasized, particularly the effects of success and failure on performance. Other topics include stress, conflict, frustration, and perceptions of control. Mr. Weiner

**\*184A. Communication Disorders.** Prerequisite: junior or senior standing. A clinical approach to speech problems with emphasis on stuttering and neurological disorders and their treatment. Mr. Sheehan

**\*184B. Laboratory in Communication Disorders.** Prerequisite: consent of the instructor. Discussion, observation and supervised small group experience with stuttering and related problems in Psychology Speech Clinic. Mr. Sheehan

**190A-190B-190C. Honors Course.** Prerequisite: acceptance by departmental Honors Committee. Opportunity for the development and analysis of creative ideas through conceptual or experimental research and their implementation by experimental research. Information and applications may be obtained from the Psychology

Undergraduate Advising Office. (For further information, see Honors Program in Psychology.) Mr. Mount

**195. Current Issues in Psychology.** Prerequisite: Junior or Senior Psychology Major standing. Some sections may require permission of instructor. A study of selected current topics of psychological interest. See Schedule of Classes for topics and instructors to be offered each quarter. This course may be repeated for credit, and may apply as elective units on the Psychology major. This course may not apply as an elective on the Psychobiology major. The Staff

**199. Directed Individual Research and Study.** Prerequisite: Junior or Senior Psychology Major standing, consent of the instructor and the Vice Chairman for Undergraduate Affairs. To be arranged with individual faculty members. Consent is based on a written proposal outlining the proposed course of study. Students should consult the Psychology Undergraduate Advising Office, Franz Hall 1531A, for further information and approval forms. Note the following regulations concerning 199 courses: A student may take only one 4-unit 199 course in Psychology per quarter. Only 4 units of 199 may be applied toward the Psychology Major elective course requirement. Only one Psychology 199 course may be taken for a letter grade; additional Psychology 199 courses may be taken only on a passed/not passed basis. The Staff

## Graduate Courses

**200A. Animal Learning and Behavior.** This course will focus on basic principles and characteristics of learning and behavior, including Pavlovian conditioning, instrumental learning and species specific behavior. The Learning and Behavior Staff

**200B. Human Learning and Behavior.** Topics to be covered include human learning and conditioning and the application of learning principles in the etiology and treatment of a variety of socially significant problems. Special emphasis will be placed on systematic desensitization of anxiety states, behavior modification programs for schizophrenic children and adults, behavioral pharmacology, control of autonomic behavior, among others. The Learning and Behavior Staff

**204A-204D. Seminar in Critical Problems in Learning.** May be taken independently and in any order. Critical problems will be drawn from such as the following:

\*1204A. Conditioning. Consideration of selected empirical topics relevant to operant and respondent conditioning paradigms.

\*1204B. Analysis of Learning. (Formerly numbered 204H.) Discussion of current experimental and field studies in orientation, habituation, classical conditioning and operant conditioning with emphasis upon evolutionary specialization and anatomical structure of the coping organism. Mr. Garcia

\*1204C. Psychophysiology of Attention and Learning. The study of research and theories concerned with the psychophysiology of attention and learning primarily in humans. Concepts and areas covered include the orienting reflex, dominant focus, classical conditioning, and their implications for the psychophysiology of psychopathology and psychotherapy. Mr. Maltzman

\*1204D. Theories of Learning. Prerequisite: Psychology 200A or equivalent. Critical discussion of the major theories in learning and their current status. Mr. Padilla

**205. Physiological Correlates of Behavior.** Prerequisite: course 115 or equivalent and consent of the instructor. The physiological substrate of behavior and the neural and endocrine mechanisms which underlie psychological phenomena and behavior. New concepts of structural and functional organization in the nervous system and the ways these relate to behavioral and neurological dysfunction. The Physiological Staff

**\*1206. Psychophysiology of Brain Function.** Modern concepts of the functional organization of the brain with particular reference to psychological phenomena and behavior. Recent advances in neurophysiology and electroencephalography bearing on perception, attention, drive, sleep-wakefulness, levels of consciousness etc. Some emphasis on pathology of behavior resulting from brain injury.

**207A-207B-207C. Seminar in Physiological Psychology.** Prerequisite: course 115 or the equivalent. Mr. Butcher, Mr. Ellison

**208. Seminar in Comparative Psychobiology.** Mr. Arnold

**209. Laboratory Methods in Physiological Psychology.** Prerequisite: consent of the instructor. Surgical skills, bioelectric instrumentation and experimental techniques, data analysis and interpretation. Mr. Krasne

**210. Comparative Psychobiology.** Prerequisite: course 115 or equivalent or consent of instructor. A survey of the determinants of species-specific behavior including genetic influences and learning. Mr. Arnold

**M211. Mind and Brain in Evolution. (½ course)** (Formerly numbered M265. Same as Psychiatry M265.) Prerequisite: consent of the instructor. This course reviews the fossil evidence on the organic evolution of the brain and the implications of that evidence for the evolution of mind and intelligence. Quantitative approaches are emphasized. Although some implications for cognitive psychology and individual differences are considered, the evolutionary analysis is "above the species level". Mr. Jerison

**212. Evaluation of Research Literature in Physiological Psychology.** (¼ course) Prerequisite: course 205 or consent of instructor. Papers of current interest will be presented by members of the seminar and their significance and methodology discussed and criticized in depth. Course may be repeated for credit.

The Physiological Staff

**218A-218B<sup>1</sup>-218C. Advanced Industrial Psychology.** Selection and training of employees, factors influencing efficiency of work.

Mr. Barthol

**219. Special Problems in Industrial Psychology.**

Mr. Barthol

**220A-220B. Social Psychology.** An intensive consideration of the concepts, theories, and major problems in social psychology.

The Social Staff

**\*1221. Seminar in Attitude Formation and Change.** Prerequisite: courses 220, 227, or consent of the instructor. Social psychological research and theories on opinions and attitudes. Effects of mass communication, social factors in assimilation of information and influence.

Mr. Sears

**222A-222B. Seminar in Group Behavior.** Prerequisite: courses 220, 227, or consent of the instructor. Special topics in interpersonal relations and group dynamics. Power control, structure and organization, group functioning.

Mr. Kelley, Mr. Raven

**223. Survey Research in Psychology.** A critical review of the theory and practice of large-scale sampling, measurement, and analysis of beliefs, attitudes, and other psychological variables.

Mr. Centers

**224. Experimental Methods in Social Psychology.** Prerequisite: courses 220, 227, or consent of the instructor. A critical review of laboratory techniques and problems of experimental control and measurement encountered in research on social psychological phenomena.

Mr. Collins

**225. Seminar: Critical Problems in Social Psychology.** Prerequisite: courses 220, 227, or consent of the instructor. May be repeated for credit with consent of the instructor.

Ms. Gutek, Mr. Gerard, Ms. Peplau

**M228. Seminar in Political Psychology.** (Same as Political Science M224G.) Prerequisite: course 220 or consent of the instructor. Examination of political behavior, political socialization, personality and politics, racial conflict, and the analysis of public opinion on these issues.

Mr. Sears

**\*1229A-229B. Issues in the Social Development of the Minority Child.** Prerequisite: consent of instructor and graduate status. A critical evaluation and integration of existing research on the social psychological development of the minority child. The two-quarter seminar will focus on the socialization of cognitive and personality style, with the goal of empirically clarifying the issues raised in this area of developmental study.

Mr. Myers

**\*1232. Experimental Research on Human Sexual Behavior.** (Formerly numbered 298.) Prerequisite: graduate standing. This course has been designed to teach students how to carry out research on human sexual behavior. The contents will include theory construction, scale development, physiological and endocrinological implications, radio-immunoassay (measuring hormones in blood sample), ethical issues, methodological and statistical considerations, the measurement of sexual arousal, fantasy, and sexual dysfunction therapy. The format will be discussion oriented, with emphasis placed on operationalizing predictions concerning human sexual functioning.

Mr. Abramson

**\*1233. Seminar in Environmental Psychology.** Prerequisite: courses 250A, 250B and 235. Critical review of work in environmental psychology designed to identify basic dimensions for the analysis of man-environment relationships. The framework of analysis uses human emotional responses to environments as intervening variables linking specific stimulus qualities to a variety of approach-avoidance behaviors. Individual differences and drug induced states as these relate to the emotional response dimensions are employed to explain within-individual differences in response to the same environment over time or between-individual differences to the same situation. Review of literature relating information rate from environments to arousal and preferences for those environments.

Mr. Mehrabian

**\*1234. Personality and Cognition.** A critical analysis of unified cognitive theories of personality combined with a consideration of relevant empirical literature. The work of such theorists as Kelly, Piaget, and Bruner will be considered along with experimental work in the areas of category theory, imagery, and meaning.

Mr. Mehrabian

**235. Personality.** A survey of cognitive, analytic, and learning theory approaches to the study of personality. Emphasis will be on the intensive exploration of selected concepts and related research.

The Personality Staff

**\*1236. Personality Theories.** A survey of the theoretical views of Freud, Jung, Adler, Rank, and various modern writers, including Allport, Lewin, Murray and Murphy.

**\*1237. Survey of Projective Methods in Personality Assessment.** Survey of theories and fields of application of projective methods, and supervised practice in techniques. For nonclinical psychology students.

Mr. Sheehan

**238. Seminar in Mental Measurements.**

Mr. Woodward

**239. Experimental Research in Personality.** A detailed analysis of some of the current research in personality. The relation of personality to the process areas will be stressed. Students will conduct independent research projects.

Mr. Welner

**240. Developmental Psychology.** A consideration of the special problems of the control and measurement of the behavior of children as well as the young of other organisms with emphasis on providing basic research relevant to both clinical and research work with children.

Ms. Greenfield, Mr. Jeffrey, Mr. Kinney

**242A-242E. Seminar in Development Psychology.** Prerequisite: course 240 or equivalent and consent of the instructor. These seminars may be taken in any order or they may be repeated for credit.

242A. Perceptual Development. Ms. Rader

242B. Cognitive Development. Ms. Greenfield, Mr. Jeffrey

\*1242C. Socialization. Mr. Madsen

\*1242D. Behavior Genetics. Mr. Kinney

242E. Cognitive Factors in Learning Disorders. Mr. Adelman

**243A-243B. Seminar in Practical and Societal Issues in Developmental Psychology.** Prerequisites: course 240 or equivalent and consent of instructor. Concerns socialization processes in human development and implication for social-political, educational, research issues, values and societal change. Credit and grade to be given only upon completion of 243B.

Mr. Nakamura

**244. Critical Problems in Developmental Psychology.** Prerequisites: course 240 or equivalent, and consent of the instructor. The course will be concerned with current problems and will vary from time to time depending upon the interest of the class and instructor. May be repeated for credit with consent of the instructor.

Ms. Henker, Mr. Kinney, Mr. Padilla

**\*1245. Personality Development and Motivation in Education.** (Same as Education M217C.) Personality development and environmental conditions which form motivational patterns; self-concept, moral behavior, aggression; creativity, sex differences, research and personality theory bearing on motivational problems in school settings and curricula development.

Ms. Feshbach

**M246. Psychological Aspects of Mental Retardation.** (Same as Psychiatry M246.) Prerequisites: consent of instructor. Discussion of the psychological aspects of mental retardation to include: classification, description, etiology, theory, prevention, treatment, assessment, modern and future developments, and input from other disciplines (ethics, law, religion, welfare systems).

The Staff

**247A-247B. Theory and Methods of Computing in the Behavioral Sciences.**

\*1247A. Acquisition and analysis of data, on-line analysis of behavior and control of experiments in the diverse content areas of psychology, e.g., perception, social, clinical, personality, and physiological.

Mr. Carterette

\*1247B. Prerequisite: course 247A or consent of instructor. Topics in human problem solving, information processing, automata, language cognition, and problems arising in computer simulation of behavior. Each student will undertake a substantial project of his own.

Mr. Carterette

**250A. Advanced Psychological Statistics.** Review of fundamental concepts. Basic statistical techniques as applied to the design and interpretation of experimental and observational research.

Mr. Wickens

**250B. Advanced Psychological Statistics.** Advanced experimental design and planning of investigations.

Mr. Wickens

**251A-251B-251C. Research Methods.** Students will design and conduct original research projects under the supervision of the instructor in charge. It is anticipated that many students will complete their project in two quarters. Normally three quarters will be allowed.

The Staff

**253. Factor Analysis.** Theory and practice of factor analysis in psychological research. Methods of factor extraction and rotation. Applications of computers to computations in factor analysis.

Mr. Comrey

\*1254. Seminar in Psychological Scaling. Theory of measurement, law of comparative judgment, methods of unidimensional scaling, multidimensional scaling and related topics of current interest.

Mr. Holman

**255. Quantitative Aspects of Assessment.** Fundamental assumptions and equations of test theory. Current problems in assessment.

Mr. Woodward

**256. Seminar in Critical Problems in Psychological Measurement.** Critical examination of issues in the major approaches to psychological measurement; relation in psychological methods and data to a general theory of measurement.

Mr. Mount

**257. Advanced Psychometric Methods.** Prerequisite: consent of instructor. Analysis of selected multivariate psychometric models, such as advanced factor analysis (e.g., rank-free or scale-free methods, confirmatory methods, procrustean transformations, factor score theory), image analysis, multivariate reliability theory, monotonicity analysis. Emphasis is on mathematical properties of the models rather than statistical inference.

Mr. Bentler

**258. Special Problems in Psychological Statistics.** Prerequisites: course 250A and 250B or consent of instructor. Special problems in psychological statistics and data analysis will be examined.

Mr. Woodward

**259. Quantitative Methods in Cognitive Psychology.** Prerequisites: course 250A and 250B or consent of instructor. This course will consider a number of nonstatistical mathematical methods and techniques commonly used in cognitive psychology. Topics to be covered include Markov chains, other stochastic processes, queueing theory, information theory, frequency analysis, etc.

Mr. Wickens

**260A-260B. Proseminar in Cognitive Psychology.** A survey of current theories and research in cognitive psychology. Topics include sensory processes, perception, human learning and memory, psycholinguistics, judgment decision processes, thinking, and problem solving.

The Cognitive Staff

\*1261. Perception. (Formerly numbered 211.) Prerequisites: course 260A or 260B, or consent of instructor. Concepts, theories, and research in the study of perception. Considers the questions: Why do things look, sound, smell, taste, or feel as they do? What is the nature of perceptual systems? How do these systems process information?

Mr. Jones, Ms. Rader

\*1262. Human Learning and Memory. (Formerly numbered 200B.) Prerequisites: course 260A or 260B, or consent of instructor. Contemporary theory and research in human verbal learning and memory; verbal and non-verbal learning and memory processes, the structure and organization of short- and long-term memory.

Mr. Bjork

**263. Psycholinguistics.** (Formerly numbered 260A.) Prerequisites: course 260A or 260B, or consent of instructor. Contemporary theory and research in psycholinguistics: coding and decoding, psycholinguistic parameters of language learning, speech recognition and perception.

Ms. French

\*1264. Judgment and Decision Processes. Prerequisites: course 260A or 260B, or consent of instructor. Contemporary theory and research in judgment and decision processes: psychophysical scaling, contextual effects on rating scales, models for the analysis of value decisions.

Mr. Parducci

\*1265. Thinking and Artificial Intelligence. Prerequisites: course 260A or 260B, or consent of instructor. Contemporary theory and research in thinking and artificial intelligence: cognitive models of knowledge representation, comprehension of linguistic information, memory. Theory and data from psychology, artificial intelligence, and linguistics will be considered.

**268A-268E. Seminar in Human Information Processing.** Prerequisites: course 260A and 260B or consent of instructor. Topics will vary with the interests of the instructor. May be taken in any order and may be repeated for credit.

\*1268A. Perception. Mr. Carterette, Mr. Thomas

268B. Human Learning and Memory. Mr. Wickens

268C. Judgment and Decision Processes. Mr. Parducci

268D. Language and Thought. Mr. MacKay

\*1268E. Human Performance. Mr. Beatty

**269. Seminar in Cognitive Psychology.** Prerequisites: course 260A and 260B or consent of instructor. A discussion of problems in Cognitive Psychology that encompass more than a single subfield of the area. May be repeated for credit.

The Cognitive Staff

**270A-270B-270C. Foundations of Clinical Psychology.** Prerequisites: Concurrent enrollment in Psychology 271A-271B-271C. Open only to graduate students in clinical Psychology and approved minors in clinical psychopathology.

270A. Analysis of phenomenological, theoretical and research issues regarding the etiology and mediating mechanisms in neurotic, affective, schizophrenic spectrum, and other personality disturbances.

270B. Principles and methods of psychological assessment and evaluation.

270C. Principles and methods of psychological intervention in individuals, families and community settings.

The Clinical Staff

**271A-271B-271C. Clinical Psychological Methods.** Prerequisites: Concurrent enrollment in Psychology 270A-270B-270C. Open only to graduate students in clinical psychology and approved minors in clinical psychopathology. Procedures in clinical psychology as applied in clinical and community settings. This course provides supervised exposure to the psychological attributes of psychopathology and the procedures for psychological assessment, intervention, and research with clinical populations. Experience will be closely coordinated with the course content in Psychology 270A-270B-270C.

The Clinical Staff

**272A-272E. Advanced Clinical Psychological Methods.** Concurrent or previous enrollment in course 401 or 451, except with consent of instructor. May be taken independently and in any order.

\*1272A. Current Psychotherapies. Mr. Sheehan

\*1272B. Psychotherapy with Adults. Mr. Ingham

\*1272C. Clinical Interventions for Psychological Problems of Children.

272D. Family Therapy and Family Dynamics. Mrs. McPherson

272E. Special Problems.

Clinical Staff

**\*1273. Interpersonal Communication Seminar.** Prerequisite: course 282 or consent of the instructor. Each student will be supported in developing a design for studying help-oriented interchange in community and clinical settings. Initial focus will be measuring interpersonal deficit, response styles and training effects. Mr. Goodman

**274A<sup>1</sup>-274B. Group Therapy Dynamics.** Mr. Sheehan

**275. Family Process.** This course reviews various theoretical perspectives applicable to the analysis of family structure and dynamics. Critical issues in the application of family constructs to clinical problems will receive particular attention. Mr. Goldstein

**M276A-<sup>1</sup>276B. Seminar: Children with Learning Disorders.** (Same as Education M280D-280E.) Prerequisite: 225 or 226A or 227A and admission to a doctoral program. Mr. Adelman

**277. Advanced Clinical Assessment.** The course will cover projective techniques, clinical interpretation, case studies, the psychological test battery, psychopathology, and application of assessment to problems in psychotherapy. Mr. Sheehan

**\*1278. Seminar in Motivation, Conflict and Neurosis.** Mr. Feshbach

**279. Seminar in Research in Psychopathology.** Mr. Rodnick

**\*1280. Seminar in Experimental Psychodynamics.** Mr. Broen

**\*1281. Seminar in Behavior Therapy.** Mr. Lovass

**\*1282. Interpersonal Forms Analysis of Human Interaction Structures.** Conceptual and experimental study of six response modalities common to psychotherapy and everyday interaction: questions, silence, advisement, interpretation, self-disclosure, and reflection. Lab work will be performed in conjunction with lecture and seminar sessions. Mr. Goodman

**\*1284. Seminar in Clinical Psychology and Communication.** (Formerly numbered 277.) Mr. Sheehan

**\*M285. Comparative Psychopathology.** (Same as Psychiatry M255.) Prerequisites: Some background in psychopathology, comparative psychology, zoology or comparative genetics and consent of the instructor. This course will explore those animal models of psychopathology most relevant to human clinical problems (i.e., schizophrenia, depression, phobias, anxiety states, drug abuse, aggression, sexual dysfunction, etc.). The interaction or convergence of social, biological, and environmental processes in determining these states will be emphasized. The relevance of the model to the understanding of homologous human conditions will be analyzed. Mr. Ervin, Mr. Garcia, Ms. Jamison

**286. Issues and Concepts of Clinical Psychology.** Survey of major issues and alternatives in current practice. Emphasis on assessment and intervention, with consideration of historical, theoretical and research bases for current trends. Open to graduate students not majoring in clinical psychology. Mr. Broen

**\*1288. Seminar in Research in Personality.** (1/2 course) Prerequisite: graduate student in Personality. This course is meant to cover current research, theory and professional issues within the area of personality. A brown bag format will be utilized to foster intellectual exchange and discussion. All personality graduate students will be required to attend, they will make at least one presentation per quarter, and will participate in discussions with faculty and guest lectures. Personality Staff

**290. History of Psychology.** Philosophical and historical context of contemporary psychology. Major trends from the 19th century to contemporary issues will be considered. Mr. Maltzman

**291. Principles of Behavioral Pharmacology.** Prerequisite: consent of the instructor. Intensive analysis of drug, brain, and behavior relationships. Discussion of the nature and source of drugs, general aspects of pharmacology, neurotransmitters and basic neuropharmacology, principles of behavioral pharmacology, categories of psychopharmacological agents, and pharmacological approaches to the study of drug addiction, schizophrenia, and other behavioral processes, both normal and pathological. Mr. Butcher

**\*1292A-<sup>1</sup>292B. The Psychology of Drug Abuse.** Prerequisite: consent of the instructor. The course will concentrate on the problem of drug abuse as it can be approached by behavioral scientists. In addition to narcotic addiction, other substance abuse problems will be discussed such as alcoholism, barbiturate addiction, amphetamine dependence and the use of LSD, marihuana and other "recreational drugs." Mr. McGlothlin

**293. Behavioral and Psychophysiological Problems of Alcoholism.** Prerequisite: consent of instructor. Behavioral and psychophysiological characteristics of alcoholism will be reviewed along with theories concerning its etiology and treatment. Experimental approaches will be emphasized. Mr. Maltzman

### Professional Courses

**300. Practicum in the Teaching of Psychology.** Prerequisites: upper division Psychology major and consent of instructor. Training and supervised practicum for advanced undergraduates in the teaching of Psychology. Students will serve as junior teaching assistants, assist in the preparation of materials and the development of innovative programs. This course may be repeated once for credit, and is offered on a passed/not passed basis.

**350. Fieldwork in Psychology.** Prerequisite: sophomore pre-psychology or psychology major standing and permission of instructor. Fieldwork in applications of psychology. Students must spend a minimum of six hours per week working in approved community settings. The Psychology Undergraduate Advising Office should be consulted for application forms and further information. S/U grading only. May be repeated once for credit. Mr. Friedman

**401. Field Work in Clinical Psychology. (1 or 2 courses)** Prerequisite: courses 271A-271B-271C. Students on practicum assignments are required to register for this course each quarter. Exception with consent of Clinical Program Committee. The Clinical Staff

**\*1402. Field Work in Speech Pathology. (1 or 2 courses)** Prerequisite: consent of the instructor. Practical work in hospitals and clinics in diagnostic testing and psychotherapy with speech disorders. Mr. Sheehan

**\*1406A-<sup>1</sup>406B-<sup>1</sup>406C. Practicum in Drug Abuse Treatment.** Prerequisite: consent of the instructor. The practicum is designed to give students exposure to a variety of patients, problems, and treatment approaches in the drug abuse field. Students will work in from two to four programs. In addition to treatment experience, the students will gain familiarity with problems of program administration and program evaluation.

**451. Internship in Clinical Psychology. (1 or 2 courses)** Prerequisite: course 401. Open only to students who have passed departmental qualifying examination. May be repeated for credit. The Clinical Staff

**454. Internship in Industrial Psychology. (1/2 to 1 course)** Mr. Barthol

**495. Presentation of Psychological Materials.** Supervised practicum in undergraduate teaching. Students will serve as discussion section leaders in selected undergraduate courses.

**501. Cooperative Program. (1/2 to 2 courses)** Prerequisite: approval of UCLA Graduate Adviser and Graduate Dean. Approval of host campus instructor, Department Chairman and Graduate Dean. The course is used to record the enrollment of UCLA students in courses taken under cooperative arrangements with neighboring institutions. To be graded S/U. The Staff

### Individual Study and Research

**596. Directed Individual Research and Study in Psychology. (1/2 to 3 courses)** One course required during second year of graduate study. One course in 596 or 599 required during each succeeding year of graduate study. (Terminal M.A. candidates are excused from these requirements.) The Staff

**597. Individual Studies. (1/2 to 3 courses)** Intended primarily for preparation for Ph.D. qualifying examinations. May be required by some area committees as prerequisite for taking qualifying examinations. The Staff

**599. Research on Dissertation. (1/2 to 3 courses)** Prerequisite: Satisfactory performance in qualifying examinations. One course required during each year following passing of qualifying examinations. The Staff

### Psychology Clinic

The Psychology Clinic was established in 1949 in Franz Hall by the Department of Psychology as a training and research center in clinical psychology. It has specialized facilities for the investigation, assessment and treatment of a variety of psychological disabilities and adjustment problems of children, adolescents and adults of the greater Los Angeles community.

The Clinic provides a broad range of psychological services to clients including individual, group and family therapy, behavior modification procedures and consultation to agencies in the community. The concern of the clinic with systematic investigation leading to new knowledge and the improvement of clinical psychological procedures is in keeping with a primary function of a University-based clinic. The number and types of clients served are consonant with this goal. Apart from those investigations related directly to professional services to clients there are a number of research programs in the clinic which reflect the current interests of the staff, such as 1) communication patterns in the family constellation relevant to both the development and the amelioration of behavioral disturbance, 2) the development of innovative techniques of therapy and behavior modification which are effective in treating various psychological problems and, 3) exploration of new modes of delivering psychological services to currently unserved segments of the population.

Such service and research functions are basic to the professional education and training of clinical psychologists as an integral part of their graduate study in the Department of Psychology. The Clinic also provides training experiences to students of other mental health professions.

### Fernald School

The Fernald School (formerly the Psychology Clinic School), a facility of the Department of Psychology, was established in 1921 as a research and training center focusing on learning problems.

The uniqueness of the facility lies in its lively experimental atmosphere, in its varied population, in the scope of its training, demonstration and research programs and in its interdisciplinary

approaches in which the talents of teachers, clinical psychologists, and school counselors are integrated and brought to bear upon the student's learning difficulties. The School's current focus is on those children with average or better intelligence who are functioning significantly below grade level in basic school skills and school achievement.

The Fernald School offers observation, classroom participation and intervention, research and other training opportunities to graduates and undergraduates in many fields, notably psychology and education. Fellowships are available for graduate students in psychology and education. Three courses focusing on learning disorders, Psychology 132A, lecture, 132B and 132C, laboratory, are specifically associated with the Fernald School programs. Psychology 132A provides an overview of the field of learning problems. Psychology 132B affords the University student the unique opportunity to observe and to participate under supervision in selected activities of the Fernald School. Psychology 132C allows further and more independent participation in working with learning problems.

The Fernald School population includes approximately 85 students, enrolled in classroom programs, and an average of 100 children, adolescents and adults who are seen in individual and small group tutoring programs. In addition, a substantial number of individuals are seen for an initial assessment and consultation process. This process is designed to help them formulate an appropriate course of action in dealing with socio-emotional and academic concerns. The research activities, based on these populations, are directed toward an analysis of the processes mediating learning difficulties and toward an evaluation of the effectiveness of various psychological and educational programs.

### Spanish Speaking Mental Health Research Center

The Spanish Speaking Mental Health Research Center (SSMHR) was established in 1973 to conduct basic and applied research on the mental health needs of the Spanish-speaking population. Supported by the National Institute of Mental Health, the SSMHR is one of only two centers in the United States to provide an interdisciplinary research environment for Hispanic mental health scholars, students, and professionals at the national level. The Center collects and disseminates scientific information through its Clearinghouse Division which publishes monographs, occasional papers, and bimonthly research bulletins. It also maintains a computer-based bibliographic storage and retrieval system to facilitate access to the literature in this field. The Center sponsors students in a wide variety of mental health disciplines, maintains close ties with community organizations, and promotes the increased representation of Hispanic professionals in mental health and social services.

## PUBLIC HEALTH

(Department Office, 16-035 School of Public Health)

Abdelmonem A. Afifi, Ph.D., *Professor of Biostatistics and Biomathematics*

Roslyn B. Alfin-Slater, Ph.D., *Professor of Nutrition and Biological Chemistry*

Rolando Armijo, M.D., M.P.H., *Professor of Epidemiology in Residence*

Lawrence R. Ash, Ph.D., *Professor of Public Health*

A. Ralph Barr, Sc.D., *Professor of Public Health*

Judith Blake, Ph.D., *Fred H. Bixby Professor of Population Policy and Sociology*

Lester Breslow, M.D., M.P.H., *Professor of Public Health*

Virginia A. Clark, Ph.D., *Professor of Biostatistics and Biomathematics (Chairman of the Department)*

Irvin Cushner, M.D., M.P.H., *Professor of Obstetrics and Gynecology and Public Health*

Roger Detels, M.D., M.S., *Professor of Epidemiology*

Olive Jean Dunn, Ph.D., *Professor of Biostatistics and Biomathematics*

Carl E. Hopkins, Ph.D., M.P.H., *Professor of Public Health*

Derrick B. Jelliffe, M.D., D.T.M.&H., D.C.H., F.R.C.P., *Professor of Economics in Public Health*

Leo G. Reeder, Ph.D., *Professor of Public Health and Sociology*

Milton I. Roemer, M.D., M.P.H., *Professor of Public Health*

John F. Schacher, Ph.D., *Professor of Public Health in Residence*

Elizabeth Stern, M.D., *Professor of Public Health in Residence*

Marian E. Swendsen, Ph.D., *Professor of Nutrition and Biological Chemistry*

Paul R. Torrens, M.D., M.P.H., *Professor of Public Health*

Daniel M. Wilner, Ph.D., *Professor of Public Health*

Telford H. Work, M.D., M.P.H., D.T.M.&H., *Professor of Infectious and Tropical Diseases and Microbiology and Immunology*

Ruth Boak, Ph.D., M.D., *Professor of Microbiology and Immunology, Pediatrics and Public Health Emeritus*

John M. Chapman, M.D., M.P.H., *Professor of Epidemiology Emeritus*

Gladys A. Emerson, Ph.D., *Professor of Nutrition Emeritus*

Edward B. Johns, Ed.D., *Professor of Health Education Emeritus*

John F. Kessel, Ph.D., *Professor of Infectious Diseases Emeritus*

John W. Knutson, D.D.S. Dr.P.H., *Professor of Preventive Dentistry and Public Health Emeritus*

Florence C. McGucken, M.S., *Lecturer in Nutrition Retired*

Frank F. Tallman, M.D., *Professor of Psychiatry and Public Health Emeritus*

Linda B. Bourque, Ph.D., *Associate Professor of Public Health*

Potter C. Chang, Ph.D., *Associate Professor of Biostatistics*

Alfred K. Neumann, M.A., M.D., M.P.H., F.A.B.P.M., *Associate Professor of Public Health*.

Raymond R. Neutra, M.D., C.M., M.P.H., Dr.P.H., *Associate Professor of Public Health*.

Dennis D. Pointer, Ph.D., *Associate Professor of Public Health*.

Stuart O. Schweitzer, Ph.D., *Associate Professor of Public Health*.

William Shonick, Ph.D., *Associate Professor of Public Health*.

Emil Berkanovic, Ph.D., *Assistant Professor of Public Health*.

Shan Cretin, M.P.H., Ph.D., *Assistant Professor of Public Health*.

William G. Cumberland, Ph.D., *Assistant Professor of Biostatistics*.

Climis A. Davos, Ph.D., *Assistant Professor of Public Health*.

Ralph R. Frierichs, D.V.M., M.P.H., *Assistant Professor of Epidemiology in Residence*.

Michael S. Goldstein, Ph.D., *Assistant Professor of Public Health and Sociology*.

Sheldon Greenfield, M.D., *Assistant Professor of Medicine and Public Health*.

Isabelle F. Hunt, M.P.H., Dr.P.H., *Assistant Professor of Nutrition*.

Donald L. Puppione, Ph.D., *Assistant Professor of Public Health*.

Martin B. Ross, Dr.P.H., *Assistant Professor of Public Health*.

Elliott Salenger, M.D., M.P.H., *Assistant Professor of Public Health*.

Susan Scrimshaw, Ph.D., *Assistant Professor of Public Health*.

Lowell E. Sever, Ph.D., *Assistant Professor of Epidemiology*.

Kenneth F. Siler, Ph.D., *Assistant Professor of Public Health in Residence*.

Gary H. Spivey, M.D., M.P.H., *Assistant Professor of Epidemiology*.

Jane Valentine, Ph.D., *Assistant Professor of Public Health*.

Barbara R. Visscher, M.D., Dr.P.H., *Assistant Professor of Epidemiology in Residence*.

Thomas M. Vogt, M.D., *Assistant Professor of Epidemiology*.

William N. Washington, M.P.H., *Assistant Professor of Health Education*.

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Lilla Aftergood, Ph.D., *Associate Research Biochemist*.

Nancy Allen, M.P.H., *Lecturer in Public Health*.

Arnold R. Beisser, M.D., *Lecturer in Public Health and Associate Clinical Professor of Psychiatry*.

Donald W. Belcher, M.D., *Lecturer in Public Health*.

Stewart N. Blumentfeld, Dr.P.H., *Researcher and Lecturer in Public Health*.

Michael L. Bobrow, B.Arch., *Lecturer in Architecture and Urban Design and Public Health*.

Robert H. Brook, M.D., Sc.D., *Associate Professor of Medicine and Public Health*.

Harold V. Brown, M.P.H., Dr.P.H., *Lecturer in Public Health*.

Edith M. Carlisle, Ph.D., *Associate Research Biochemist and Lecturer in Public Health*.

Wen-Ping Chang, M.D., M.P.H., D.M.Sc., *Lecturer in Public Health*.

Arthur W. Chung, M.D., *Adjunct Professor of Public Health*.

William D. Clay, B.A., M.S., *Assistant Researcher in Public Health*.

David Coady, M.D., M.P.H., *Adjunct Assistant Professor of Public Health*.

Carl F. Coffelt, M.D., M.P.H., *Lecturer in Public Health*.

Anne H. Coulson, *Lecturer in Public Health*.

Joseph W. Cullen, Ph.D., *Adjunct Professor of Public Health*.

G.A. Dhopeswarkar, Ph.D., *Research Biochemist of Nuclear Medicine and Radiation Biology and Adjunct Professor of Public Health*.

Wilfrid J. Dixon, Ph.D., *Professor of Biomathematics and Public Health*.

Robert M. Elashoff, Ph.D., *Professor of Biomathematics and Biostatistics*.

James E. Enstrom, Ph.D., *Assistant Researcher in Public Health*.

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Jean S. Felton, M.D., *Lecturer in Public Health*.

Jay W. Friedman, D.D.S., M.P.H., *Lecturer in Public Health*.

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Raymond J. Jessen, Ph.D., *Professor of Management and Public Health*.

Olive G. Johnson, B.A., *Lecturer and Specialist in Health Records Systems*.

Martine Jozan, M.D., Dr.P.H., *Assistant Researcher in Public Health*.

Joel D. Kopple, M.D., *Associate Professor of Medicine and Public Health in Residence*.

Joel W. Kovner, Dr.P.H., *Lecturer in Public Health*.

Eileen Nebel Levine, M.P.H., *Lecturer in Public Health*.

Charles E. Lewis, M.D., Sc.D., *Professor of Medicine and Public Health*.

Lawrence S. Linn, Ph.D., *Lecturer in Public Health*.

Lonis Liverman, M.S.W., *Lecturer in Public Health*.

Irvine M. Lourie, M.D., M.P.H., M.S., *Lecturer in Public Health*.

Thomas Mack, M.D., M.P.H., *Adjunct Associate Professor of Epidemiology*.

Louis E. Mahoney, Jr., M.D., M.P.H., *Adjunct Associate Professor of Public Health*.

Ralph W. McKee, Ph.D., *Professor of Biological Chemistry and Public Health*.

James F. Mead, Ph.D., *Professor of Biological Chemistry and Public Health*.

Jean L. Mickey, Ph.D., *Lecturer in Biostatistics*.

Mohammad G. Mustafa, Ph.D., *Adjunct Assistant Professor of Medicine and Public Health*.

Charlotte Neumann, M.D., M.P.H., *Lecturer in Public Health and Pediatrics and Associate Researcher in Public Health*.

Joseph P. Newhouse, Ph.D., *Lecturer in Public Health*.

David D. Nicholas, M.D., M.P.H., *Researcher and Lecturer in Public Health*.

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Norma Ostergard, M.S., *Assistant Field Program Supervisor in Public Health Nutrition*.

Bertha L. Paegel, M.D., M.P.H., *Lecturer in Public Health*.

Stanton J. Price, L.L.B., *Lecturer in Public Health*.

George W. Prichard, J.D., M.D., M.P.H., *Lecturer in Public Health*.

Jose Quiroga, M.D., *Associate Researcher in Public Health*.

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Ruth J. Roemer, J.D., *Lecturer in Public Health*.

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Max H. Schoen, D.D.S., Dr.P.H., *Professor of Dentistry and Public Health*.

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Bernard M. Siegel, M.D., *Assistant Clinical Professor of Medicine and Adjunct Assistant Professor of Public Health*.

Amar J. Singh, Ph.D., *Lecturer in Public Health*.

Grant G. Slater, Ph.D., *Associate Research Biological Chemist in Public Health and Psychiatry*.

Forest Tennant, M.D., M.P.H., Dr.P.H., *Adjunct Assistant Professor of Epidemiology*.

Leo Tepper, M.D., M.P.H., *Lecturer in Public Health*.

J. Albert Torribio, M.S.S.W., M.S.W., *Lecturer in Health Education*.

Robert E. Tranquada, M.D., *Professor of Medicine and Public Health*.

William B. Ward, M.P.H., *Assistant Researcher in Public Health*.

John E. Ware, Ph.D., *Lecturer in Public Health*.

Lawrence G. Wayne, Ph.D., *Lecturer in Public Health*.

Paul F. Wehrle, M.D., *Lecturer in Epidemiology*.

Girma Wolde-Tsadik, Ph.D., *Adjunct Assistant Professor of Public Health*.

Alfred J. Zertas, M.B.B.S., M.R.C.P., M.P.H., *Associate Researcher in Public Health*.

Courses of instruction in the School of Public Health are currently being revised and renumbered. Therefore, subsequent to the date of publication, changes may be made without notice. Contact the School of Public Health, Office of Student Affairs for the latest offerings.

#### Upper Division Courses

**112. Human Genetics and Reproduction.** (Same as Anthropology M12.) Lecture, four hours. A survey for the general student considering normal and abnormal development as well as basic principles. Topics will include human genetics, human reproduction, problems of pregnancy and its outcome, birth defects, prenatal diagnosis and genetic counseling. Emphasis is on introducing the student to facts which the informed public needs for current discussions of the "New Genetics" and scientific and ethical questions regarding reproduction and development. Mr. Sever

**44. Principles of Healthful Living.** Lecture, four hours. Analysis of health care issues as related to the health care consumer and the health care delivery system. Includes identification of health needs, and the clarification of personal responsibilities for health. Ms. Richards

**100. Introduction to Public Health.** Lecture, four hours. Prerequisites: four units of Life Sciences. Principles of Public Health. Analysis of demographic, professional, organizational, fiscal, social, and research features. Covers health, mental health, environmental health and consumer protection fields. Mr. Wilner

**101. Introduction to Medical Science.** Lecture, four hours. This course will present an introduction to disease processes. It is intended primarily for students in public health and is not open to premedical students. One year sequence in biology, physiology or other biological science is recommended. Mr. Salenger

**102A-102B. Health Record Science.** Lecture, two hours; laboratory, three hours. Prerequisite: Biology 4A or equivalent and consent of instructor. A is required for B. Principles and theories of systems and techniques used for organization, analysis, and maintenance of records and reports are studied and evaluated according to their use in varied situations. Ms. Johnson

**104. Human Disease and Public Health. (1½ course)** Lecture, six hours; discussion, two hours. Prerequisite: junior, senior or graduate standing and consent of the instructor. An introduction to the study of human diseases, disorders and defects including genetic, mental, social, environmental, nutritional, degenerative and infectious diseases and the response modes and mechanisms of man as these relate to Public Health. Mr. Schacher

**107. Hospitals and Their Management.** (Formerly numbered 480.) Lecture, four hours. Prerequisite: one course in the Social Sciences. Introduction to the structure and organization of the hospital, hospital industry and its environment; managerial processes in hospitals and major issues confronting the industry. Mr. Ross

**108. Principles of Food Analysis. (½ course)** Lecture, two hours; laboratory, three hours. Prerequisite: Chemistry 21 and 22. Theory and practice of quantitative methodology in the analysis of foods. Ms. Alfin-Slater

**109. Quantitative Methods for Decision Making in Health Services.** (Formerly numbered 479A.) Lecture, four hours.

Prerequisites: courses 101, 132, 160A and consent of instructor. Decision theory and the use of statistics in decision making. Decision theory includes: frameworks for decision making and control, decision under uncertainty, utility theory, Bayes' theorem, and value of information. Statistical topics include: communicating with statistics, measures of association, regression, analysis of variance, and forecasting. Mr. Cretin

**110. Environmental Health.** Lecture, three hours; field trip, one hour. Prerequisites: Chemistry 11A, Biology 1A, Mathematics 3A, Physics 3A or 6A. Broad coverage of environmental health with particular reference to water quality, air quality, noise, food, housing, radiation, vector control, toxicology, occupational health and safety and environmental management. Ms. Valentine

**111. Principles of Food and Nutrition. (½ course)** Lecture, two hours. Prerequisites: One course in biology, chemistry or physiology and consent of instructor. Principles of nutrition and nutritional requirements for normal growth and development. Ms. Alfin-Slater

**113. Nutrition.** Lecture, three hours. Prerequisites: organic chemistry, Biology 1A and 1B or equivalent. Metabolic aspects of carbohydrates, fats, proteins, vitamins and minerals. Dietary requirements, intake and absorption of nutrients. Ms. Hunt

**114A. Biologic Processes.** Lecture, three hours. Prerequisites: organic chemistry, one year; Biology 1A-1B. Metabolism of carbohydrates, proteins and other nitrogen compounds, and lipids; and role of hormones and enzymes in metabolism; physiological processes. Mr. Mah, Ms. Alfin-Slater, Ms. Swendseid

**114B. Biologic Processes: Physiology and Nutrition.** Lecture, three hours. Prerequisites: course 114A, Biology 4A-4B, one year of organic chemistry, consent of instructor. The metabolism of lipids, carbohydrates and proteins; the role of hormones and enzymes in metabolism; physiological processes occurring in various organs. Ms. Alfin-Slater

**115. Population, Ecology and Health.** (Formerly numbered 420.) Lecture, four hours. Prerequisite: course 101. Introduction to major national and international aspects of current population issues. Particular attention paid to economic development, ecology, and policy conflicts as related to population growth and decline and family planning and health programs. Ms. Scrimshaw

**116. Health, Disease and Health Services in Latin America.** Lecture, four hours. Prerequisites: one upper division course on Latin America or 101. Introduction to health, disease and health services in Latin America with emphasis on epidemiology, health administration, medical anthropology and nutrition. Ms. Scrimshaw

**117. Biotechnology of Air Pollution. (½ course)** Lecture, two hours. Prerequisites: course 110 and consent of instructor. Biological and physical effects of air contaminants in relation to environmental quality and health effects. Mr. Mustafa

**118. Clinical Nutrition Laboratory. (½ course)** (Formerly numbered 114D.) Discussion, one hour; laboratory, four hours. Prerequisites: course 108 or equivalent; one year organic chemistry; Biology 1A and 1B. Analytical procedures for determining the various constituents of blood and urine. Mr. Puppione

**120A. Therapeutic Nutrition. (½ course)** (Formerly numbered 120A-120D.) Lecture, two hours. Prerequisites: course 113, 114A or equivalent, and consent of instructor. Recent findings in the field of diet and disease and modifications made in the normal diet for pathological conditions. Ms. Carlisle

**120B. Therapeutic Nutrition. (½ course)** (Formerly numbered 120A-120D.) Lecture, two hours. Prerequisites: course 113, 114A, or equivalent, 120A, and consent of instructor. Recent findings in the field of diet and disease and modifications made in the normal diet for pathological conditions. Ms. Carlisle

**132. Health Services Organization.** (Formerly numbered 450A.) Lecture, four hours. Prerequisites: four units of Social Sciences. Structure and function of the American health care system; issues and forces shaping its future. Mr. Torrens

**133. Structure and Function of Health Care Facilities.** (Formerly numbered 201A.) Lecture, two hours; discussion, two hours; field work, three hours. Prerequisite: course 132 (may be taken concurrently) and consent of instructor. Introduction to structure, organization and function of health care facilities. Mr. Ross

**135. Principles and Techniques of Counseling. (½ course)** Lecture, one and one-half hours; discussion, one-half hour. An introduction to the counseling processes, styles and range of counseling services available to Public Health and health care personnel. Ms. Liverman

**136. Introduction to Comprehensive Health Planning.** (Formerly numbered 408.) Lecture, four hours; field work, four hours. Prerequisite: one upper division course in MicroEconomics, Statistics, Calculus, or Political Science. Concepts underlying health planning, the state of the art and some relevant literature. Mr. Kisch

**138. Health Education for Teacher Credentials. (½ course)** Lecture, two hours. Prerequisite: admission to the Teacher Education Credential Program. The teaching-learning process as applied to personal and community health. Content includes psychoactive drugs (alcohol, tobacco, and narcotics), human

sexuality, and community health resources. Required for the California State Teaching Credential. Mr. Washington and Staff

**140. Health Care Issues in International Perspective.** (Formerly numbered 206.) Lecture, four hours. Prerequisites: course 132, another course in Health Administration, two upper division courses in Social Sciences. Analysis of crucial issues in health care: manpower policy, economic support, health facilities, patterns of health service delivery, regulation, planning and other aspects of health care systems are probed in the settings of European welfare states, developing nations, and socialist countries. Mr. Roemer

**141. Community Health Education.** (Formerly numbered 234.) Lecture, two hours; discussion, two hours. Prerequisite: one course in social sciences and consent of instructor. Problems of social, economic, and cultural origin as they apply to sound community organization in the public health field. Examination of the health education activities of professional, voluntary, and official health agencies and analysis of their interrelationships. Mr. Washington

**142. The World's Population and Food.** Lecture, three hours. Prerequisite: Economics 1, 2, or 100. Junior and above. World's food sources; major food groups, human food requirements and consumption; food in developing economies; the international movement of foods; interrelations of foods; population and economic progress. Mr. Rada

**143. Health and Consumer Economics.** (Formerly numbered 106.) Lecture, three hours. Prerequisite: Economics 1 and 2, or 100. Junior and above. Study of impact of health problems and costs on individual and family incomes and expenditures, including productivity and dependency. Mr. Rada

**144. Economics of Health and Medical Care.** (Formerly numbered 154.) Lecture, three hours. Prerequisite: Economics 1 and 2, or 100. Junior and above. Study of demand, supply and price determinants in private and public sectors of health and medical care fields. Mr. Rada

**145. Environmental Management.** (Formerly numbered 279.) Lecture, four hours; discussion, one hour. Prerequisites: Economics 100, Political Science 142 or 143, or equivalent and consent of instructor. Introduction to the foundations and principles of environmental management, decision-making, and evaluation of environmental policies and programs. Mr. Davos

**147. Principles of Epidemiology.** Lecture, two hours; laboratory, four hours. Prerequisites: course 101 or 104. Introduction to epidemiology including the factors governing health and disease in populations. The Staff

**148. Human Sexuality and Sexual Health.** Lecture, three hours; discussion, one hour. Prerequisites: two courses in behavioral and/or life sciences and consent of instructor. An interdisciplinary review of sexual physiology and sexual behaviors is followed by consideration of pregnancy and its prevention, sexual dysfunction, and sex-transmitted disease. Psycho-social, cultural, political, and health care aspects are included. Mr. Cushner

**149. Behavioral Sciences and Health.** Lecture, three hours. Prerequisite: one course in Social Sciences. Basic concepts in the behavioral sciences pertinent to health and medical care; cultural and social class variations in health status; health team and community relations; community decision-making in public health. Mr. Berkanovic, Mr. Goldstein, Mr. Reeder

**150. Infectious Diseases and Public Health.** Lecture, three hours; demonstration, one hour. Prerequisite: consent of the instructor. Introduction to infectious diseases of man emphasizing modes of transmission and control of etiologic agents of Public Health importance. Mr. Schacher and the Staff

**152. Genetics and Public Health.** Lecture, four hours. Prerequisites: Public Health M12 (or Biology 134), 147, 160A and consent of instructor. Discussion of human medical and population genetics with focus on epidemiologic and public health aspects of genetic disorders. Mr. Sever

**153. Public Health Microbiology.** Lecture, two hours; laboratory, six hours. Prerequisite: Chemistry 11A, 11B, 11C and Chemistry 11BL or 11CL, 21, 22, 24; Biology 1A, 1B or equivalent and consent of instructor. Basic principles and laboratory procedures employed in sanitation, including food and milk, water supply and waste disposal and environmental quality. Mr. Mah

**M158. Organization of Medical Practice.** (½ course) (Same as Medicine M158.) Lecture, two hours. Prerequisite: course 450A and graduate standing in Public Health, Medicine, Nursing. Education certification of medical practitioners. Organization medical practice, solo, group, HMO. Doctor-patient relationships, medical ethics, economics, professional liability, health care evaluation. Mr. Goodman

**160A. Introduction to Biostatistics.** Lecture, three hours; laboratory/quiz, two hours. Prerequisite: upper division standing; courses in the biological or physical sciences. Students who have completed courses in statistics may enroll only with the consent of the instructor. Introduction to methods and concepts of statistical analysis. Sampling situations with special attention to those occurring in the biological sciences. Topics will include: distributions, tests of hypotheses, estimation, types of error, significance and confidence levels, sample size. Students may not receive credit for this course and Public Health 163A. The Staff

**160B. Introduction to Biostatistics.** Lecture, three hours; laboratory/quiz, two hours. Prerequisite: course 160A or equivalent with consent of the instructor. Introduction to analysis of variance, linear regression, and correlation analysis. Students may not receive credit for this course and Public Health 163B. The Staff

**160C. Introduction to Biostatistics.** Lecture, three hours; laboratory/quiz, two hours. Prerequisite: courses 160B or equivalent with consent of the instructor. Design of experiments, analysis of variance, multiple and polynomial regression analysis with biomedical applications. The Staff

**160D. Introduction to Biostatistics.** Lecture, three hours; laboratory, two hours. Prerequisite: course 160B or equivalent and consent of the instructor. Introduction to concepts of probability used in biomedical sciences. Enumeration statistics and non-parametric methods. Comparison of non-parametric with analogous parametric tests. Discussion of power and sample size. The Staff

**161. Demography: Introduction to Demographic Materials and Methods.** Lecture, three hours; laboratory, two hours. Prerequisite: course 160A. Sources of demographic information; description of human populations; calculation and interpretation of statistics used to measure and describe population growth, structure geographic distribution, mortality, natality and migration. Ms. Mickey

**163A. Basic Biostatistics.** Lecture, three hours; quiz, one hour. Prerequisite: Mathematics 31A-31B-31C or equivalent. Basic concepts of statistical analysis applied to the biological sciences. Topics include random variables, sampling distributions, parameter estimator, statistical inference. Students may not receive credit for this course and Public Health 160A. The Staff

**163B. Basic Biostatistics.** Lecture, three hours; quiz, one hour. Prerequisite: course 163A. Topics include elementary analysis of variance, simple linear regression and correlation, non-parametric methods, elements of sequential analysis. Students may not receive credit for this course and Public Health 160B. The Staff

**170. Family Health and Biosocial Development.** Lecture, two hours; discussion, two hours. Prerequisites: Psychology 130 or Education 125 or Physiology 100 or equivalent and consent of instructor. Biosocial factors related to normal human physical, intellectual and emotional growth and development from family and public health perspective. Mr. Katz, Ms. Neumann

**171. Child Health in the USA.** Lecture, three and one-half hours; discussion, one-half hour. Prerequisites: course 170 and consent of instructor. Course will examine the health problems which afflict infants, children and adolescents in the USA and discuss the priorities, approaches, services and policies which exist or could be developed to deal with these problems. Ms. Neumann

**172. Introduction to Reproductive Health.** Lecture, two hours; discussion, two hours. Prerequisite: course 101. Review of reproductive physiology, normal and abnormal pregnancy, family planning, male-specific and female-specific health problems including health care and psycho-social considerations. Mr. Cushner

**193. Nutrition and Health. (1/2 course)** Lecture, two hours. Prerequisites: course 101 or 104 or equivalent and consent of instructor. A course in basic and clinical nutrition theory and practice for students in health science curricula. Ms. Alfin-Slater, Mr. Jelliffe

**199. Special Studies. (½ or 1 course)** Prerequisite: senior standing; consent of the instructor and Department Chairman. Consent is based on a written proposal outlining the course of study. Individual guided studies under direct faculty supervision. Study to be structured by instructor and student at time of initial enrollment. Undergraduate or graduate students may enroll in only four units each academic period. Only four units may be counted toward the minimum course requirements for a master's degree. Offered on a letter graded basis. The Staff

#### Graduate Courses

**200A. Epidemiology of Cancer.** Lecture and discussion, four hours. Prerequisites: courses 101 or 104, 147, 160A and consent of instructor. Etiological concepts and mechanisms. Pathogenesis, diagnosis and classification of neoplastic diseases. Epidemiologic principles and methods as applied to cancer. Classical studies in cancer epidemiology. Models of causal association. Ms. Stern

**200B. Epidemiology of Cancer.** Lecture and discussion, four hours. Prerequisites: course 200A and consent of instructor. Environmental carcinogens; experimental and epidemiologic assessment of the hazards. Occupational cancer. Cancer legislation and regulation. Application of models to planning cancer control and prevention strategies. Evaluation of screening programs; risk and benefit. Ms. Stern

**202A. Governmental Health Services and Trends.** Lecture, four hours. Prerequisites: course 450A and consent of the instructor. Systematic analysis of the interface of organized programs of personal health services, preventive or therapeutic with various governmental agencies at all jurisdictional levels. Study of changing trends in the relationships of traditional public health and newer medical care and quality-control functions. Mr. Shonick

**203. Microeconomic Theory of the Health Sector.** Lecture, four hours. Prerequisites: Economics 1 and 2 or equivalent; Public Health 450A; 160A, 202A and consent of instructor. Micro-

economic aspects of the health care system including health manpower substitution, choice of efficient modes of treatment and market efficiency and competition. Mr. Schweitzer

**205. Epidemiology of Cardiovascular Disease.** Lecture, two hours; discussion, two hours. Prerequisites: courses 147, 160A, 246A and consent of instructor. Epidemiology of cardiovascular diseases: methods of study, implications for prevention, and controversial issues as reported in current literature. Mr. Vogt

**207. Research Topics in Health Economics.** Seminar, four hours. Prerequisites: courses 132, 203, 411 or equivalent and consent of instructor. Economic analysis of current health services issues. Participants will critically examine studies pertaining to health manpower, health care costs and controls, the diffusion of technology, and cost-benefit analysis of health programs. Mr. Schweitzer

**208. Law, Social Change and Health Service Policy.** Lecture, four hours. Prerequisites: course 132, two upper-division courses in political science or sociology or equivalent; and consent of the instructor. Course examines legal issues affecting policy formulation for environmental, preventive and curative health service programs. Mr. Price

**209A. Management of Epidemiologic Data. (½ course)** Lecture, two hours. Prerequisites: courses 147 and 160A (may be taken concurrently). Introduction to concepts, collection and management of data with particular emphasis on large scale bases. The course includes introduction to the computer and the appropriate selection and use of packaged programs. Ms. Coulson

**209B. Management of Epidemiologic Data. (½ course)** Lecture, two hours. Prerequisite: course 209A or consent of the instructor. Continuation of course 209A, including introduction to FORTRAN and other compiler languages and the development of special purpose programming for epidemiologic problems. Special problems of data management in large scale studies in infectious and chronic diseases will be emphasized. Ms. Coulson

**210. Advanced Environmental Health.** Lecture, four hours. Prerequisite: Chemistry 11A, Biology 1A, Mathematics 3A, Physics 3A or 6A, and course 110 or equivalent and consent of instructor. Theoretical considerations and supporting data requisite for scientific establishment and justification of environmental health standards and requirements, with particular reference to related health factors. Ms. Valentine

**211A. Advanced Nutrition: Vitamins. (½ course)** Lecture, two hours. Prerequisite: Biological Chemistry 101A-101C or equivalents and consent of instructor. Comprehensive treatment of vitamin nutrition and metabolic-nutrient interactions. Ms. Swendseid

**211B. Advanced Nutrition: Proteins. (½ course)** Discussion, two hours. Prerequisites: Biological Chemistry 101A-101C or equivalents and consent of instructor. Comprehensive treatment of protein nutrition and metabolic-nutrient interactions. Ms. Swendseid

**211C. Advanced Nutrition: Lipids. (½ course)** Lecture, two hours. Prerequisites: Biological Chemistry 101A-101C or equivalents and consent of instructor. Comprehensive treatment of lipid nutrition and metabolic-nutrient interactions. Ms. Alfin-Slater

**211D. Advanced Nutrition: Minerals. (½ course)** Discussion, two hours. Prerequisites: Biological Chemistry 101A-101C or equivalents and consent of instructor. Comprehensive treatment of mineral nutrition and metabolic-nutrient interactions. Ms. Alfin-Slater

**212A. Laboratory Techniques in Environmental and Nutritional Sciences.** Lecture, two hours; laboratory, four hours. Prerequisites: Chemistry 24 or Biological Chemistry 101A (may be enrolled currently), Public Health 114D, and consent of instructor. Laboratory course in biochemical techniques and instrumentation used in Environmental and Nutritional Sciences. Mr. Pupione, Ms. Valentine

**212B. Advanced Laboratory Techniques in Nutritional Science.** Lecture, two hours; laboratory, four hours. Prerequisite: course 212A and consent of instructor. Current biochemical methods emphasizing instrumentation. Mr. Pupione

**213. Epidemiology of Perinatal Problems.** Lecture, two hours; discussion, two hours. Prerequisites: courses 101, 147, M12 (or Biology 134) and consent of instructor. Considers distribution, determinants and significance of perinatal problems including fetal death, prematurity, genetic diseases, congenital malformations and mental retardation. Mr. Sever

**\*214. Infectious and Tropical Disease Epidemiology.** Lecture, three hours; discussion, three hours. Prerequisites: course 147 plus one advanced course in epidemiology and consent of the instructor. For students with prior courses in microbiology, parasitology, entomology or pathology. A course for advanced students on the epidemiology of major infectious diseases in developing countries, including both those with a direct or contact mode of spread and those that are vector-borne. Not offered every year. Mr. Schacher, Mr. Work

**215. Epidemiology of Neurologic Disease. (½ course)** Lecture and discussion, two hours. Prerequisite: courses 101, 147, 160A, 246A-246B or equivalent; consent of instructor. Epidemiologic characteristics of selected chronic neurologic diseases with particular emphasis on etiology and possible control. Ms. Visscher

**216A. Ecology of Exotic Diseases.** Lecture, two hours; discussion, six hours. Prerequisite: Public Health 147, Bacteriology 101 and 103, or equivalent and consent of instructor. Geographic pathology and the behavioral causes of exotic diseases. Climatological, ecological and biological determinants of the distribution, exposure to and occurrence of exotic diseases.

Mr. Work

**216B. Viral Diseases of Man.** Lecture, two hours; laboratory, six hours. Prerequisite: course 216A or equivalent and consent of instructor. Viral and rickettsial diseases of man. Natural history, epidemiology, diagnosis, control, and prevention of these diseases especially in tropical situations.

Mr. Work

**217. Qualitative Research Methodology.** Discussion, three hours; laboratory, one hour. Prerequisites: courses 101, 160A, M245A, 132 or equivalents and consent of instructor. Intensive seminar-field course in qualitative research methodology. Emphasis placed on using qualitative methods and techniques in research and evaluation related to health care.

Ms. Scrimshaw

**218A. Protozoal Diseases of Man.** Lecture, four hours. Prerequisites: Bacteriology 101 or equivalent or Biology 105 or equivalent and consent of instructor. Comprehensive overview of systematics, morphology, biology, host-parasite relationships, public health problems and control of protozoa parasitic in man and animals. May be taken concurrently with 218B.

Mr. Ash

**218B. Protozoal Diseases of Man. (½ course)** Laboratory, four hours. Prerequisites: course 218A (may be taken concurrently). Laboratory work stresses the methods of diagnosis and the practical microscopic recognition of the protozoa parasitic in man and animals. Includes the intestinal protozoa and those organisms occurring in the blood and tissues of their hosts and the pathology associated with these infections.

Mr. Ash

**219. Arthropods of Medical Importance.** Lecture, two hours; laboratory, six hours. Prerequisites: Biology 105 or 107 or equivalent; Bacteriology 101 or equivalent; Biology 181 or equivalent. The biology and identification of mites and insects of public health importance involved in the transmission and causation of human diseases.

Mr. Barr

**220A. Helminthic Diseases of Man.** Lecture, four hours. Prerequisites: Bacteriology 101 or equivalent or Biology 105 or equivalent and consent of instructor. Comprehensive overview of the systematics, morphology, biology, host-parasite relationships, public health problems and control of the nematodes, trematodes and cestodes parasitic in man and animals. May be taken concurrently with 220B.

Mr. Ash

**220B. Helminthic Diseases of Man. (½ course)** Laboratory, four hours. Prerequisite: course 220A (may be taken concurrently.) Diagnosis and the practical microscopic recognition of the nematodes, trematodes and cestodes parasitic in man and animals. The pathology produced by these infections is also studied.

Mr. Ash

**221. Chemical Behavior of Aquatic Systems.** Lecture, three hours. Prerequisites: Chemistry 1A, Mathematics 3A, Public Health 110, plus consent of instructor. The chemistry of ocean waters, rivers, ground waters and water treatment systems. Topics include thermodynamics of natural waters, acids and bases, carbon dioxide cycle, solubility reactions, oxidation and reduction, plus applied problems.

Ms. Valentine

**222. Microbiology of Water Quality.** Lecture, three hours. Prerequisites: Public Health 110; Public Health 153; Chemistry 21; Chemistry 22 or Chemistry 103 or equivalent. Examines basic concepts of eutrophication, indicator organisms, aquatic microbes; assessment of biological treatment practices re water reuse and/or purification.

Mr. Mah

**224A. Environmental Toxicology.** Lecture, three hours; discussion, one hour. Prerequisite: Chemistry 153 or Biological Chemistry 101A-101B, and consent of instructor. Essentials of toxicology, dose response, physical, chemical or biological agents that adversely affect man and environmental quality.

The Staff

**224B. Environmental Toxicology: Trace Contaminants.** Lecture, three hours; discussion, one hour. Prerequisite: course 224A. Essentials of toxicology in relation to trace contaminants.

The Staff

**225. Medical Anthropology.** Lecture, four hours. Prerequisites: courses 101, 147, one upper division course in psychology, sociology, or anthropology, or equivalent and consent of instructor. Cross-cultural aspects of human behavior as they relate to perception, treatment, incidence and prevalence of disease and illness.

Ms. Scrimshaw

**226. Survival Distributions.** (Formerly numbered 239B.) Lecture, two hours. Prerequisites: Mathematics 31C or equivalent, Mathematics 152B or 150C or equivalent. Analysis of survival distributions with non-censored and censored data.

Ms. Clark

**227. Advanced Demography.** Lecture, three hours. Prerequisite: course 161 or the equivalent. Calculation of estimates of stable population parameters. Application of stable population concepts to the estimation of fertility rates in the absence of vital registration data. Consequences of changes in vital rates. Implications for policy.

Ms. Mickey

**M232. Disease Problems in Socio-Economic and Political Impact in Latin America.** (Same as Latin American Studies M232.) Lecture, six hours; discussion, six hours. Prerequisite: consent of the instructor. A graduate course for students with

knowledge of the geography and social and political systems for the diverse nationalities which constitute Latin America. The focus will be on important disease problems in respect to their social, economic and political impact on Latin American countries with only a minimum of medical and technical details necessary to understand the nature of the disease as it afflicts individuals and populations.

Mr. Work

**233. Change Determinants in Health-Related Behavior.** Lecture, four hours. Prerequisite: minimum of four courses of behavioral science (one of which must be upper division), concurrent enrollment in course 149, or consent of the instructor. A unified behavioral science approach to the natural determinants of change in health-related behavior at the community, group and individual levels, as a foundation for planned change.

The Staff

**236. Introduction to Program Evaluation.** Lecture, two hours; discussion, two hours. Prerequisites: courses 160A, 245A or equivalent and consent of instructor. Definitions and strategies for health program evaluation; selected applications of research design and measurement to interpret evaluative data.

Mr. Berkanovic

**238. Ecology of Mental Health.** Lecture and discussion, two hours; reading and preparation of a serious research paper, four hours. Prerequisites: courses 147, 160A or equivalent, 149 or equivalent and consent of instructor. Analysis of the occurrence and distribution of mental disorders in the community and the relationships to social structure. Problems of classification, definition, measurement in socio-psychiatric epidemiology, sociocultural and social-psychological factors in mental disorders.

Mr. Reeder

**240A-240B-240C. Biostatistics.** Lecture, three hours; discussion, one hour (240A only). Prerequisites: Public Health 160C, Math 31C, 152B or the equivalent. With the consent of the instructor certain prerequisites may be taken concurrently or waived. Quantitative methods in public health, medicine and the biological sciences, statistical theory and application to problems in the design and analysis of medical experiments and surveys.

The Staff

**M241A-241B-241C. Linear Statistical Models.** (Same as Mathematics M279A-279B-279C.) Lecture, three hours. Prerequisite: Mathematics 152B or 150C and course 160C or equivalent. Topics include linear algebra applied to linear statistical models, distribution of quadratic forms, the Gauss-Markov theorem, fixed and random component models, balances and unbalanced designs.

The Staff

**242A-242B-242C. Multivariate Biostatistics.** Lecture, four hours. Prerequisite: course M241A or equivalent. Multivariate analysis as it is used in biological and medical situations. Topics from component analysis, factor analysis, discriminant analysis, analysis of dispersion, canonical analysis.

The Staff

**243A. Advanced Topics: Stochastic Processes.** Lecture, four hours. Prerequisite: courses in upper division mathematics including statistics and probability. Stochastic processes applicable to medical and biological research.

Ms. Dunn, Mr. Massey

**243B. Advanced Topics: Mathematical Epidemiology.** Lecture, four hours. Prerequisite: course 243A or equivalent and courses in upper division mathematics including statistics and probability. Mathematical theory of epidemiology with deterministic and stochastic models, and problems involved in applying the theory.

Mr. Massey

**243C. Advanced Topics: Statistical Genetics.** Lecture, four hours. Prerequisite: courses in upper division mathematics including statistics and probability. Introduction to statistical genetics.

Ms. Dunn

**244A. Introduction to Statistical Methods for Biological Assays.** Lecture, four hours. Prerequisites: course 160C and Mathematics 150A, 150B, 150C or 152A, 152B. Topics include standard statistical procedures for the estimation of relative potency, density of micro-organisms and density of radioactivity, models used for these procedures and statistical considerations for designing such assays.

Mr. Chang

**244B. Statistical Methods for Research Biological Assays.** Lecture, four hours. Prerequisite: course 244A. Topics include statistical methods developed for research assays for which the standard procedures do not apply.

Mr. Chang

**M244C. Computation Statistics.** (Same as Biomathematics M280 and Mathematics M280.) Lecture, three hours. Prerequisites: Mathematics 150A-150B-150C and 115 or the equivalent. An introduction to the theory and design of statistical programs; pivoting and other technologies used in stepwise regression, nonlinear regression algorithms, algorithms for balanced and unbalanced analysis of variance including the mixed model, iterative rescaling and other methods for log-linear models.

Mr. Jennrich

**M245A. Introduction to Social Research Methods in Health.** (Same as Anthropology M264.) Lecture, four hours; assignments, eight hours. Prerequisites: consent of the instructor. Introduction to the basic methods and techniques involved in designing and conducting health research. Focuses on defining problems for research, critiquing existing research, and constructing research designs using a variety of research methods in health studies, including discussion of students own research plans. Emphasis is

on the behavioral science aspects of health research.

Ms. Bourque

**245B. Analysis and Interpretation of Health Survey Data.** Lecture, two hours; laboratory, one hour; 10-12 hours per week on class assignments. Prerequisites: course M245A, 160A, 160B or consent of the instructor. Introduction to computer analysis of health survey data using various available statistical procedures. Emphasis is on the actual analysis of existent data and includes introduction to computers as an analytical tool, development of skills for determining appropriate analytical techniques and procedures by which resultant data can be interpreted and presented.

Ms. Bourque

**246A. Advanced Epidemiology.** Lecture and discussion, four hours. Prerequisites: courses 101, 147, 160A, 160B (may be taken concurrently), one year of biological sciences. Graduate standing and consent of instructor. Discussion of study designs, research methodology, problems of measurement and analytic techniques used in epidemiologic research.

Mr. Detels and the Staff

**246B. Advanced Epidemiology.** Lecture and discussion, four hours. Prerequisite: course 246A. Graduate standing and consent of instructor. This course is a continuation of course 246A and will concentrate on selection of appropriate research design, problems of measurement, and analytic techniques commonly used in epidemiologic studies.

Mr. Detels and the Staff

**M249A. Sociocultural Aspects of Health and Illness.** (Same as Sociology M249A.) Lecture, two hours. Prerequisites: course 149 or graduate standing in sociology, anthropology or psychology and consent of the instructor. The relationship between the sociological, cultural, and psychosocial factors in the etiology, occurrence, and distribution of morbidity and mortality. Emphasis is on life styles and other socioenvironmental factors associated with disease and mortality.

Mr. Reeder

**M249B. Sociocultural Aspects of Health and Illness.** (Same as Sociology M249B.) Lecture, three hours. Prerequisite: graduate standing in Social Sciences or Public Health and consent of instructor. A sociological examination of the concepts "health" and "illness" and role of various health professionals especially physicians. Professionalization and professional-client relationships within organizational settings.

Mr. Goldstein

**M249C. Sociocultural Aspects of Health and Illness.** (Same as Sociology M249C.) Lecture, two hours. Prerequisite: graduate standing and consent of instructor. Sociocultural factors in illness behavior. Emphasis on the processes affecting differential patterns of use of health services.

Mr. Berkanovic

**250. Current Problems in Health Education.** Lecture, one hour; discussion, three hours; term paper. Prerequisites: courses 233, 234, and consent of instructor. Current problems and findings in health education content areas, such as nutrition, mental health, family health, consumer health, safety, communicable and chronic diseases.

Mr. Washington

**251. Administrative Relationships in Health Education.** Lecture, one hour; discussion, three hours. Prerequisite: courses 230 and 250 or consent of the instructor. Responsibility and authority for health education in educational institutions and relationships with other agencies and groups.

Mr. Washington

**252. Community Problems in Mental Disorders.** Lecture, three hours. Prerequisite: consent of instructor. Mental disorders, mental retardation and delinquency; and the responsive social agencies, including concern with suicide prevention and psychological problems of aging.

Mr. Goldstein

**257. Epidemiology of Arthropod-borne Disease.** Lecture, four hours. Prerequisites: course 101, 147, 246A, 246B and graduate standing. Epidemiological aspects of disease carried by arthropods, emphasizing life cycle and ecology of vectors as related to epidemiology of viral, rickettsial, bacterial, protozoal and helminthic diseases.

Mr. Barr

**261. Seminar in Community Health Education. (½ course)** Discussion, two hours. Prerequisites: courses 250 and 251. In depth analysis of health education concepts as they relate to the professional practitioner.

Mr. Washington

**265. Seminar in Epidemiology: Methodology. (½ course)** Discussion, two hours. Prerequisites: courses 147, 160A, 246A, or equivalent and consent of instructor. Review of current epidemiologic research contained in recent medical literature. May be repeated for credit.

The Staff

**266. Seminar in Epidemiology: Infectious and Tropical Disease. (½ course)** Discussion, two hours. Prerequisites: courses 147, 160A, 246A, or equivalent and consent of instructor. Review of research on specific diseases of public health importance. May be repeated for credit.

**267. Advanced Seminar in Biostatistics. (½ course)** Discussion, two hours. Prerequisite: course 240C and consent of instructor. Students and faculty present and discuss current research in Biostatistics.

The Staff

**268A. Special Topics: Categorical Data. (½ course)** Lecture, two hours. Prerequisites: Public Health 160D or 163B, Math 150C or 152B and consent of the instructor. Methods for the analysis of categorical data and the assessment of association.

The Staff

**268B. Special Topics: Distribution Free Methods. (½ course)** Lecture, two hours. Prerequisites: Public Health 163B or 160D; Math 150C or 152B and consent of the instructor. Theory and

application of distribution free methods in biostatistics.

The Staff

**268C. Special Topics: Simulation Methods. (½ course)** Lecture, two hours. Prerequisites: Math 150C or 152B, a course in computer programming, Public Health 160C and consent of the instructor. Techniques for simulating important statistical distribution and applications in health science problems.

The Staff

**268D. Special Topics: Miscellaneous. (½ course)** Lecture, two hours. Prerequisites: course 160C and consent of the instructor. Topics in Biostatistics not covered in other courses.

The Staff

**269. Seminar in Biostatistics. (½ course)** Discussion, two hours. Prerequisites: two courses from the 268A-D series, 240A, 240B and consent of the instructor. Students present and discuss current developments of methodology and problems in applications of Biostatistics.

The Staff

**270. Seminar on Current Issues in Maternal and Child Health. (½ course)** Discussion, two hours. Prerequisites: courses 170 and 171 and either 101 or 104. New knowledge and approaches in selected health and social problems of families, women of childbearing age and children including early development, day care and genetic counseling.

Mr. Katz, Ms. Neumann

**273. Seminar in Maternal and Child Nutrition.** Lecture, two hours; discussion, two hours. Prerequisites: courses 101, 170, 193 or equivalent and consent of instructor. Nutrition of mothers, infants and children in countries at various levels of socio-economic development; measures for prevention and treatment of protein-calorie malnutrition; relationship between nutrition and mental development; impact of ecological, socio-economic and cultural factors on nutrition, nutrition education and service.

Mr. Jelliffe and Ms. Neumann

**274. Seminar in Environmental Health Sciences. (½ course)** Lecture, two hours. Prerequisites: Biological Chemistry 101A-101B, or equivalent and consent of instructor. Emphasis on current biological, physical, and chemical sciences relating to environmental topics and review of research literature.

Mr. Mah

**275. Seminar in Health Effects of Environmental Contaminants. (½ course)** Discussion, two hours. Prerequisite: Biological Chemistry 101A-101B, or equivalent and consent of instructor. Emphasis on health effects of air, water, environmental pollutants on man and review of research literature.

Mr. Mah

**278. Environmental Policy Planning and Decision-Making.** Lecture, four hours; discussion, one hour. Prerequisites: graduate standing; courses 112, 210, 471, 472, or consent of the instructor. Establishment of a systematic analytic framework for environmental policy planning and decision-making. Topics will include: identification of policy interdependencies; evaluation of policy tradeoffs; assessment of optional technologies and futures; assessment of utilization of taxation, prices, incentives, penalties for achieving requisite environmental objectives; assessment of control and standards options.

Mr. Davos

**281. Issues in Health Planning.** Discussion, three hours; field work, three hours. Prerequisite: courses 406 and M245A or equivalent research course. In-depth presentation and analysis of current issues of importance to advanced students in the CHP program.

Mr. Kisch

**283. Seminar in Behavioral Sciences and Health. (½ to 1 course)** Lecture, two hours. Prerequisite: courses M249A-249B-249C or equivalent and consent of the instructor. Recent significant contributions of the behavioral sciences to the understanding of health and illness, with selected and varying topics each quarter. May be repeated for credit.

Mr. Reeder, Mr. Wilner and the Staff

**284. Seminar in Nutrition. (½ course)** Lecture, two hours. Prerequisites: courses 113, 114A, 114B, one course in 211 series. Review of current literature in nutritional science. Emphasis on methodology and data evaluation. May be repeated for credit.

Ms. Swendsid

**285. Seminar in Public Health Nutrition. (½ course)** Prerequisites: courses 113, 114A-114B and one nutrition course in 200 or 400 series. Review of literature in selected areas of public health nutrition.

The Staff

**400. Field Studies in Public Health. (½ or 1 course)** Prerequisites: consent of instructor. Field observation and studies in selected community organizations for health promotion or medical care. Enrolled students must file field placement and program training documentation on form obtainable from Student Affairs Office. Not applicable to minimum course requirements for the M.S. degree. Only four units applicable to minimum total of 44 units required for the M.P.H. degree.

The Staff

**401B. Legal Aspects of Hospital Administration. (½ course)** Lecture, two hours. Prerequisite: consent of instructor. A survey of legal matters pertinent to the practicing hospital administrator. Emphasis is on derivation of legal authority for operations; hospital consent, medical record and negligence law; legislation; administration codes; and case law relating to hospital operations.

Mr. Givard

**402A. Health Information Systems: Organization and Management.** Lecture, two hours; laboratory, three hours. Prerequisites: courses 102A-102B or equivalent and consent of instructor. Principles of and systems relating to the organization and

management of a health facility's health information system.

Ms. Johnson

**402B. Health Information Systems: Organization and Management.** Lecture, two hours; laboratory, three hours. Prerequisite: course 402A or equivalent and consent of instructor. Health and administrative research, using clinical records. Principles of planning for routine and special studies. Individual investigation in methods of obtaining and processing data to meet needs of programs in institution and agency. Introduction to principles of medical auditing: analysis of medical and health services.

Ms. Johnson

**403A-403B-403C. Practicum in Health Planning.** Prerequisites: courses 404A-404B, 407 and consent of instructor. Required of all MSPH students with a concentration in Health Planning. Preparation for and subsequent analysis of a ten-week work experience which students undertake during the summer between the first and second year. In-Progress grading is used.

Mr. Kisch

**404A. Small Area Planning for Resources for Personal Health Service—Theory. (½ course)** Lecture, two hours. Prerequisite: course 450A and one additional course in health services and hospital administration, or consent of instructor. Health planning theory, methods and experience with planning for personal health care resources, for small geographic areas. Determining needs and estimating required utilization levels and health care resources. Survey of elements of different disciplines used in areawide health planning.

Mr. Shonick

**404B. Small Area Planning for Resources for Personal Health Services—Theory and Laboratory.** Lecture, two hours; laboratory, two hours. Prerequisites: course 404A, 450A, and one additional course in health services and hospital administration, or consent of instructor. Study of health planning theory and survey of methods as in course 404A. In addition, projects and exercises will be assigned to obtain some practice and further insights into problems and methods.

Mr. Shonick

**405. Planning and Development of Family Health Programs.** Lecture, two hours; discussion, two hours. Prerequisites: courses 420, 456A, 160A or 245A, 170 or 273. Theory guidelines, and team exercise for planning community health/family planning projects in the U.S.A. and in developing countries. Phases include: community needs identification; goal setting; budget and work plan development; funding, staffing; evaluation design; data and cost analysis; and project presentation.

Mr. Neumann

**406. Applied Methodology in Health Planning.** Lecture, three hours; field work, four hours. Prerequisites: courses 132 or equivalent; 404A-B; 407; 408 and consent of instructor. Demonstrating the methodology of health planning by involving students in the formulation of an actual health plan for an existing agency in the Los Angeles area.

Mr. Kisch

**407. Information Processing for Health Planners.** (Formerly numbered 207.) Lecture, four hours. Prerequisites: courses 160A or 163A, and 408, and consent of instructor. Information theory is presented to the students as a framework for understanding data analysis. The computer is used to implement data analysis results with previously presented information systems concepts.

Mr. Siler

**409. Statistical Methods in Medical Studies. (½ course)** (Formerly numbered 239A.) Lecture, two hours. Prerequisites: courses 160C or 160D or Mathematics 152B or equivalent and graduate standing in Public Health or related field. Design and analysis of biomedical studies.

Ms. Clark

**411. Financing Health Care.** Lecture, four hours. Prerequisites: Economics 1 and 2, or equivalent, Public Health 450A and consent of instructor. Patterns of health care financing by consumers, providers, third-party intermediaries; and trends in health service use and expenditures, national health insurance, and international comparisons of health financing.

Mr. Schweitzer

**414. Preventive Medical Services in the Community. (½ course)** Lecture, two hours; field trips. Prerequisites: courses 147, 450A or equivalent and consent of instructor. Clinical preventive practices in the community including cardiovascular disease, dependency disorders, communicable diseases, maternal health, mental health, presymptomatic screening, personnel, licensure and financing.

Mr. Tennant

**415. Management of Medical Care Organizations and Programs.** (Formerly numbered 451.) Lecture, four hours. Prerequisites: course 133 and consent of instructor. Application of organizational, economic and behavioral science concepts to understanding the structure and functions of health care facilities and programs.

Mr. Pointer

**416. Managerial Processes in Health Service Organizations.** (Formerly numbered 201B.) Lecture, one hour; laboratory, three hours. Prerequisites: courses 132, 133, 451, and consent of instructor. Managerial skills and behaviors applied to the components of organizations at several levels: individual, interpersonal, group, inter-group, system, and inter-organization. The unique features of health service organizations are stressed as applications are presented.

Mr. Pointer, Mr. Ross

**417. Integrative Seminar in Health Services Management.** Discussion, four hours. Prerequisite: course 416. Resident and preceptors are responsible for presenting cases of actual

administrative problems for solution by teams of students and faculty.

Ms. Gretin, Mr. Pointer, Mr. Ross

**418. Contemporary Issues in Health Services Management.** Lecture, two hours; discussion, two hours. Prerequisite: course 416. Advanced study of the contemporary intramural and extramural issues which affect the management of health care facilities.

Ms. Gretin, Mr. Pointer, Mr. Ross

**419. Evaluation of Health Services and Programs.** (Formerly numbered 453B.) Lecture, two hours; discussion, one hour; laboratory, one hour. Prerequisites: courses 109, 132, 160A or equivalent and consent of instructor. Analysis of methods and findings of current research and evaluation of personal health services and programs in a variety of social contexts. Principles of decision analysis. Emphasis on measurement of outcomes of health service systems.

Mr. Hopkins

**421. Nutritional Assessment: Dietary Surveys. (½ course)** Lecture, one hour; discussion, three hours. Prerequisites: courses 113, 114A, 147, 160A and 445A. Collection and evaluation of nutrient intake data for the purpose of nutritional assessment of population groups.

Ms. Hunt

**422. Nutritional Assessment: Laboratory Assays. (½ course)** Lecture, one hour; laboratory, three hours. Prerequisites: courses 113, 114A-114B-114C-114D or equivalent and one course in 211 series. Biochemical methods for evaluating nutritional status of individuals or population groups. Techniques for measuring vitamins, minerals, lipids and proteins.

Ms. Swendsid

**430. Practicum in Health Education. (1 or 2 courses)** Lecture, two hours; laboratory, six or eighteen hours. Prerequisites: courses 233, 234, M245A, 236 or equivalents and consent of the instructor. Study of community- and group-felt health needs reflected by behavioral responses. Analysis of the data with respect to understanding the needs; planning, implementing, and evaluating need-directed health education programs.

Ms. Richards

**431. Handicapped Children: The Public Health Concern. (½ course)** (Formerly numbered 259.) Lecture, two hours. Prerequisites: courses 101 or 104; 170 or equivalent and consent of instructor. Etiology, prevalence, social consequences and remedial programs for the chief handicapping conditions in children both physical and mental. Emphasis on both biological and social factors, current research and program development.

Mr. Katz

**434. Health Education in Clinical Settings.** Lecture, two hours; discussion, two hours. Prerequisites: course 132, 233, 234, 236 and consent of the instructor. Analysis of the role, methods, and techniques of health education pertaining to hospitals, clinics and patient education. Observation and discussion of clinical activities in the medical center in relation to the process of health education.

Ms. Richards

**436. Manpower Management in Health Services Organizations. (½ course)** (Formerly numbered 401A.) Lecture, two hours. Prerequisites: courses 132, 133 or equivalent and consent of instructor. An introduction to personnel administration and labor relations as they apply to health care facilities.

Mr. Pointer

**438. Principles of Health Facility Financial Management. (½ course)** (Formerly numbered 401C.) Lecture, two hours. Prerequisites: course 133, Management 403 or equivalent and consent of instructor. Introduction to accounting and financial functions and systems in health care facilities; emphasis is accorded to short-term hospitals.

The Staff

**444A-444B. Health Record Systems.** Lecture, three hours; laboratory, three hours. Prerequisite: graduate standing and experience in health record administration. Advanced study of principles and criteria involved in planning, installing and administering systems to record, process, and retrieve data for records and reports in health and medical institutions and agencies.

Ms. Johnson

**445A. Principles of Public Health Nutrition.** (Formerly numbered 445.) Lecture, two hours; discussion, one hour. Prerequisites: course 113, 114A&C, 160A, 147; 450A (may be taken concurrently). A survey of methods, problems and practices used by health agencies in dealing with community nutrition of population groups.

Ms. Hunt

**445B. Practicum in Public Health Nutrition.** Discussion, one hour; field research, 12 hours. Prerequisites: courses 400, 445A and 450A (may be taken concurrently). Analysis of Public Health nutrition problems. Delivery of community nutrition education.

Ms. Hunt

**452. Community Mental Health.** Lecture, four hours. Prerequisite: graduate status. Concepts of mental health, mental illness, prevention of mental disorders. Mental health in public health programs. Public health aspects of control of mental disorders. Epidemiology, program planning and legal aspects of mental disorders.

Mr. Wilner

**453. Health Insurance Principles and Programs.** Lecture, four hours. Prerequisites: courses 132, 202, an additional health services and hospital administration course, or equivalent, and consent of instructor. Examination of social, actuarial, and commercial assumptions underlying health insurance. Analysis of the diversity of voluntary medical care insurance plans, under different sponsorship and with varied scopes of coverage and benefits and their implications for public and private medical care developments.

Mr. Shonick

**454. Issues and Problems of Local Health Administration. (½ course)** Lecture, two hours. Prerequisites: courses 101, 132,

another health services course, and consent of the instructor. Analysis of organizational issues currently faced by local health departments in increasing the scope and quality of services; exploration of administrative problems and inter-agency relationships. Mr. Salenger

**456A. International Health Agencies and Programs.** Lecture, four hours. Prerequisites: need in depth background in health science, political science, economics or behavioral science. Historical development and functions of international organizations concerned with health, including United Nations units (WHO, UNICEF, etc.) as well as bilateral movements (U.S. AID, Colombo Plan), medico-religious missions, private foundations, and other channels for dissemination of ideas and practices. Mr. Chung, Mr. Neumann

**456C. Advanced Issues in International Health.** Lecture, two hours; discussion, two hours. Prerequisites: courses 456A, 456B, and 450A. This third course in the international health series focuses in depth on major issues in the field. These issues confront both recipients and donors of financial or technical assistance for the improvement of health care in less developed countries. Mr. Chung, Mr. Neumann

**458. Epidemiologic Aspects of Preventive Medicine.** (½ course) Lecture and discussion, two hours. Prerequisites: graduate standing, course 101, 147, 160A or MD/RN degrees and consent of instructor. Current technical, epidemiologic and programmatic aspects in preventive medicine. Mr. Breslow

**459. Benefit—Cost Evaluation of Health Programs.** (Formerly numbered 254.) Lecture, two hours; discussion, two hours. Prerequisites: courses 147, 160A, Economics 102 or equivalent and consent of instructor. Cost—benefit and cost effectiveness principles and techniques employed to evaluate public health programs and projects. Mr. Rada

**460. Environmental Measurements.** (Formerly numbered 223.) Lecture, two hours; laboratory, four hours. Prerequisites: Chemistry 11A; Public Health 110; 210; 212A or 153; Chemistry 22 or 103. Instrumental methods for laboratory and field applications to assess the quantity of environmental pollutants in air, food, and water, and to assess the degree of exposure to such factors as noise and radiation. Ms. Valentine, Mr. Mah

**468. Principles and Practices of Medical Care Audit.** (½ course) Lecture, two hours. Prerequisites: courses 132, 147, 160A, or equivalent and consent of instructor. Analysis of systems used in evaluating health care professional providers' performances in hospital and ambulatory settings. Health information systems and data available used for medical audits. Mr. Goodman, Ms. Johnson

**470. Human Reproduction in Cross—Cultural Perspective.** Lecture, two hours; discussion, two hours. Prerequisites: courses 101, 147, 420, 172, or equivalents and consent of instructor. Exploration of human behavior related to reproduction. Cross-cultural exploration of biological and behavioral factors with particular reference to human adaptation. Ms. Scrimshaw

**471. Assessment of Family Nutrition.** Lecture, four hours (with discussion). Prerequisites: courses 101, 170, 193, 273. Assessment of the nutritional status of families in developing countries with special reference to limited resources, terrain and cross-cultural considerations, stressing anthropometric methods and techniques. Mr. Jelliffe, Ms. Neumann

**472. Environmental Systems Analysis.** Lecture, four hours; discussion, one hour. Prerequisite: courses in calculus and linear algebra and consent of the instructor. Application of quantitative techniques and optimization models of Systems Analysis, and concepts of General System Theory on environmental planning, management and policy formation. Lectures will be supplemented by student's utilization of computer programs especially designed for environmental systems. Mr. Davos

**473. Maternal and Child Health in Developing Areas.** Lecture, four hours; discussion, part of the lecture. Prerequisites: courses 170, 273, 456A or equivalents; consent of the instructor. Main health problems of mothers and children in developing areas stressing causation, management and prevention. Particular reference to adapting programs to limited resources in cross-cultural milieu. Mr. Jelliffe, Ms. Neumann

**474A. Reproductive Health Services and Programs.** Lecture, two hours; discussion, two hours. Prerequisite: course 172 or equivalent. Examination of U.S. delivery system of pregnancy care, family planning, male-specific and female-specific health care including methods, facilities, personnel and funding. Mr. Cushner

**474B. Current Issues in Reproductive Health.** Lecture, two hours; discussion, two hours. Prerequisite: course 474A. A critical review of current public health and socio-political problems in reproductive health. Emphasis is on development of feasible solutions and the strategies for achieving them. Mr. Cushner

**479. Quantitative Methods in Health Services Management.** (Formerly numbered 479B.) Lecture, four hours. Prerequisite: course 109. Quantitative methods for managerial decision making. Deterministic and stochastic analyses of problems in: resource allocation, inventory control, task sequencing, patient and facilities scheduling, demand forecasting, and cost-benefit analysis. Ms. Cretin

**501. Cooperative Program.** (½ to 2 courses) Prerequisites: Approval of UCLA Graduate Advisor and Graduate Dean. Approval of

host campus instructor, Department Chairman and Graduate Dean. This course is used to record enrollment in courses taken under cooperative arrangements with neighboring institutions. No more than 8 units may be applied to the minimum total course requirements for a master's degree. No credit allowed toward the minimum five graduate course requirement for a master's degree. Offered on a Satisfactory (S)/Unsatisfactory (U) grade basis only. The Staff

### Individual Study and Research

**596. Directed Individual Study or Research.** (½ to 2 courses) Prerequisites: graduate standing, consent of the instructor. Individual guided studies under direct faculty supervision. May be repeated for credit; only 1 course (4 units) will count toward the minimum course requirement for the M.P.H. and M.S. in Public Health degrees. Offered on a letter graded basis only. The Staff

**597. Preparation for Master's Comprehensive or Doctoral Qualifying Examination.** (½ to 2 courses) Prerequisites: graduate standing, consent of the instructor. May be repeated for credit. May not be used to fulfill any course requirements for the master's or doctor's degrees. Offered on a Satisfactory (S)/Unsatisfactory (U) grade basis. The Staff

**598. Master's Thesis Research.** (½ to 2 courses) Prerequisite: consent of the instructor. May be repeated for credit. Only one course (4 units) will count toward the minimum total course requirement for the M.P.H. and M.S.P.H. degrees. No credit allowed toward the minimum five graduate course requirement. Offered on a Satisfactory (S)/Unsatisfactory (U) grade basis. The Staff

**599. Doctoral Dissertation Research.** (½ to 2 courses) Prerequisite: consent of the instructor. May be repeated for credit. May not be used to fulfill any course requirements for a degree. Offered on a Satisfactory (S)/Unsatisfactory (U) grade basis. The Staff

## RADIOLOGICAL SCIENCES

(Department Office, BL-428 Center for the Health Sciences)

Leslie R. Bennett, M.D., *Professor of Radiological Sciences.*  
 John A. Campbell, M.D., *Professor of Radiological Sciences in Residence.*  
 J. Michael Criley, M.D., *Professor of Radiological Sciences in Residence.*  
 Moses A. Greenfield, Ph.D., *Professor of Radiological Sciences.*  
 William N. Hanafee, M.D., *Professor of Radiological Sciences.*  
 DeLores E. Johnson, M.D., *Professor of Radiological Sciences in Residence.*  
 Joseph Jorgens, M.D., *Professor of Radiological Sciences in Residence.*  
 Guy J. F. Juillard, M.D., *Professor of Radiological Sciences.*  
 David E. Kuhl, M.D., *Professor of Radiological Sciences.*  
 Edward A. Langdon, M.D., *Professor of Radiological Sciences.*  
 Norman S. MacDonald, Ph.D., *Professor of Radiological Sciences.*  
 Ismael Mena, M.D., *Professor of Radiological Sciences in Residence.*  
 Frederick S. Mishkin, M.D., *Adjunct Professor of Radiological Sciences.*  
 Lawrence S. Myers, Ph.D., *Adjunct Professor of Radiological Sciences.*  
 Carol M. Newton, M.D., Ph.D., *Professor of Radiological Sciences and Biomathematics.*  
 Amos Norman, Ph.D., *Professor of Radiological Sciences.*  
 Bernard J. O'Loughlin, M.D., Ph.D., *Adjunct Professor of Radiological Sciences.*  
 Robert G. Parker, M.D., *Professor of Radiological Sciences.*  
 Michael E. Phelps, Ph.D., *Professor of Radiological Sciences.*  
 Robert L. Scanlan, M.D., *Adjunct Professor of Radiological Sciences.*  
 Richard J. Steckel, M.D., *Professor of Radiological Sciences.*  
 Joseph Tabrisky, M.D., *Professor of Radiological Sciences.*  
 Elias G. Theros, M.D., *Professor of Radiological Sciences.*  
 Daniel J. Torrance, M.D., *Adjunct Professor of Radiological Sciences.*  
 Julien Van Lancker, M.D., *Professor of Radiological Sciences and Pathology.*  
 Milo M. Webber, M.D., *Professor of Radiological Sciences.*  
 Gabriel H. Wilson, M.D., *Professor of Radiological Sciences (Chairman of the Department).*  
 Richard E. Ottoman, M.D., *Emeritus Professor of Radiological Sciences.*  
 Leo G. Rigler, M.D., *Emeritus Professor of Radiological Sciences.*  
 Justin J. Stein, M.D., *Emeritus Professor of Radiological Sciences.*  
 George V. Taplin, M.D., *Emeritus Professor of Radiological Sciences.*  
 Zoran L. Barbaric, M.D., *Associate Professor of Radiological Sciences.*  
 John R. Bentson, M.D., *Associate Professor of Radiological Sciences.*  
 Marvin B. Cohen, M.D., *Adjunct Associate Professor of Radiological Sciences and School of Medicine.*  
 James D. Collins, M.D., *Associate Professor of Radiological Sciences.*  
 J. Duncan Craven, M.D., *Adjunct Associate Professor of Radiological Sciences.*  
 Jack I. Eisenman, M.D., *Adjunct Associate Professor of Radiological Sciences.*  
 Richard H. Gold, M.D., *Associate Professor of Radiological Sciences.*  
 Barbara M. Kadell-Wootton, M.D., *Adjunct Associate Professor of Radiological Sciences.*  
 Milton Kunin, M.D., *Adjunct Associate Professor of Radiological Sciences.*  
 Ralph S. Lachman, M.D., *Associate Professor of Radiological Sciences in Residence and Pediatrics.*  
 Ruthann Pick, M.D., *Adjunct Associate Professor of Radiological Sciences.*  
 Isaac Reese, Ph.D., *Adjunct Associate Professor of Radiological Sciences.*

Richard F. Riley, Ph.D., *Associate Professor of Radiological Sciences.*  
 Heinrich R. Schelbert, M.D., *Associate Professor of Radiological Sciences.*  
 Harold D. Snow, D.V.M., *Adjunct Associate Professor of Radiological Sciences.*  
 Ronald W. Thompson, M.D., *Associate Professor of Radiological Sciences in Residence.*  
 Marvin Weiner, M.D., *Associate Professor of Radiological Sciences.*  
 Lawrence W. Bassett, M.D., *Assistant Professor of Radiological Sciences in Residence.*  
 Marshall E. Bein, M.D., *Assistant Professor of Radiological Sciences.*  
 Robert K. Bier, M.D., *Adjunct Assistant Professor of Radiological Sciences.*  
 Sharon E. Byrd, M.D., *Adjunct Assistant Professor of Radiological Sciences.*  
 Sachiko Cochran, M.D., *Adjunct Assistant Professor of Radiological Sciences.*  
 Donald R. Eisert, M.D., *Assistant Professor of Radiological Sciences in Residence.*  
 Harvey S. Frey, M.D., Ph.D., *Adjunct Assistant Professor of Radiological Sciences and Biomathematics.*  
 Gerda Gallob, Ph.D., *Adjunct Assistant Professor of Radiological Sciences.*  
 Antoinette S. Gomes, M.D., *Assistant Professor of Radiological Sciences in Residence.*  
 L. Stephen Graham, Ph.D., *Adjunct Assistant Professor of Radiological Sciences.*  
 Stephen H. Greenberg, M.D., *Adjunct Assistant Professor of Radiological Sciences.*  
 Verity S. Grinnell, M.D., *Assistant Professor of Radiological Sciences in Residence.*  
 Martin Herman, Ph.D., *Assistant Professor of Radiological Sciences in Residence.*  
 Grant B. Hieshima, M.D., *Assistant Professor of Radiological Sciences in Residence.*  
 Edward J. Hoffman, Ph.D., *Assistant Professor of Radiological Sciences in Residence.*  
 Henry S. Huang, D.Sc., *Assistant Professor of Radiological Sciences in Residence.*  
 Hushang Kangaroo, M.D., *Adjunct Assistant Professor of Radiological Sciences.*  
 Anthony A. Mancuso, M.D., *Adjunct Assistant Professor of Radiological Sciences.*  
 Charles Mehrlinger, M.D., *Assistant Professor of Radiological Sciences in Residence.*  
 Theodore Q. Miller, M.D., *Adjunct Assistant Professor of Radiological Sciences.*  
 Jerrold H. Mink, M.D., *Assistant Professor of Radiological Sciences in Residence.*  
 Victor O. Oren, M.D., *Adjunct Assistant Professor of Radiological Sciences.*  
 Zbigniew Petrovich, M.D., *Adjunct Assistant Professor of Radiological Sciences.*  
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 William Sample, M.D., *Assistant Professor of Radiological Sciences in Residence.*  
 Dennis Sarti, M.D., *Assistant Professor of Radiological Sciences in Residence.*  
 Lorraine E. Smith, M.D., *Assistant Professor of Radiological Sciences in Residence.*  
 Neville C. W. Smith, M.D., *Adjunct Assistant Professor of Radiological Sciences.*  
 Peter Spiegler, Ph.D., *Assistant Professor of Radiological Sciences.*  
 Toshiyuki T. Tanaka, M.D., *Adjunct Assistant Professor of Radiological Sciences.*  
 Alan S. Tesler, M.D., *Adjunct Assistant Professor of Radiological Sciences.*  
 Neal Tobochnik, Ph.D., *Adjunct Assistant Professor of Radiological Sciences.*  
 J. Michael Uszler, M.D., *Assistant Professor of Radiological Sciences in Residence.*  
 Ramesh C. Verma, M.D., *Assistant Professor of Radiological Sciences in Residence.*  
 Lalitkumar H. Vora, M.D., *Adjunct Assistant Professor of Radiological Sciences.*  
 Isaac Weintraub, M.D., *Assistant Professor of Radiological Sciences.*  
 Thomas H. Weisenburger, M.D., *Assistant Professor of Radiological Sciences.*  
 Robert W. Wilson, M.D., *Assistant Professor of Radiological Sciences in Residence.*  
 James Winter, M.D., *Adjunct Assistant Professor of Radiological Sciences.*  
 Dennis W. Wong, Pharm.D., *Adjunct Assistant Professor of Radiological Sciences.*  
 Charles H. Yamashiro, M.D., *Adjunct Assistant Professor of Radiological Sciences.*  
 Caroline H. Yeager, M.D., *Adjunct Assistant Professor of Radiological Sciences.*

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Louis Adler, M.D., *Assistant Clinical Professor of Radiological Sciences.*  
 Michael O. Anderson, M.D., *Assistant Clinical Professor of Radiological Sciences.*  
 Rolf D. Arndt, M.D., *Assistant Clinical Professor of Radiological Sciences.*  
 Bruce M. Barack, M.D., *Assistant Clinical Professor of Radiological Sciences.*  
 Donald de Forest Bauer, M.D., *Assistant Clinical Professor of Radiological Sciences.*  
 Ronald L. Becker, M.D., *Assistant Clinical Professor of Radiological Sciences.*



- Gerald D. Berman, M.D., *Assistant Clinical Professor of Radiological Sciences.*
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- David E. Cohn, M.D., *Assistant Clinical Professor of Radiological Sciences.*
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- Terrence E. Donlon, Ph.D., *Lecturer in Radiological Sciences.*
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- Michael M. Edelstein, M.D., *Assistant Clinical Professor of Radiological Sciences.*
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- Vincent A. Esposito, M.D., *Assistant Clinical Professor of Radiological Sciences.*
- Karl H. Falkenbach, M.D., *Assistant Clinical Professor of Radiological Sciences.*
- Vincent R. Fennell, M.D., *Assistant Clinical Professor of Radiological Sciences.*
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- Ezekiel Freed, M.D., *Assistant Clinical Professor of Radiological Sciences.*
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- Stan Furmanski, M.D., *Assistant Clinical Professor of Radiological Sciences.*
- Manohar P. Gandhi, M.D., *Assistant Clinical Professor of Radiological Sciences.*
- Harvey A. Gilbert, M.D., *Assistant Clinical Professor of Radiological Sciences.*
- Lionel D. Ginsberg, M.D., *Assistant Clinical Professor of Radiological Sciences.*
- David S. Goller, M.D., *Assistant Clinical Professor of Radiological Sciences.*
- Robert K. Gray, M.D., *Assistant Clinical Professor of Radiological Sciences.*
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- Michael T. Gyepes, M.D., *Clinical Professor of Radiological Sciences.*
- Julia E. Halasz, M.D., *Assistant Clinical Professor of Radiological Sciences.*
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- Oscar Harvey, M.D., *Assistant Clinical Professor of Radiological Sciences.*
- Gerald Hassan, M.D., *Assistant Clinical Professor of Radiological Sciences.*
- Donald F. Hausknecht, Ph.D., *Lecturer in Radiological Sciences.*
- Gail W. Haut, M.D., *Assistant Clinical Professor of Radiological Sciences.*
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- Edward Helmer, M.D., *Assistant Clinical Professor of Radiological Sciences.*
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- Francis E. Holly, Ph.D., *Lecturer in Radiological Sciences.*
- Neal Horn, M.D., *Assistant Clinical Professor of Radiological Sciences.*
- John W. Horns, M.D., *Assistant Clinical Professor of Radiological Sciences.*
- Margaret A. Ingram, M.D., *Clinical Instructor in Radiological Sciences.*
- James E. Jefferson, M.D., *Associate in Radiological Sciences.*
- Peter J. Julien, M.D., *Assistant Clinical Professor of Radiological Sciences.*
- Michael R. Kadin, M.D., *Assistant Clinical Professor of Radiological Sciences.*
- Arthur R. Kagan, M.D., *Associate Clinical Professor of Radiological Sciences.*
- Mitchell S. Komaiko, M.D., *Assistant Clinical Professor of Radiological Sciences.*
- Robert A. Ledner, M.D., *Assistant Clinical Professor of Radiological Sciences.*
- Paul P. Lee, M.D., *Assistant Clinical Professor of Radiological Sciences.*
- Norman D. Levine, M.D., *Associate Clinical Professor of Radiological Sciences.*
- Bernard S. Lewinsky, M.D., *Assistant Clinical Professor of Radiological Sciences.*
- Samuel T. Lim, M.D., *Assistant Clinical Professor of Radiological Sciences.*
- Rabbe R. Lindstrom, M.D., *Assistant Clinical Professor of Radiological Sciences.*
- Joseph F. Linsman, M.D., *Associate Clinical Professor of Radiological Sciences.*
- Arthur G. Litman, M.D., *Associate Clinical Professor of Radiological Sciences.*
- James F. Mack, M.D., *Assistant Clinical Professor of Radiological Sciences.*
- Paul S. Mahoney, M.D., *Assistant Clinical Professor of Radiological Sciences.*
- Sulabha Masih, M.D., *Assistant Clinical Professor of Radiological Sciences.*
- George G. McCormack, M.D., *Associate in Radiological Sciences.*
- Edward M. McMonigle, M.D., *Assistant Clinical Professor of Radiological Sciences.*
- Harvey S. Miller, M.D., *Assistant Clinical Professor of Radiological Sciences.*
- Herman Nussbaum, M.D., *Assistant Clinical Professor of Radiological Sciences.*
- Sherwin M. Olken, M.D., *Assistant Clinical Professor of Radiological Sciences.*
- Ronald J. O'Reilly, M.D., *Associate Clinical Professor of Radiological Sciences.*
- Clifford R. Ossorio, M.D., *Clinical Instructor of Radiological Sciences.*
- Theodore T. Ott, *Lecturer (Retired) of Radiological Sciences.*
- Joseph Parks, M.D., *Assistant Clinical Professor of Radiological Sciences.*
- Joseph Patterson, M.D., *Assistant Clinical Professor of Radiological Sciences.*
- George Peters, M.D., *Clinical Instructor of Radiological Sciences.*
- Jonathan Po, M.D., *Assistant Clinical Professor of Radiological Sciences.*
- William L. Pogue, M.D., *Assistant Clinical Professor of Radiological Sciences.*
- Saar A. Porraath, M.D., *Assistant Clinical Professor of Radiological Sciences.*
- Barry D. Pressman, M.D., *Assistant Clinical Professor of Radiological Sciences.*
- David I. Rabinov, M.D., *Associate Clinical Professor of Radiological Sciences.*
- Aroor R. Rao, M.D., *Associate in Radiological Sciences.*
- Burton I. Rein, M.D., *Assistant Clinical Professor of Radiological Sciences.*
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- Garry D. Roghair, M.D., *Assistant Clinical Professor of Radiological Sciences.*
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- Roger Sevrin, M.D., *Assistant Clinical Professor of Radiological Sciences.*
- Michael S. Shaub, M.D., *Assistant Clinical Professor of Radiological Sciences.*
- Solomon S. Shaub, M.D., *Assistant Clinical Professor of Radiological Sciences.*
- Ellis L. Silberman, M.D., *Assistant Clinical Professor of Radiological Sciences.*
- Rita W. Sklar, M.D., *Associate in Radiological Sciences.*
- Richard C. Small, M.D., *Assistant Clinical Professor of Radiological Sciences.*
- Lois J. Smart, M.D., *Assistant Clinical Professor of Radiological Sciences.*
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- David Stern, M.D., *Assistant Clinical Professor of Radiological Sciences.*
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- H. Jerome Stulberg, M.D., *Assistant Clinical Professor of Radiological Sciences.*
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- Edgar L. Surprenant, M.D., *Associate Clinical Professor of Radiological Sciences.*
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- Paddy Taber, M.D., *Assistant Clinical Professor of Radiological Sciences.*
- Doina Tanasescu, M.D., *Assistant Clinical Professor of Radiological Sciences.*
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- Stanford B. Trachtenberg, M.D., *Assistant Clinical Professor of Radiological Sciences.*
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- David W. Wilder, M.D., *Assistant Clinical Professor of Radiological Sciences.*
- Henry S. Williams, M.D., *Associate Clinical Professor of Radiological Sciences.*
- Gerald I. Winkler, M.D., *Clinical Instructor of Radiological Sciences.*
- Ralph Wolfstein, M.D., *Associate Clinical Professor of Radiological Sciences.*
- John H. Woodruff, Jr., M.D., *Associate Clinical Professor of Radiological Sciences.*
- Duane A. Young, M.D., *Assistant Clinical Professor of Radiological Sciences.*
- Norman Zheutlin, M.D., *Clinical Professor of Radiological Sciences.*
- Arthur S. Zimmerman, M.D., *Clinical Instructor of Radiological Sciences.*
- Michael I. Zucker, M.D., *Associate in Radiological Sciences.*

#### Requirements for Admission to Graduate Status

Candidates for admission to graduate status in the Department of Radiological Sciences must meet the general requirements set by the Graduate Division for admission to such status.

*Areas of Study.* Study in the fields of radiation physics, radiation biology, and radiation chemistry with applications in nuclear medicine, radiation therapy, and diagnostic radiology will be open to qualified students.

#### Requirements for the Degree of Master of Science in Medical Physics

*General University Requirements.* Candidates for the Master of Science degree in Medical Physics must meet the general requirements set by the Graduate Division for this degree. The candidate must elect the Thesis Plan.

*Departmental Requirements.* The student must complete radiology courses in the three clinical rotations (Nuclear Medicine, 202A; Diagnostic Radiology, 202C; and Radiation Therapy, 202D), and the necessary prerequisites. Additional courses may be required. The student should have an appropriate background in physics, chemistry, biology, and mathematics.

#### Requirements for the Doctoral Degree in Medical Physics

*General University Requirements.* Candidates for the Doctoral Degree in Medical Physics must meet the general requirements set by the Graduate Division for this degree. A series of written and oral examinations are required before advancement to candidacy.

*Departmental Requirements.* (1) Advancement to Candidacy. Advancement to candidacy is granted only after the student has passed preliminary written screening examinations and a qualifying oral examination in the physical, biological, and chemical foundations of medical physics. (2) Normally, graduate students will be expected to take courses 200, 202, 204, 206, 207, 208, 260, and 266. Completion of additional courses may be recommended.

The Doctorate in Medical Physics is not granted merely upon completion of routine requirements as to examinations, courses, and dissertation; fulfillment of such requirements is a prerequisite. The Ph.D. will be granted only to students who have clearly demonstrated both an adequate grasp of a broad field of knowledge and an ability to contribute to that field of knowledge by original and independent research.

#### Graduate Courses

**199. Directed Individual Study or Research in Medical Physics for Undergraduate Students.** (½ to 1 course) Prerequisite: consent of the Graduate Adviser of Medical Physics. Directed individual study in Medical Physics for undergraduate students. Student must submit written proposal outlining study or research to be undertaken. This should be worked out in consultation with the faculty member involved prior to the beginning of the quarter. The Staff

**200A. Physics of Nuclear Medicine.** Prerequisite: consent of instructor. Nuclear structure, statistics of radioactivity decay, nuclear radiations and their interactions with matter, nuclear decay processes, nuclear reactions, and dosimetry of radioactive nuclides. Mr. Norman

**200B. Instrumentation in Nuclear Medicine.** Prerequisite: course 200A. Introduction to nuclear medicine instrumentation including exterior probe systems, well scintillation detectors, liquid scintillation counters, scanners and cameras; dosimetry of internally administered radioisotopes. Mr. Graham

**200C. Radioactive Pharmaceuticals.** Prerequisite: courses 200A and 200B. Chemistry and physics of radioactive preparations employed in nuclear medicine. Topics include use of generator systems, kits, assay procedures and the characteristics of official and non-official preparations such as colloids, macroaggregates and chelates. Mr. Riley

**201. Environmental Radiations.** The sources, physical proper-

ties, and biological hazards of ionizing radiations, ultraviolet and laser light, and microwave and acoustic radiations in the environment. Social benefit vs. technological risk will be evaluated. Mr. Norman

**202A-202D. Applications of Medical Physics to Clinical Problems.** Prerequisite: course 200C or consent of instructor. Selected studies in the clinical use of radiostopes.

202A-202B. Nuclear Medicine. The Staff  
202C. Diagnostic Radiology. The Staff  
202D. Radiation Therapy. The Staff

**202E-202F. Application of Medical Physics to Clinical Problems: Radiation Therapy.** Prerequisite: course intended for physicians only. Lecture/seminar discussion of dosimetric calculations and measurements involving cases under treatment. Written reports on representative problems selected from current literature and/or clinical experience. The Staff

**203. Physics of radiation Therapy.** Radiation quantities and units. Radiation dosimetry, clinical applications in treatment planning. Methods of measuring radiation quantities. The calibration of radiation therapy equipment. Mr. Spiegler

**204. Introductory Radiation Biology.** Lecture. Effect of ionizing radiation on chemical and biological systems. Mr. Riley

**205. Physics of Diagnostic Radiology.** Production of x-rays, basic interactions between x-rays and matter, x-ray system components, physical principles of medical radiography, radiographic image quality, fluoroscopy, image intensifiers, special procedures, x-ray protection. Laboratory experiments will illustrate the basic theory. Mr. Greenfield

**207. Radiation Protection and Health Physics.** Concepts in radiation protection, the recommendation of the national council on radiation protection and measurements, the maximum permissible dose levels. Shielding calculations. The layout and design of radiographic installation. Mr. Spiegler

**208A-208B. Medical Physics Laboratory.** Prerequisite: course 206A and 206B; or consent of instructor. Techniques for measuring ionizing and non-ionizing radiation, applications to problems in radiological sciences. Mr. Herman

**M216. Computer and Biomathematical Applications in Radiological Sciences.** (Same as Biomathematics M216.) Prerequisite: Biomathematics 210 and elementary calculus are recommended. Computer and biomathematical methods will be presented that relate to dosimetry, treatment strategies, biological effects of radiation, and laboratory research in radiotherapy and radiobiology. Mr. Frey, Ms. Newton

**260A-260B. Seminar in Medical Physics. (½ course each)** Seminar. Joint critical study by students and instructors of the fields of knowledge pertaining to medical physics. Periodic contributions are made by visiting scientists. Research in progress is discussed. Mr. Norman, Mr. Riley

**266A-266B-266C. Seminar in Nuclear Medicine. (½ course each)** Seminar. Topics of current interest in nuclear medicine. Seminar intended for physicians, radiation physicists, and graduate students. Mr. Webber

**268. Seminar in Radiopharmaceuticals. (½ course)** Current concepts in radioactive pharmaceutical agents in clinical use, including promising investigational agents. Utilization of short-lived, cyclotron produced isotopes in radiopharmaceuticals. The rational design of new radiodiagnostic agents. Mr. Robinson

**481. Angiographic Techniques. (¼ course)** Prerequisite: consent of the instructor. Laboratory. Beginning Radiology residents will be taught basic techniques of angiographic procedures, utilizing animals. Mr. Snow

**495. Special Studies in Medical Physics.** Teaching assistance in graduate laboratory courses under the supervision of a member of the faculty. May be taken on a "Satisfactory" (S) or "Unsatisfactory" (U) basis only. The Staff

**596. Research in Medical Physics. (1 to 3 courses)** Directed individual study of research. May be taken any number of times for letter grades; only one course may be used for M.S. credit. The Staff

**597. Preparation for the Comprehensive Examination for the Master's Degree or the Qualifying Examination for the Ph.D.** May be taken for one quarter only, on a "Satisfactory" (S) or "Unsatisfactory" (U) basis, and is not creditable for the M.S. degree. The Staff

**598. Research for the Preparation of the Master's Thesis.** May be taken any number of times on a "Satisfactory" (S) or "Unsatisfactory" (U) basis. A maximum of two courses, or 598 and 596 combined, may be used for M.S. credit. The Staff

**599. Research for Dissertation. (1 to 3 courses)** Prerequisite: satisfactory performance on screening examinations. Research for and preparation of the doctoral dissertation. May be taken any number of times on a "Satisfactory" (S) or "Unsatisfactory" (U) basis. The Staff

## ROMANCE LINGUISTICS AND LITERATURE (INTERDEPARTMENTAL)

Margherita Cottino-Jones, Ph.D., *Professor of Italian*  
Claude L. Hulet, Ph.D., *Professor of Spanish and Portuguese*  
C. P. Otero, Ph.D., *Professor of Spanish and Romance Linguistics*  
Carroll B. Johnson, Ph.D., *Associate Professor of Spanish*  
Stephen D. Werner, Ph.D., *Associate Professor of French*  
Delphine Perret, Docteur III<sup>e</sup> cycle, *Assistant Professor of French*  
Edward F. Tuttle, Ph.D., *Associate Professor of Italian and Romance Linguistics (Chairman)*

The integration of linguistic and literary knowledge is taken to be one of the highest aims of this interdepartmental program.

### Requirements for the Master's Degree

*General Requirements:* See Master's Degrees. The Program favors the comprehensive examination plan, but will approve M.A. theses for exceptionally well-qualified students under special circumstances.

1. *Admission Requirements.* The B.A. in French, Italian, Portuguese, or Spanish, or their equivalent, with a GPA in upper division courses of 3.00 or better. Students admitted from elsewhere whose preparation is considered deficient in view of their intended specialization are required to make up their deficiencies by taking specified upper division courses. Such courses may be taken concurrently with graduate courses, but they do not count toward the course requirements for the M.A. Three letters of recommendation are required. During his first graduate year, the student who knows only the language of his major should prepare himself in at least one other Romance language so he can take courses in his minor no later than in his second year of graduate study.

2. *Course Requirements.* The M.A. program permits specialization in either Linguistics or Literature and will include a major and a minor. Twelve courses are the minimum requirement of which six courses (at least five of them graduate) must be in the student's major language, with specialization either in Linguistics or in Literature. One course in the history or development of the major language is highly recommended. At least three courses should be in the minor language, also with specialization in either Linguistics or Literature. The remaining three courses should be selected in consultation with the guidance committee so as to be logically supportive of the student's major field of study. Each individual program will be worked out in close consultation with the guidance committee. Course 596 may be included twice. Linguistics 100 is required of all students majoring in the linguistics field.

3. *Guidance.* Each new graduate student must make an appointment with the Chairman during the week preceding the start of classes to discuss general requirements and to decide on a program of courses for the quarter. Following this initial interview, the student is required to see his advisor at least once a quarter for review of his progress towards the degree. He must have his study list approved by his advisor each quarter before it is signed by the Chairman of the program. A guidance committee will be constituted for each student upon declaration of his field of specialization and in no case later than the end of the first quarter in the program.

4. *Language Requirement.* In addition to the Romance language of major interest and the Romance language of minor interest, candidates are required to have either Latin 3 or the equivalent, or Italian 3 or the equivalent (provided Italian is not their major), whether they specialize in Linguistics or in Literature. The language requirement must be completed no later than the quarter before the quarter in which the student expects to receive his degree.

5. *Comprehensive Examination Plan.* The comprehensive examination is administered by three members of the student's guidance committee, appointed by the Chairman. Two of the three committee members will represent the languages and field of the student's major and first minor. The written comprehensive examination, consisting of one 4-hour examination in the major field, one 2-hour examination in the minor field, and one oral examination not to exceed one hour, will be given each quarter in the second week prior to final examinations. The examination is graded by the comprehensive examination committee, whose decision is final. If a student fails the examination or any part thereof, he may retake the failed portions once when the examination is next regularly offered.

6. *Thesis Plan.* A student may petition for authorization to write an M.A. thesis only after completion of six courses which count toward the degree. It is the responsibility of the student to choose an appropriate topic and find a professor willing to direct the thesis. He then petitions the program for authorization to proceed. The program Chairman first examines the petition and then presents it to the Interdepartmental Committee for approval or denial by a majority vote. If the petition is approved, a thesis committee is appointed which consists of a chairman in the field of the thesis and two other members of the sponsoring departments. After completion of the thesis, the candidate must pass a two-hour oral examination testing his knowledge of the field of his thesis and his general competence. Only those students who attain a 3.5 grade point rating in the examination will be encouraged to proceed to candidacy for the Ph.D. degree.

### Requirements for the Ph.D. Degree

*General Requirements:* See Doctoral Degrees.

*Departmental Requirements.*

1. *Fields of Specialization and Course Requirements.* Romance Linguistics and Literature Program: Linguistics or Literature. In each case the Ph.D. program will consist of a major and two minors. These courses (a minimum program) will be distributed as follows: Major — 5 courses, First Minor — 3 courses, Second Minor — 2 courses. At least one seminar is required in each of the three fields. In addition to those required for the master's degree, or equivalent, at least ten other graduate courses, of which no more than two 596 courses may apply, as well as such courses as his guidance committee may prescribe, are required. Linguistics 100 is required of all students majoring in the linguistics field.

2. *Linguistics:* A student specializing in Linguistics may take as his major field one of the following: (1) The present-day grammar of the Romance language of his major interest and its relation to the grammar of its sister languages and to language in general; (2) The development of the Romance language of his major interest in relation to its sister languages (and possibly other interrelated cultural aspects) from the perspective of historical linguistics; (3) The genetic and typological relationships of the Romance languages to other Indo-European languages and to language in general. The two minors may be other Romance languages, or one other Romance language plus a field of Romance literature.

3. *Literature:* The student specializing in Literature may take as his major field one of the following fields in the literatures of at least two Romance languages: (1) Early Romance Literature and Philology; (2) Renaissance and Baroque; (3) Modern Literature, preferably with emphasis in one century. The first minor may be one of the preceding fields not chosen for the major. The second minor may be the same field or a new field in another Romance language; or some other related field in the major language or in Romance Linguistics.

4. *Language Requirement.* In addition to the minimum of two Romance languages required in the student's program, Latin 3 or Italian 3, or the equivalent, is required of all students in the interdepartmental program. Students choosing options 2 or 3 in Linguistics or option 1 in Literature also require German, whereas those choosing option 1 in Linguistics or option 2 or 3 in Literature will require another foreign language to be determined by the guidance committee in accordance with the individual's program. A minimum level of acceptable accomplishment in non-Romance languages is passing the ETS test, where such test exists. In languages where there is no such test, passing an examination administered by the corresponding language department fulfills the requirements. This foreign language requirement may also be met by evidence of completion of two years of college level courses in the language with Grade B or better, or by evidence of fulfillment of the foreign language requirement in connection with an M.A. obtained elsewhere. The foreign language requirement must be satisfied no later than the quarter before the quarter in which the qualifying examinations are taken.

5. *Admission Requirements and Guidance.* Entering students whom the Chairman determines to have obtained the M.A. in French, Italian, Luso-Brazilian Language and Literature, Spanish or the equivalent with distinction are automatically eligible for admission to the Ph.D. program and may proceed to form their guidance committee; those whose M.A. program registers deficiencies in scope or quality will be required to make up those deficiencies and complete three graduate courses, after which their eligibility for admission to the Ph.D. program will be determined by the Interdepartmental Committee.

The guidance committee is composed of a chairman, who represents the student's major field of study and under whom the student proposes to write his dissertation, and two members representing the minor fields, all members belonging to the sponsoring departments. The chairman of the committee will normally be a tenured professor. It is the student's responsibility to constitute the committee and to secure the individual member's consent, which will be transmitted to the Chairman in writing. As soon as possible after advancement to candidacy, the student meets with his guidance committee for the purpose of working out his program of courses and setting a tentative date for the qualifying examinations. The guidance committee has final authority to prescribe the course of study in each individual case.

Students working toward the Ph.D. who have not yet been authorized to form their guidance committee are advised by the Chairman. Each new graduate student must make an appointment which will be scheduled during the week preceding the start of classes. During the interview the student and advisor discuss general requirements and decide on a program of courses for the quarter. Following this initial interview, the student is required to see his advisor at least once a year for a review of his program towards the degree. He must have his study list approved by his advisor every quarter.

Students who have formed their guidance committee are advised by the chairman of that committee, who, moreover, must approve their study list each quarter before it is signed by the Chairman of the program.

6. *Qualifying Examinations.* At least two months prior to the date of the qualifying examinations, the student proceeds to form his doctoral committee, consisting of the three members of the

guidance committee, plus two additional members from outside the staffs of the sponsoring departments, which will also pass on the student's written and oral examinations. The qualifying examinations are given around the middle of the fall and spring quarters and consist of (a) a three-hour written examination in the major field; (b) a two-hour examination in the first minor; (c) a one-hour examination in the second minor; and (d) a two-hour oral examination in the three fields at which time the student's prospectus for the dissertation is also discussed and approved. Failed portions of the examination may be retaken once after such remedial preparation as the committee may specify.

7. *The Dissertation.* The dissertation may be on any subject within the general area of Romance Linguistics and Literature. If more than five calendar years elapse between advancement to candidacy and the presentation of the dissertation, the program may require the student to revalidate his qualifying examination.

In consultation with the appropriate advisor(s), courses should be selected with an eye to the organic relationship between them, preferably among those listed below and/or their prerequisites:

**Introduction to Romance Studies**  
(Spanish M200) (Italian 201)

**Courses in Linguistics**

**Grammatical Theory:**  
(Linguistics 201A-201B, 206A-206B)

**Historical Linguistics:**  
(Linguistics 202A-202B, 203)

**Synchronic Linguistics**

**Advanced Grammar:**  
(French 201A-201D, 206) (Spanish 204A-204B, 206) (Italian 259B)

**Studies in Linguistics and Dialectology:**  
(French 261, 262) (Spanish 256A-256B)

**Historical Linguistics**

**The Development of the Romance Languages:**

**Northern Gallo-Romance:**  
(French 204A-204B)

**Southern Gallo-Romance:**  
(French 215E)

**Hispano-Romance:**  
(Spanish M203A-203B)

**Italo-Romance:**  
(Italian 259A)

**Romance Dialectology:**  
(Italian 259C) (Spanish 209)

**Indo-European Linguistics:**  
(Indo-European Studies 210, 280A-280B)

**Romance Linguistics:**  
(Linguistics 225G)

**Medieval Latin:**  
(Latin 231A-231B)

**Vulgar Latin:**  
(Latin 232)

**History of the Latin Language:**  
(Latin 240)

**Italic Dialects and Latin Historical Grammar:**  
(Latin 242A-242B)

**Later Medieval Latin Palaeography and Manuscripts, 1100-1500:**  
(History 224)

**Studies in the History of the Romance Languages:**

**Gallo-Romance:**  
(French 215A)

**Hispano-Romance:**  
(Spanish M251)

**Italo-Romance:**  
(Italian 259A-259B-259C, 210A)

**Courses in Literature**

**The Intellectual Background of Romance Literature:**  
(French 205A-205C)

**Studies in Medieval Latin Literary History:**  
(History 222A-222B)

**Literary Criticism:**  
(French 203A-203B-203C) (Spanish M201) (Italian 205A-205B)

**Studies in the History of Ideas:**  
(French 260A-260B)

**Studies in Literary Criticism:**  
(French 258A-258B)

**Studies in Philosophy and Literature:**  
(French 259A-259B)

**Early Romance Literature**

**Early Romance Literature:**

(French 215B-215E) (Spanish 222-223, Portuguese 242A) (Italian 210B-210C, 214A-214G, 215A-215B-215C)

**Petrarca:**  
(Italian 214D, 251)

**Studies in Early Romance Literature:**  
(French 250A-250B) (Spanish 262A-262B-262C) (Italian 250A-250D, 252)

**Renaissance and Baroque Literature**

**Renaissance and Baroque Literature:**  
(French 216A-216H, 217A-217I) (Spanish 224-226, 237, Portuguese 242A and 243A) (Italian 216A-E, 217A-217C)

**Corvantes:**  
(Spanish 227)

**Studies in Renaissance and Baroque Literature:**  
(French 251A-251B, 252A-252B, 253A-253B) (Spanish 264A-264D) (Italian 253A-253C, 255A-255B)

**Modern Romance Literature**

**The XVIIIth Century:**  
(French 218A-218D) (Spanish 230 and 239) (Italian 218A-218E) (Portuguese 242B, 243A)

**Rousseau:**  
(French 218B-218C)

**The XIXth Century:**  
(French 219A-219K) (Spanish 231 and Portuguese 242B and 243B) (Italian 219A-219F)

**The XXth Century:**  
(French 220A-220P, 221A-221D) (Spanish 232-235 and 240-245, and Portuguese 242C and 243C) (Italian 220A-220C)

**Studies in the XVIIIth Century:**  
(French 254A-254B) (Spanish 277) (Italian 256A-256B)

**Studies in the XIXth Century:**  
(French 255A-255B) (Spanish 270A-270B, 278) (Italian 257A-257B)

**Studies in the XXth Century:**  
(French 256A-256B, 257A-257B) (Spanish 272A-272D, 280A-280D) (Italian 258A-258B)

**Genre Studies:**  
Novel: Portuguese 252A, 253A Poetry: Portuguese 252B, 253B Theater: Portuguese 252C, 253C Essay and Short Story: Portuguese 252D, 253D

## SLAVIC LANGUAGES

(Department Office, 115 Kinsey Hall)

Aleksandar Albijanić, Ph.D., *Professor of South Slavic Languages and Literatures.*

Henrik Birnbaum, Ph.D., *Professor of Slavic Languages and Literatures.*

Thomas Eekman, Ph.D., *Professor of Slavic Literatures.*

Marija Gimbutas, Ph.D., *Professor of European Archaeology.*

Kenneth E. Harper, Ph.D., *Professor of Russian Literature.*

Vladimir Markov, Ph.D., *Professor of Russian Literature.*

Michael Shapiro, Ph.D., *Professor of Russian Linguistics and Poetics.*

Dean S. Worth, Ph.D., *Professor of Slavic Languages.*

Michael S. Flier, Ph.D., *Associate Professor of Slavic Languages.*

Peter Hodgson, Ph.D., *Associate Professor of Russian Literature.*

Rochelle Stone, Ph.D., *Associate Professor of Polish and Russian Literature.*

Alan H. Timberlake, Ph.D., *Associate Professor of Slavic Languages.*

Michael Heim, Ph.D., *Assistant Professor of Czech and Russian Literature.*

Edward Denzler, M.A., *Lecturer in Russian.*

**Preparation for the Major**

*Required courses:* Russian 1, 2, 3, 4, 5, 6, Slavic 99A-99B. Note: courses Russian 119 and 120A-120B may be taken in the sophomore year.

**The Major**

*Required courses:* Russian 101A-101B-101C, 111A-111B-111C, 119, 120A-120B, 121, 123; three courses chosen from Russian 130A-130B-130C, 134, 140A-140D, 150; one course chosen from Russian 124A-124F, or 126; and any three electives chosen from Russian 102A-102B-102C (when taken in conjunction with Russian 112A-112B-112C), 122, 124A-124F, 125, 126, 130A-130B-130C, 134, 140A-140D, 150, 193, Polish 152A-152B, Czech 155A-155B, Serbocroatian 154A-154B.

Students intending to continue into graduate school should note that several graduate courses (numbered below 220) may be taken by qualified seniors with permission of the instructor and the Graduate Adviser.

**Admission to Graduate Status**

The completion of the undergraduate major or its equivalent is required. Students entering from other institutions will be asked to make up any deficiencies before being admitted to most graduate courses.

**Requirements for the Master's Degree**

1. For the general requirements, see Master's Degrees. The Department follows the Comprehensive Examination Plan. The M.A. is weighted towards either Linguistics or Literature, but all candidates are expected to have a sound general knowledge of both Russian linguistics and Russian literary history.

2. Application for advancement to candidacy may be made when the student has passed the reading examination in French or German and no later than the second week of the quarter in which the candidate expects to take his M.A. examinations. The French or German examination must be passed no later than the end of the quarter preceding the quarter in which the candidate expects to take his M.A. examination.

3. *Course Requirements.* Required of all M.A. candidates: Slavic 201; Russian 102A-102B-102C, 112A-112B-112C, and 204. In addition, candidates for the M.A. (Linguistics) must take Slavic 202 and two courses chosen from Russian 211, 212, 213; candidates for the M.A. (Literature) must take Russian 211, 212 and 213, and one other literature course in the Department. Note: most of the courses required for the M.A. are open to qualified seniors with the permission of the instructor and the Graduate Adviser.

4. A written examination, based on course work and the departmental reading list, will cover either (a) Linguistics, including a thorough knowledge of Russian phonology and grammar and an acquaintance with Comparative Slavic Linguistics, Old Church Slavonic, and the history of the Russian literary language; or (b) Literature, including an acquaintance with the entire history of Russian literature from its origins to the present and a thorough knowledge of the major developments and figures of the nineteenth and early twentieth centuries.

5. A final oral examination will test the student in the fields of his major interest and on his general background. It may be conducted partly in Russian.

6. *Statute of limitations.* The Department does not encourage part-time or non-resident M.A. candidates. The M.A. examinations must be taken within two calendar years from the time of admission to the Graduate Division (time spent in removing deficiencies, to a maximum of one year, does not count toward this two-year period).

7. Students who fail either the written or the oral examination may retake it once, not later than one calendar year after the first attempt.

8. A grade of "High Pass" on the M.A. examinations is one of the conditions for admission to the Department's doctoral program (see below). M.A. candidates who intend to continue toward the Ph.D. should note that courses numbered 220-239 which are required for the Ph.D. may be taken before completion of the M.A.

**Requirements for the Doctor's Degree**

1. For the general requirements, see Graduate Division. The Department's program envisages specialization in either Linguistics or Literature, with Russian as the principal language and literature respectively. By special arrangement, students can specialize in a language or literature other than Russian.

2. *Admission to the doctoral program.* Students may make formal application to the Department for admission to the doctoral program when they have: (1) passed the UCLA M.A. examination with a grade of "High Pass"; (2) passed the reading examinations in both German and French; (3) taken one year (or the equivalent) of a second Slavic language. Students who received a grade lower than "High Pass" on the UCLA M.A. examination, and entering students with an M.A. from other institutions, must (re)take the M.A. examination within one year as a doctoral screening examination, success in which is required for admission to the doctoral program.

3. *Language examinations.* The Department utilizes the ETS examinations in French and German and accepts a passing score of 500. Candidates for the doctoral program have the option of taking a Departmental examination to satisfy the requirement of reading proficiency in the second language (French or German). A student proposing to work toward the Ph.D. in Slavic linguistics may, upon Departmental approval, be permitted to substitute for the 500-point passing score in the second of his French and German examinations (i.e., in the examination in either French or German), a grade of 450 points, plus a reading knowledge of one other language important to the study of Slavic philology, namely: Finnish, Hungarian, Latvian, Lithuanian, or a Turkic language relevant to East or South Slavic historical linguistics, such reading knowledge to be tested in a manner prescribed by the Department Chairman. A reading knowledge of two such languages may, by the same procedure, be substituted for the entire French or (more rarely) German examination.

4. *Course requirements.* For candidates in Linguistics: Slavic 222, 223, 242, Russian 241, 242, 243A, 265, and one seminar. For candidates in Literature: two courses chosen from Slavic 230A-230B-230C; Russian 251A; and three seminars. Recommended preparation: candidates specializing in Linguistics are advised to take or audit courses 100, 103, 110, 120A-120B, M150, in the Department of Linguistics; candidates specializing in Literature are advised to acquire a sound general knowledge of modern Western European literature.

5. *Qualifying examinations.* The nature and scope of a series of written qualifying examinations will be prescribed for each

candidate. All candidates are expected to have a sound general knowledge of both Slavic philology and Russian literary history, at least equivalent to that required for the M.A. at UCLA. In addition, candidates specializing in Linguistics and Literature, respectively, will be expected to demonstrate a more detailed mastery of either: (a) Linguistics, including Old Church Slavonic, Comparative Slavic Linguistics, and the structure and history of one major and two minor Slavic languages (one from each of the Eastern, Western and Southern groups), which presupposes knowledge equivalent to one year's study of a second and third Slavic language; or (b) Literature, including the entire body of Russian literature from its origins to the present, and a basic knowledge of comparative Slavic literary history, which presupposes a knowledge of the major figures and developments in the literature of at least one Slavic country other than Russia.

6. Students who fail either the written or the oral qualifying examination may retake it once, not later than one calendar year after the first attempt.

7. *Statute of limitations:* The qualifying examinations must be taken within two years of the date of admission to the doctoral program. The dissertation must be completed within three calendar years of the date when the qualifying examinations are passed.

## Slavic

**99A-99B. Slavic Peoples and Cultures.** Three hours weekly. 262A. Prehistoric period and migrations of the Slavs. Beginnings of Slavic literacy. Cultural history of the Western and Southern Slavs. 262B. Cultural history of Russia, including the Ukraine and Belorussia. The Staff

**177. Baltic Languages and Cultures. (1/2 course)** Two hours weekly. A general survey of the peoples speaking Old Prussian, Lithuanian, and Latvian; their linguistic, historical and ethnic affiliations. Mrs. Gimbutas

**M179. Baltic and Slavic Folklore and Mythology.** (Same as Folklore M126.) Three hours weekly. A general course for students interested in folklore and mythology and for those interested in Indo-European mythic antiquities. Mrs. Gimbutas

**199. Special Studies. (1/2 to 2 courses)** No scheduled hours. Prerequisite: senior standing and consent of instructor. The Staff

## Graduate Linguistic Courses

**201. Introduction to Old Church Slavonic.** Three hours weekly. Introduction to phonology and grammar; readings. Required for the M.A. (Linguistics, Literature). The Staff

**202. Introduction to Comparative Slavic Linguistics.** Three hours weekly. Introduction to the comparative phonology and grammar of the Slavic languages. Required for the M.A. (Linguistics) and Ph.D. (Linguistics). The Staff

**222. Introduction to Western Slavic Languages.** Three hours weekly. Prerequisite: course 202. Recommended preparation: Czech 102A-102B-102C or Polish 102A-102B-102C. Introduction to the structure and history of the Western Slavic languages. Required for the Ph.D. (Linguistics). The Staff

**223. Introduction to Southern Slavic Languages.** Three hours weekly. Prerequisite: course 202. Recommended preparation: Serbo-Croatian 103A-103B-103C. Introduction to the structure and history of the Southern Slavic languages. Required for the Ph.D. (Linguistics). Mr. Albijanic

**224. Introduction to Ukrainian and Belorussian.** Three hours weekly. Prerequisite: course 202. Introduction to the history and structure of Ukrainian and Belorussian as contrasted to Russian. The Staff

**241A-241B. Advanced Old Church Slavonic.** Three hours weekly. Prerequisite: course 201. 241A. Advanced readings in canonical texts. 241B. East, West and South Slavic recensions of Church Slavonic. Course 241A only is required for the Ph.D. (Linguistics). The Staff

**242. Comparative Slavic Linguistics.** Three hours weekly. Prerequisite: course 202. Indo-European to Common Slavic and the development of Common Slavic. Required for the Ph.D. (Linguistics). The Staff

**251. Introduction to Baltic Linguistics.** Three hours weekly. Prerequisite: course 202 recommended. Introduction to Baltic linguistics, with special reference to Baltic as a member of the Indo-European family and to the relationship between Baltic and the Slavic group. The Staff

**261. Slavic Paleography.** Three hours weekly. Prerequisite: course 201. Introduction to Slavic paleography: inscriptions, birchbark letters, Glagolitic and Cyrillic texts. The Staff

**262A-262B. Western Slavic Linguistics.** Three hours weekly. Prerequisite: course 222, 262A. Lekhičic. 262B. Czechoslovak, Sorbian. The Staff

**263A-263B. Southern Slavic Linguistics.** Three hours weekly. Prerequisite: course 223. 263A. Serbo-Croatian and Slovene. 263B. Bulgarian and Macedonian. Mr. Albijanic

**281. Seminar in Slavic Linguistics.** Three hours weekly. Selected topics in comparative and historical Slavic linguistics. May be repeated for credit with consent of the instructor and Graduate Adviser. The Staff

**282. Seminar in Structural Analysis.** Three hours weekly. Selected topics. May be repeated for credit with consent of the instructor and Graduate Adviser. The Staff

## Graduate Literature Courses

**230A-230B-230C. Comparative Slavic Literature.** Three hours weekly. Recommended preparation: upper division courses in Czech, Polish, Russian and Yugoslav literatures. 230A. Middle Ages through Baroque, 230B. Classicism to Romanticism. 230C. Realism to Modernism. Two quarters required for the Ph.D. (Literature). The Staff

**290. Seminar in Comparative Slavic Literature.** Three hours weekly. Prerequisites: courses 230A-230B-230C. Selected topics. May be repeated for credit with consent of the instructor and the Graduate Adviser. Mr. Eekman

**295. Seminar in Literary Analysis.** Three hours weekly. Selected topics. The Staff

## Individual Study and Research

**596. Directed Individual Study or Research. (1/2 to 2 courses)** Prerequisite: approval of the instructor and the Graduate Adviser. The Staff

**597. Preparation for the Comprehensive Examination for the Master's Degree or the Qualifying Examination for the Ph.D. (1/2 to 2 courses)** Prerequisite: consent of the instructor and the Graduate Adviser. The Staff

**599. Research for Dissertation. (1/2 to 2 courses)**

## Bulgarian

**103A-103B-103C. Elementary Bulgarian.** Five hours weekly. Basic course in the Bulgarian language. The Staff

**130. Introduction to Bulgarian Civilization.** Three hours weekly. An introductory survey of the social and cultural institutions of the Bulgarian people and their historical background. The Staff

## Czech

**102A-102B-102C. Elementary Czech.** Five hours weekly. Basic course in the Czech language. Mr. Heim

**102D-102E-102F. Advanced Czech.** Three hours weekly. Prerequisite: course 102C. Mr. Heim

**155A-155B. Survey of Czech Literature.** Three hours weekly. Lectures and reading in English. 155A. From the Middle Ages to Romanticism. 155B. From Realism to the present. Mr. Heim

## Polish

**102A-102B-102C. Elementary Polish.** Five hours weekly. Basic course in the Polish language. Mrs. Stone

**102D-102E-102F. Advanced Polish.** Three hours weekly. Prerequisite: course 102C. Mrs. Stone

**152A-152B. Survey of Polish Literature.** Three hours weekly. Lectures and readings in English. 152A. From the Middle Ages to Romanticism. 152B. From Realism to the present. Mrs. Stone

**160. Polish Romanticism.** Three hours weekly. Lectures and readings in English. Comparison of Polish Romanticism with that of other Slavic and Western European countries. The Staff

**280. Seminar in Polish Literature.** Three hours weekly. Selected topics in Polish prose, poetry and drama. The Staff

## Russian

### Language Courses

**1. Elementary Russian.** Five hours weekly plus one hour per week in laboratory. Mr. Denzler in charge

**2. Elementary Russian.** Five hours weekly plus one hour per week in laboratory. Mr. Denzler in charge

**3. Elementary Russian.** Five hours weekly plus one hour per week in laboratory. Mr. Denzler in charge

**4. Intermediate Russian.** Five hours weekly plus one hour per week in laboratory. Mr. Denzler in charge

**5. Intermediate Russian.** Five hours weekly plus one hour per week in laboratory. Mr. Denzler in charge

**6. Intermediate Russian.** Five hours weekly plus one hour per week in laboratory. Mr. Denzler in charge

**10A-10B-10C. Russian Conversation. (1/2 course each)** Three hours weekly. Prerequisite: Russian 3 or consent of the instructor.

Russian conversation designed to supplement the grammar and readings of courses 4-5-6. The Staff

**101A-101B-101C. Advanced Russian. (1/2 course each)** Prerequisite: Russian 6. Course will meet three hours/week, with additional meetings and laboratory sessions at the instructor's discretion. Advanced grammar and reading. The Staff

**102A-102B-102C. Advanced Grammar and Reading. (1/2 course each)** Three hours weekly. Prerequisite: Russian 101C or consent of instructor. Advanced grammatical analysis; reading of difficult texts. The Staff

**111A-111B-111C. Conversation and Composition. (1/2 course each)** Two hours weekly. Prerequisite: course 6 and 10C, or permission of the instructor. Conversation and composition. Conducted in Russian. Required of majors. The Staff

**112A-112B-112C. Advanced Conversation and Composition. (1/2 course each)** Two hours weekly. Prerequisite: course 111C, or consent of the instructor. Advanced conversation and composition. Conducted in Russian. The Staff

**121. Russian Phonology.** Three hours weekly. Prerequisite: course 6. Introduction to articulatory phonetics, phonemics, morphophonemics. The Staff

**122. Russian Morphology.** Three hours weekly. Prerequisite: course 6. Introduction to word-formation and vocabulary-building. The Staff

**123. Historical Commentary on Modern Russian.** Three hours weekly. Prerequisite: course 6. Historical explanation of the phonological and morphological anomalies of modern Russian. The Staff

## Literature Courses

**119. Survey of Russian Literature to Pushkin.** Three hours weekly. Prerequisite: upper division standing. (Slavic majors should take this course during their sophomore year.) Lectures and readings in English. The Staff

**120A-120B. Survey of Russian Literature.** Three hours weekly. Prerequisite: upper division standing. (Slavic majors should take this course during their sophomore year.) Lectures and readings in English. 120A. Nineteenth Century. 120B. Twentieth Century. The Staff

**124A-124F. Studies in Russian Literature.** Three hours weekly. Lectures and reading in English. The following writers will be alternately discussed: A. Pushkin; B. Gogol; C. Turgenyev; D. Dostoevsky; E. Tolstoy; F. Chekhov. The Staff

**125. The Russian Novel in its European Setting.** Three hours weekly. Prerequisite: upper division standing. Emphasis on nineteenth- and twentieth-century novelists. Lectures and readings in English. The Staff

**126. Survey of Russian Drama.** Three hours weekly. Prerequisite: upper division standing. Major Russian plays of the 18th to 20th centuries. Lectures and readings in English. The Staff

**130A-130B-130C. Russian Poetry.** Three hours weekly. Prerequisite: course 6. Lectures and readings in Russian. 130A. Introduction to analysis of poetic texts. 130B. From mid-eighteenth century through precursors of Symbolism. 130C. From late-nineteenth century through contemporary Soviet verse. The Staff

**134. Pushkin.** Three hours weekly. Prerequisite: course 6. Major poetical works. Lectures and readings in Russian. The Staff

**140A-140D. Russian Prose.** Three hours weekly. Prerequisite: course 6. Lectures and reading in Russian. 140A. Major writers from Karamzin to Turgenyev; 140B. Dostoevsky to Gorky; 140C. Contemporary writers; 140D. Advanced readings in Russian prose. The Staff

**M150. Russian Folk Literature.** (Same as Folklore M150.) Three hours weekly. Lectures and readings in Russian. The Staff

**193. Seminar in Russian Literature.** Three hours weekly. Prerequisites: Russian 6 or consent of the instructor; Russian 101C recommended. Reading and discussion of selected authors; written seminar papers will usually be required. The Staff

## Graduate Linguistics Courses

**203. Higher Course in Russian. (1/2 course)** Two hours weekly. Prerequisite: course 102C. Reading advanced texts; advanced composition, conversation; stylistics. Required two quarters/year of all enrolled graduate students. May be repeated for credit. The Staff

**204. Introduction to the History of the Russian Literary Language.** Three hours weekly. Prerequisites: course 123, Slavic 99A-99B. Introductory survey of literary Russian in its cultural and historical setting. Required for the M.A. (Linguistics, Literature).

**210. Readings in Russian Historical Texts.** Three hours weekly. Prerequisites: Slavic 201 or consent of instructor. Readings in early Russian chronicles and other documents of historical interest. The Staff

**241. Russian Phonology.** Three hours weekly. Prerequisites: courses 102A-102B-102C, 121. Survey of taxonomic and

generative theories of Russian phonology. Required for the Ph.D. (Linguistics). The Staff

**242. Russian Morphology.** Three hours weekly. Prerequisites: courses 102A-102B-102C, 122. Advanced study of flexion and derivation. Required for the Ph.D. (Linguistics). The Staff

**243A-243B. Historical Phonology and Morphology of Russian.** Three hours weekly. Prerequisite: course 123. 243A. Survey of Russian historical phonology and grammar. 243B. Selected topics. 243A required for the Ph.D. (Linguistics). The Staff

**263. Russian Dialectology.** Three hours weekly. Prerequisites: courses 243A-243B. Introduction to the phonology and grammar of modern Great Russian dialects. The Staff

**264. The Evolution of Literary Russian.** Three hours weekly. Prerequisites: course 204, Slavic 201. Lectures and analysis of texts. Eleventh to twentieth centuries. The Staff

**265. Russian Syntax.** Three hours weekly. Prerequisites: courses 102A-102B-102C, 121, 122. Survey of traditional and generative approaches to Russian syntax. Required for the Ph.D. (Linguistics). The Staff

**266. Russian Lexicology.** Three hours weekly. An introduction to the formal and semantic patterning of the Russian lexicon. Required for the Ph.D. (Linguistics). The Staff

### Graduate Literature Courses

**211. Eighteenth Century Russian Literature.** Three hours weekly. Lectures and readings in major and secondary writers. Required for the M.A. (Literature). The Staff

**212. Nineteenth Century Russian Literature.** Three hours weekly. Lectures and readings in major and secondary writers. Required for the M.A. (Linguistics, Literature). The Staff

**213. Twentieth Century Russian Literature.** Three hours weekly. Lectures and readings in major and secondary writers. Required for the M.A. (Linguistics, Literature). The Staff

**251A-251B. Old Russian Literature.** Three hours weekly. 251A. Survey of Old Russian Literature from the Kievan period through the Seventeenth century. 251B. Selected topics. 251A required for the Ph.D. (Literature). The Staff

**270. Russian Poetics.** Three hours weekly. Prerequisites: courses 130A-130B-130C. Introduction to the technical study of Russian poetics and versification. Recommended as preparation for course 290. Mr. Markov

**290. Seminar in Russian Poetry.** Three hours weekly. Prerequisites: courses 130A-130B-130C. Recommended preparation: course 270. Selected authors and works. May be repeated for credit with consent of the instructor and the Graduate Adviser. The Staff

**291A. Seminar in Old Russian Literature.** Three hours weekly. Prerequisite: course 251. The Staff

**291B. Seminar in Eighteenth Century Russian Literature.** Three hours weekly. Prerequisite: course 211. Selected authors and works. May be repeated for credit with consent of the instructor and the Graduate Adviser. The Staff

**292. Seminar in Nineteenth Century Russian Literature.** Three hours weekly. Prerequisite: course 212. Selected authors and works. May be repeated for credit with consent of the instructor and the Graduate Adviser. The Staff

**293. Seminar in Twentieth Century Russian Literature.** Three hours weekly. Prerequisite: course 213. Selected authors and works. May be repeated for credit with consent of the instructor and the Graduate Adviser. The Staff

**294. Seminar in Russian Literary Criticism.** Three hours weekly. Prerequisites: courses 211, 212, 213. Selected topics. May be repeated for credit with consent of the instructor and the Graduate Adviser. The Staff

## Serbocroatian

**103A-103B-103C. Elementary Serbocroatian.** Five hours weekly. Basic course in the Serbocroatian language. Mr. Albijanić

**103D-103E-103F. Advanced Serbocroatian.** Three hours weekly. Prerequisite: course 103C. Mr. Albijanić

**154A-154B. Survey of Yugoslav Literature.** Three hours weekly. Lectures and readings in English. 154A. From the Middle Ages to Romanticism. 154B. From Realism to the present, including folk literature. Mr. Albijanić, Mr. Eekman

## Slovak

**222. The Structure of Slovak.** Three hours weekly. Prerequisite: Slavic 202; Slavic 222 recommended. Introduction to the phonological and morphological structure of the Slovak language, especially as contrasted with Czech. The Staff

## Ukrainian

**101A-101B-101C. Elementary Ukrainian.** Five hours weekly. Basic course in the Ukrainian language. The Staff

## Non-Slavic Languages of Eastern Europe

### Lithuanian

**101A-101B-101C. Elementary Lithuanian.** Five hours weekly. Basic course in the Lithuanian language. The Staff

### Romanian

**101A-101B-101C. Elementary Romanian.** Five hours weekly. Basic course in the Romanian language. The Staff

**130. Introduction to Romanian Civilization.** Three hours weekly. An introductory survey of the social and cultural institutions of the Romanian people and their historical background. The Staff

**201. Romanian as a Romance Language.** Three hours weekly. A survey of the structure and development of the Romanian language, with special emphasis on the relationship of Romanian to other members of the Romance group. The Staff

### Related Courses in Other Departments

**History 146A-146D; Linguistics 100, 103, 110, 120A-120B, M150,** as well as several of the graduate courses in Linguistics.

## SOCIAL WELFARE

(Department Office, 238 Dodd Hall)

Jerome Cohen, Ph.D., *Professor of Social Welfare (Chairman, Doctoral Program Committee)*

Maurice F. Connery, D.S.W., *Professor of Social Welfare (Chairman)*. Jeanne M. Giovannoni, Ph.D., *Professor of Social Welfare*.

Alfred H. Katz, D.S.W., *Professor of Social Welfare and Professor of Public Health*

Harry H. L. Kitano, Ph.D. *Professor of Social Welfare and Professor of Sociology*

Eileen Blackey, D.S.W., *Emeritus Professor of Social Welfare*

Nathan E. Cohen, Ph.D., *Emeritus Professor of Social Welfare*

Donald S. Howard, Ph.D., L.H.D., *Emeritus Professor of Social Welfare*

Elliot T. Studt, D.S.W., *Emeritus Professor of Social Welfare*

Warren Haggstrom, Ph.D., *Associate Professor of Social Welfare*

Doris S. Jacobson, Ph.D., *Associate Professor of Social Welfare*

Manuel R. Miranda, Ph.D., *Associate Professor of Social Welfare*

Harry Wasserman, D.S.W., *Associate Professor of Social Welfare*

Diane de Anda, Ph.D., *Assistant Professor of Social Welfare*

Carol W. Williams, *Assistant Professor of Social Welfare*

Rosina Becerra, Ph.D., *Acting Associate Professor of Social Welfare*

Elsie Giorgi, M.D., *Lecturer in Human Behavior*

Katherine M. Kolodziejcki, M.S.W., *Field Work Consultant*

Myra Koplin, M.S.W., *Field Work Consultant*

Jane E. Kurohara, M.S.W., *Field Work Consultant*

Alex J. Norman, D.S.W., *Acting Associate Professor of Social Welfare*

Winifred E. Smith, M.S.W., *Lecturer in and Coordinator of Field Instruction*

Laura S. Wiltz, M.S., *Field Work Consultant*

### Graduate Courses

**201A-201B-201C. Dynamics of Human Behavior I, II, III. (½ course each)** Lecture, two hours; laboratory, one hour. Credit to be given at the completion of the sequence 201A-201B; 201C will be graded separately. Biopsychosocial factors associated with individual and group behavior and development as applicable in the social functioning of individuals and groups. Emphasis is on theoretical issues and research evidence which contribute to a unified theory of human development. Mr. J. Cohen, Mr. Connery, Miss Giorgi

**202A-202B. Dynamics of Human Behavior: Deviance IV, V. (½ course each)** Prerequisite: courses 201A-201B-201C. Credit to be given only at the completion of the sequence. This course deals with deviations and pathologies or stresses in the physical, emotional and social areas of human functioning as those problems relate to the role and function of the social worker.

**203. Integrative Theory and Research in Human and Social Behavior. (½ course)** An integrative course which brings together the preceding courses in the human behavior and the social environment series, by examination at an advanced level of the major theoretical strands and the identification of problem areas requiring further research.

**204A. Social Systems in Social Welfare. (½ course)** The application of social system theory to the problems of social welfare and social work. Analysis of the network of community relationships, values, stratification, institutions and subcultures as related to the premises and services of social work.

**204B. Small Groups in Social Welfare. (½ course)** Application of theory and knowledge of small group functioning to problems of working with groups in social work settings. Analysis of group

formation, structure of interaction and communication patterns, and of leadership and morale problems. Application to family, peer and special-purpose groups.

**205. Group Conflict and Change. (½ course)** Study of the phenomena of group conflict and change as they appear in the social welfare matrix of groups, communities and social institutions; relationship between conflict and social and cultural change; major research contributions in understanding of these phenomena.

**210A-210B-210C. Social Ecology.** Prerequisite: Doctoral status and/or permission of the instructor. Exploration of data and theories from the biological and policy sciences regarding ecological relationships. Review of current biophysical, sociocultural, demographic, technological, economic, and political changes as they affect human society, its institutions and, more particularly, social welfare needs.

**220. History and Philosophy of Social Welfare. (½ course)** The history of social work as a field: body of knowledge, method and process, and point of view analyzed within the context of the economic, political, social, philosophical and scientific climate of the period.

**221A. Social Welfare Policy and Services I. (½ course)** Nature, roles and history of welfare institutions in different societies; applicable social system theory with special reference to values as seen by different components of the welfare system; theory and research about needs met and not met, about various welfare policies and organizational forms, and about social change to prevent needs.

**221B. Social Welfare Policy and Services II. (½ course)** Prerequisite: consent of the instructor. Study of income-maintenance policy and services. Introduces theory and research about selected levels of living, regularity and source of income, and their relevance for family and social well-being; analysis of various income-maintenance policies and services; causes and nature of poverty. Current antipoverty legislation.

**222A-222B-222C. Social Welfare Administration I, II, III. (½ course each)** Prerequisite: graduate status and/or permission of the instructor. Study of methods by which welfare policies are formulated and translated into action; the nature of organizational and research process involved in welfare administration; role of welfare agency personnel in policy formulation, implementation and evaluation.

**223. Seminar on the Social Work Profession. (½ course)** The nature and role of social work in contemporary society; relationships with other professions; probable future trends in the profession; social work ethics, professional organizations, certification licensing; professional responsibility for continued self-criticism and improvement of the profession.

**224A-224B-224C. History and Philosophy of Social Welfare.** Prerequisite: Doctoral status and/or permission of the instructor. Analysis of long-term trends in welfare policies and programs in relation to political, economic, and other relevant factors. Philosophical foundations underlying social welfare theories, programs, and methods will be explored and values, assumptions, and attitudes historically affecting social welfare examined.

**225A-225B-225C. Social Welfare Systems.** Prerequisite: Doctoral status and/or permission of the instructor. Analysis of theories of organizational behavior affecting social welfare systems (including supranational systems transcending national boundaries), their directions, goals, values, and relationships to social work. Application of organizational theory to planning, organizing, and administering welfare agencies will be stressed.

**227A-227B-227C. Comparative Social Welfare Theories and Programs.** Prerequisite: Doctoral status and/or permission of the instructor. Analysis of interrelationships between nations' welfare services and the social, economic, religious, and broader cultural milieus within which they develop. Special attention to social theories, value systems, and other elements of culture which particularly affect welfare programs.

**230A-230B-230C. Theory of Social Work Method I, II, III. (½ course each)** Concurrent social work practicum is required. An introduction to the theory of social work with individuals and small groups and to the principles of practice which are derivative of this and related theory.

**231A-231B. Advanced Theory of Social Work Method IV, V. (½ course each)** Required: Concurrent social work practicum. Advanced-level, critical analysis of theories, concepts and principles underlying social casework practice. Specific attention to deviation and stress as conditions affecting functioning of individuals and groups; and to diagnostic knowledge and competence required in rehabilitation and prevention.

**240A-240B-240C. Theory of Social Work Method (Community Organization) I, II, III. (½ course each)** Concurrent practicum in social work required. Covers historical and theoretical developments in community organization; understanding the community as a social system; role of the practitioner in identification, analysis and evaluation of needs, existing programs, policies, structures and strategies of intervention.

**241A-241B. Advanced Theory of Social Work Method (Community Organization) IV, V. (½ course each)** Concurrent practicum in social work required. Emphasis on various patterns of community action for attaining social welfare objectives; research and field experience directed toward study of social problems within

the context of community planning; emerging patterns of physical, economic and social planning within the framework of social change theory.

**M242. Counseling Families of Handicapped Children. (½ course)** (Same as Psychiatry M254.) Prerequisite: consent of instructor. Techniques and issues in counseling families through evaluation, feedback, and treatment. Social and psychological stresses on family unit, professional's reactions, community resources, and issues of genetic counseling, placement, and developmental crises.

**245A-245B-245C. Development of Social Work Practice Theory.** Prerequisite: Doctoral status and/or permission of the instructor. Critical analysis of social work practice theories in historical, social and scientific contexts, with attention to how theory becomes modified through application to practice.

**258. Critical Problems in Social Welfare.** Prerequisite: Doctoral status and/or permission of the instructor. Concerned with current problems in the field of social welfare. Specific topics to be discussed will vary depending upon the research and educational interests and needs of the class. May be repeated for credit.

**280. Social Welfare Research. (½ course)** Sources, nature and uses of social work theory and research-based knowledge and of broader social data relevant to social welfare activities. Critical analysis of major methods of developing scientific knowledge.

**281A-281B-281C. Advanced Social Welfare Research. (½ course each)** Credit to be given only at the completion of the sequence. Group research projects requiring intensive examination and analysis of a social problem area directed toward the development of research knowledge and techniques for social work practice. This course is offered on an In Progress basis, which requires students to complete the full three-quarters sequence, at the end of which time a grade is given for all quarters of work.

**285A-285B-285C. Research in Social Welfare.** Prerequisite: Doctoral status and/or permission of the instructor. Review of areas of research of concern to social workers with special attention to design, instrument construction, data collection, data processing, data reduction, analysis and interpretation. Designs studied will include survey, panel, experimental observation, and theory development research.

**286A-286B-286C. Survey of Research Methods.** Prerequisite: Doctoral status and/or permission of the instructor. Purpose to present basic concepts underlying research methods. Content includes theoretical and conceptual approaches to research problem formulation; research design, including experimental, comparative and survey; sampling; statistical methods; methods of observation and techniques of data analysis.

**290A-290B-290C. Seminar in Social Work. (½ course each)** A series of seminars dealing with trends in social work and social welfare, with the focus on current social problems affecting individuals, groups, and communities and new patterns of intervention based on recent demonstrations and research.

## Professional Courses

**401A-401B-401C. Practicum in Social Work.** Laboratory, 20 hours weekly. Educationally directed practicum conducted in selected health, welfare and educational facilities. The major objective is to provide opportunities for the student to test his theoretical knowledge and to acquire a disciplined practice foundation in his profession.

**402A-402B-402C. Advanced Practicum in Social Work. (1½ courses each)** Prerequisite: course 401A-401B-401C. Laboratory, 24 hours weekly. Practicum in social work is arranged for the student in keeping with his major field of study.

**501. Cooperative Program. (½ to 2 courses)** Prerequisites: approval of UCLA Graduate Adviser and Graduate Dean. Approval of host campus instructor, Department Chairman and Graduate Dean. The course is used to record the enrollment of UCLA students in courses taken under cooperative arrangements with neighboring institutions. To be graded S/U.

## Individual Study and Research

**596A. Special Study and Research for M.S.W. Degree Candidates. (½ to 2 courses)** Individual programming for selected students to permit pursuit of a subject in greater depth.

**596B. Special Study and Research for D.S.W. Degree Candidates. (½ to 2 courses)** Prerequisite: Doctoral status and/or permission of the instructor. S/U and letter grade.

**597A. Preparation for the Comprehensive Examination for the M.S.W. Degree. (½ to 2 courses)** Prerequisite: consent of the instructor.

**597B. Preparation for the Qualifying Examination for the D.S.W. Degree. (½ to 2 courses)** Prerequisite: Doctoral status and/or permission of the instructor.

**599. Dissertation Research in Social Welfare for D.S.W. Degree Candidates. (½ to 2 courses)** Prerequisite: Doctoral status and/or permission of the instructor.

# SOCIOLOGY

(Department Office, 264 Haines Hall)

Howard E. Freeman, Ph.D., *Professor of Sociology.*  
Harold Garfinkel, Ph.D., *Professor of Sociology.*  
Oscar Grusky, Ph.D., *Professor of Sociology.*  
Gene N. Levine, Ph.D., *Professor of Sociology.*  
Georges Sabagh, Ph.D., *Professor of Sociology.*  
Melvin Seeman, Ph.D., *Professor of Sociology (Chairman of the Department).*

Donald J. Treiman, Ph.D., *Professor of Sociology.*  
Ralph H. Turner, Ph.D., *Professor of Sociology.*  
Maurice Zeitlin, Ph.D., *Professor of Sociology.*  
Melville Dalton, Ph.D., *Emeritus Professor of Sociology.*  
Leo J. Kuper, Ph.D., *Emeritus Professor of Sociology.*  
Richard T. Morris, Ph.D., *Emeritus Professor of Sociology.*  
Rodolfo Alvarez, Ph.D., *Associate Professor of Sociology.*  
Kenneth D. Bailey, Ph.D., *Associate Professor of Sociology.*  
Phillip Bonacich, Ph.D., *Associate Professor of Sociology.*  
Robert M. Emerson, Ph.D., *Associate Professor of Sociology.*  
Lucie C. Hirata, Ph.D., *Associate Professor of Sociology.*  
John E. Horton, Ph.D., *Associate Professor of Sociology.*  
Ivan H. Light, Ph.D., *Associate Professor of Sociology.*  
David D. McFarland, Ph.D., *Associate Professor of Sociology.*  
Valerie K. Oppenheimer, Ph.D., *Associate Professor of Sociology.*  
Melvin Pollner, Ph.D., *Associate Professor of Sociology.*  
Jerome Rabow, Ph.D., *Associate Professor of Sociology.*  
Emanuel A. Schegloff, Ph.D., *Associate Professor of Sociology.*  
Samuel J. Surace, Ph.D., *Associate Professor of Sociology.*  
Warren D. TenHouten, Ph.D., *Associate Professor of Sociology.*  
Jeffrey Alexander, Ph.D., *Assistant Professor of Sociology.*  
Jack Katz, Ph.D., *Assistant Professor of Sociology.*  
David E. Lopez, Ph.D., *Assistant Professor of Sociology.*  
Linda B. Nilson, Ph.D., *Assistant Professor of Sociology.*  
William G. Roy, *Assistant Professor of Sociology.*  
Lynne G. Zucker, Ph.D., *Assistant Professor of Sociology.*  
\_\_\_\_\_, *Assistant Professor of Sociology.*

Ralph L. Beals, Ph.D., *Emeritus Professor of Anthropology and Sociology.*  
Judith Blake Davis, Ph.D., *Professor of Public Health and Sociology.*  
Michael S. Goldstein, Ph.D., *Assistant Professor of Public Health and Sociology.*  
C. Wayne Gordon, Ph.D., *Professor of Education and Sociology.*  
Roderick J. Harrison, *Acting Assistant Professor of Sociology.*  
Harry H. L. Kitano, Ph.D., *Professor of Social Welfare and Sociology.*  
David O'Shea, Ph.D., *Associate Professor of Education and Sociology.*  
Jeffrey Prager, *Acting Assistant Professor of Sociology.*  
Leo G. Reeder, Ph.D., *Professor of Public Health and Sociology.*  
Edwin S. Shneidman, Ph.D., *Professor of Thanatology, Medical Psychology, Psychology, and Sociology.*  
Gerald H. Shure, Ph.D., *Professor of Psychology and Sociology.*  
Julia C. Wrigley, *Assistant Professor of Education and Sociology.*

## Purposes of the Major in Sociology

The primary purpose of the major in Sociology is to contribute directly to the student's capacity for critical analysis and understanding of social phenomena. It is intended at the same time to serve as a preparation for those who plan a career in areas such as the following: high school or junior college teaching, social work, architecture and urban planning, law, public health, and government service. It also provides training for advanced graduate work in Sociology and Social Psychology.

## Preparation for the Major

An introductory course, Sociology 1 or 101, is required. Also required at the lower division level is a statistics course, Sociology 18. Alternatively, this requirement can be met with Mathematics 50A, Psychology 41, Economics 40, or Public Health 160A.

Also required at the lower division level are two courses from Group A: Mathematics 2, 4A; Philosophy 31; Economics 1, 2; or Linguistics 1; and two courses from Group B: Anthropology 5A, 5C, 22; History 1A, 1B, 1C; Philosophy 7, 21; Political Science 1; Psychology 10; or Geography 3. These courses may be used to satisfy the breadth requirements of the College of Letters and Science under Plan A only.

All courses required for the major in Sociology, including lower division and allied field courses, must be taken for a letter grade. A 2.0 grade-point average is required for the preparation and for the major.

## The Major

Ten upper division Sociology courses are required (40 units) and four upper division allied field courses (16 units). The allied fields are: Anthropology, Economics, Geography, History, Political Science and Psychology. Of the 10 Sociology courses, one must be a general theory course (Sociology 112 or 113). It is recommended that this theory course as well as the statistics course be completed before undertaking any other upper division work in Sociology.

The upper division courses are grouped into six Core Areas (109 through 169). Students must complete two courses in three different Core Areas; the remaining four Sociology courses are electives. (Note: Until additional courses are approved for Core Area VI, Sociology 160 may be applied to Core Area IV.) A Psychology course taken to fulfill the breadth requirement cannot

also be used for the allied field requirement. Only eight units of Sociology 199 are allowed. At least four of the Sociology courses must be taken while in residence in the College of Letters and Science on this campus.

Courses 109, 210A and 210B are recommended for students who intend to pursue graduate work in Sociology.

Students are encouraged to consult the Undergraduate Counselor in Haines Hall 254B whenever problems arise with regard to their academic programs. This office also provides counseling for students interested in obtaining career advice.

## The Honors Program

The Honors Program in Sociology provides an opportunity for outstanding students to undertake an independent year-long research project under the guidance of a member of the sociology faculty. The project culminates with an honors thesis or paper. The main advantage provided is the opportunity to work closely with individual faculty sponsors. Students intending to obtain advanced degrees will find this program especially useful. Students selected will enroll in Sociology 199HA, B, and C in their senior year. These courses will count toward the ten upper division course requirement for all Sociology majors. Upon completing the program students will graduate either with Departmental Honors or Highest Honors on their record. Qualifications: In order to qualify for the program the student must have a 3.5 overall grade point average, have completed the Sociology Preparation requirements and, in most cases, have completed the required theory course. Applications are available in the Sociology Undergraduate Counselor's office, 254B Haines Hall. Students should apply in the last quarter of their junior year.

## Requirements for the Master's Degree

For the M.A. degree in sociology, the student is required (1) to complete an acceptable program of a minimum of nine upper division and graduate level courses (the equivalent of 4 quarter units each) of which at least six courses must be graduate level (200 series) in sociology; (2) to pass two departmental examinations in statistics or complete courses 210A-210B with grades of C or better; (3) to complete one of the two-quarter methodology sequences in the series numbered 212-218; and (4) to satisfy the faculty that he has an adequate command of sociological theory, methodology, and substance has been demonstrated by submission of an acceptable dossier of written papers, as prescribed in departmental regulations. Those students who plan to seek the Ph.D. are advised to complete the foreign language requirement or its equivalent some time during their first year of graduate study. The M.A. degree is especially intended to qualify students who plan to become junior college teachers. Students are encouraged to plan their programs so as to fulfill the requirements for the junior college or secondary teaching credentials. Details on credential matters may be obtained from the Credentials Counselor in the School of Education.

## Requirements for the Ph.D. Degree

Candidates for the doctor's degree must conform to the general requirements set by the Graduate Division for the Ph.D. degree. It should be emphasized that the granting of the doctor's degree does not depend alone upon the satisfactory completion of a specified number of courses. The candidates must demonstrate competence as research scholars and ability to give instruction in the field.

In addition to the general requirements set by the Graduate Division, every prospective candidate for the doctor's degree must fulfill the following: 1. Pass a reading examination in French, German, Spanish, Italian, Russian, or other language approved by the Department, (a) Or, as an alternative, the student could complete course 5 of a language, or the equivalent, with a minimum grade of C, or five quarters of study of one language with a minimum grade of C in each course. (b) A second alternative is for students who might find it equally profitable for their research to study sources in an allied field such as history, political science, linguistics, psychology, economics, philosophy, or mathematics. The student would be permitted to substitute for the language requirement a set of three upper division or graduate courses offered at UCLA and passed with a grade of at least B. In order to do this, students must submit the proposed list of courses to their Ph.D. committee, or to the Executive Committee if no Ph.D. committee has been formed, with a justification for the set of courses presumably based on the potential contribution of these courses to their Ph.D. research. Only courses taken while the student is a graduate student will count toward fulfilling this requirement; and once approved, any substitution of courses for those originally approved would require full committee approval. 2. Pass two departmental examinations in statistics or complete courses 210A-210B with grades of C or better. 3. Complete two of the two-quarter methodology sequences in the series numbered 212-218. 4. Satisfy the faculty that an adequate command of sociological theory, methodology, and substance has been demonstrated by submission of an acceptable dossier of written papers, as prescribed in departmental regulations. 5. Pass written examinations in two special fields. 6. Pass a qualifying oral examination. 7. Prepare a satisfactory doctoral dissertation embodying the results of original research. 8. At the option of the certifying members of the candidate's doctoral committee, a final oral examination may be deemed necessary. Details of these requirements are described in a brochure which may be secured from the Graduate Affairs Office of the Department.

The dissertation will be in accordance with the requirements of

the Graduate Division. Before the dissertation is begun, the subject must be approved in writing by the student's graduate advisers.

### Lower Division Courses

**1. Introductory Sociology.** No credit will be given for this course to students who have completed Sociology 101. Survey of the characteristics of social life, the processes of social interaction, and the tools of sociological investigation. The Staff

**18. Interpretation of Quantitative Data.** Prerequisite: course 1 or 101, or may be taken concurrently. Satisfies the statistics requirement for the major in sociology. Reading graphs and tables; statistical description using indices of central tendency, dispersion, and association; simple linear regression. Probability; the binomial, normal, t and chi-square distributions and hypothesis testing based on them. Examples drawn from recent issues of American Sociological Review or other leading sociological journals. The Staff

### Upper Division Courses

Course 1, or the equivalent, and upper division standing (upper division standing may be waived by permission of the instructor) are prerequisite to all upper division courses in Sociology.

**101. Principles of Sociology.** Prerequisite: upper division standing. No credit will be given for this course if course 1 has been completed. For upper division students who have not taken Sociology 1. A more intensive introduction to sociology than is given in course 1. May not be counted as fulfilling the requirements of the field of concentration. The Staff

### CORE AREA I: THEORY AND METHOD

**109. Introduction to Sociological Research Methods.** A systematic treatment and semiquantitative skills of use in sociological research, e.g., classification, questionnaire and schedule design, content analysis, critical analysis of studies, conceptual analysis of case materials. Field work may be required for this course. Mr. Bailey, Mr. Harrison, Mr. TenHouten

**112. Development of Sociological Theory.** A comparative survey of basic concepts and theories in sociology, 1850-1920; the codification of analytic schemes; a critical analysis of trends in theory construction. Mr. Alexander, Mr. Bailey, Mr. Horton

**113. Contemporary Sociological Theory.** A critical examination of significant theoretical formulations, 1920 to the present; an analysis of the relation between theoretical development and current research emphasis. Mr. Garfinkel, Ms. Hirata, Mr. TenHouten

**114. Marxist Sociology.** The course will stress the fundamentals of Marxist theory and method and their historical development. Attention will be given throughout to continuing debates within Marxism and to differences between Marxism and other schools of sociological thought. This course does not meet the theory requirement for the major. Mr. Horton

**115. Experimentation and Laboratory Methodology in Sociology.** Prerequisites: course 18 or equivalent introductory statistics and introductory social psychology. This course provides opportunities for students to participate as observers, subjects, and experimenters in a variety of laboratory and simulations of social and political settings and to use a number of computer-supported techniques as aids in conducting, analyzing, and interpreting their experiences in these settings. Mr. Shure

**116. Introduction to Mathematical Sociology.** Prerequisite: Mathematics 2, 4A (a course whose content includes introductions to probability theory, matrix algebra, and differential and integral calculus), and Sociology 18 or equivalent. Mathematical treatments of several sociological phenomena, such as occupational mobility, population growth, organizational structure, and friendship patterns, each covered in some detail, including initial development and subsequent evaluation and modification, emphasizing both the deductive and computational aspects of mathematics. Mr. McFarland

### CORE AREA II: SOCIAL STRUCTURE AND CHANGE

**120. Social Change.** A study of patterns of social change, resistance to change, and change-producing agencies and processes. Mr. Alexander, Mr. Roy, Mr. Surace

**121. Organizations and Society.** Sociological analysis of organizations and their social environment. An introduction to basic theories, concepts, methods, and research on the behavior of organizations in society. Mr. Alvarez, Mr. Grusky, Mr. Surace

**122. Mass Communications.** Formal organization, functions, and development of the mass media; communications as a social process; cultural patterns; audience characteristics; communications and bureaucracy. Aspects of the American media are compared with other systems, e.g., Soviet, British, Arabic. Field work may be required for this course. Mr. Levine

**123. Social Stratification.** An analysis of American social structure in terms of evaluational differentiation. Topics to be considered include criteria for differentiation, bases for evaluation, types of stratification, the composition of strata and status systems, mobility, consequences of stratification and problems of methodology. Mr. Lopez, Mr. McFarland, Ms. Nilson

**124. Ethnic and Status Groups.** The characteristics of the "visible" ethnic groups, e.g., Japanese, Mexican and Negro; their organization, acculturation, and differentiation. The development, operation and effects of selective immigration and population mobility. The status of the chief minorities in the continental U.S., with comparative materials drawn from Jamaica, Hawaii, and other areas. Mr. Kitano, Mr. Prager

**125. Urban Sociology.** Urban and rural cultures, the characteristics of cities in Western civilization, with emphasis on the American metropolis. Mr. Light

**126. Social Demography.** Studies of past, present, and future trends in population growth. Sociological theories of causes and consequences of population growth and redistribution. Emphases on the correlates of fertility, mortality, and migration. Mr. Bailey, Ms. Oppenheimer, Mr. Sabagh

**128. Occupations and Professions.** Description and analysis of representative occupations and professions, with emphasis upon the contemporary United States. Mr. Light, Ms. Nilson, Ms. Oppenheimer

**129. White Racism.** Verbal and metaphorical stereotyping of blacks, whites and other subdominant and dominant groups; cross-cultural comparisons; impact of media; institutional racism, educational and economic; political mobilization of black and poor communities; the study of strategies for resisting white racism. The Staff

### CORE AREA III: COMPARATIVE SOCIETIES

**130. Social Processes in Africa.** A course in comparative sociology. A study of selected processes in African societies, primarily in the fields of urban sociology, social structure and social change, involving an interdisciplinary approach. The Staff

**131. Latin American Societies.** A descriptive survey of the major Latin American societies, emphasizing their historical backgrounds and their emergent characteristics, with special attention to the relations between rural and urban life. Mr. Lopez

**132. Population and Society in the Middle East.** Prerequisite: upper division standing and consent of the instructor. A survey of the Middle Eastern societies; their historic and environmental bases; the contemporary demographic and cultural situation. Mr. Sabagh

**133. Comparative Sociology of the Middle East.** Prerequisite: upper division standing and consent of the instructor. A review of the unity of Middle Eastern societies in Islam and their diversity exemplified by such nomadic peoples considered throughout. The Staff

**134. Comparative Social Institutions of East Asia.** Analysis of selected social institutions of China, Japan, and Korea. Emphasis will be on continuity and change in East Asian societies. Ms. Hirata

**136. Structure and Process of American Society.** Analysis of interrelationships among structures and processes in American society, with emphasis on patterns of differentiation, exchange, control, and belief formation. The question of boundary definition (both analytic and real) and the question of order will be considered throughout. Mr. Roy, Mr. Zeitlin

**137. Comparative Studies of Jewish Communities in the U.S. and Abroad.** The history, distribution, structure, and functioning of major Jewish communities is covered, with particular focus upon North America and Israel. Interrelationships and sources of conflict between Jews and Gentiles in Western countries are taken up. More generally, the economic and social integration of Diaspora Jewish communities is treated. Field work may be required for this course. Mr. Levine

### CORE AREA IV: INSTITUTIONS

**140. Political Sociology.** The contributions of sociology to the study of politics including the analysis of political aspects of social systems, the social context of action, and the social bases of power. Mr. Roy, Mr. Zeitlin

**141. Economy and Society.** The sociology of economic life with emphasis upon principal economic institutions of the United States. Mr. Light

**142. Sociology of the Family.** Theory and research dealing with the modern family, its structure and functions, including historical changes, variant family patterns, family as an institution, and the influence of the contemporary society on the family. Ms. Oppenheimer

**M143. Sociology of Education.** (Same as Education M108.) Studies of social processes and interaction patterns in educational organizations, the relationships of such organizations to aspects of society, social class and power, social relations within the school, formal and informal groups, school culture, roles of teachers, students, and administrators. Mr. Gordon, Mr. Rabow, Ms. Wrigley

**144A. Conversational Structures I.** An introduction to some of the structures which are employed in the organization of conversational interaction, such as turn-taking organization, the organization of repair, and some basic sequence structures with limited expansions. Mr. Schegloff

**144B. Conversational Structure II.** Prerequisite: course 144A. A consideration of some of the more expanded sequence structures, story structures, topical sequences, and the overall structural organization of single conversations. Mr. Schegloff

**145. Sociology of Deviant Behavior.** An examination of the leading sociological approaches to the study of deviation and a general survey of the major types of deviation in American society. Mr. Freeman, Mr. Horton, Mr. Surace

**146. Criminology.** Theories of the genesis of crime; factors in the organization of criminal behavior from the points of view of the person and group; criminal behavior systems. Mr. Rabow

**147. Control of Crime.** Theories of punishment; methods of dealing with convicts; social organization of police, courts, prisons, probation, and parole. Field work is a required feature of this course. Mr. Emerson, Mr. Rabow

**148. Normal Environments.** Structural interpretation of the concerted production, management, and alteration of perceived normal interpersonal environments. Field work is a required feature of this course. Mr. Garfinkel, Mr. Pollner

**149. A Study of Norms.** Properties of norms, of normatively governed conduct, of lay and professional methods for describing, producing, using, and validating norms in contrasting settings of socially organized activities; relevance of these properties for the programmatic problems of analytic sociology. Field work is a required feature of this course. Mr. Garfinkel, Mr. Pollner

### CORE AREA V: SOCIAL PSYCHOLOGY

**150. Collective Behavior.** Prerequisite: course 1 or equivalent, course 18 or equivalent, and upper division standing. Characteristics of crowds, mobs, publics, social movements, and revolutions. Their relation to social unrest and their role in developing and changing social organization. Mr. Prager, Mr. Seeman, Mr. Turner

**151. Culture and Personality.** Prerequisite: course 1 or equivalent, course 18 or equivalent, and upper division standing. Theories of the relation of variations in personality to culture and group life, in primitive and modern societies, and the influence of social role on behavior. Mr. Turner

**152. Group Processes.** Systematic study of the formation, structure, and functioning of groups; analysis of group processes and group products from a variety of theoretical viewpoints; implications of various research techniques. Mr. Bonacich, Mr. Rabow, Ms. Zucker

**153. Process and Socialization in the Family.** Prerequisite: course 1 or equivalent, course 18 or equivalent, and upper division standing. Examination of the processes of interaction, decision-making, role differentiation, conflict, integration, and socialization within the family and their interrelations with society. Mr. Turner

**154. Social Psychology: Sociological Approaches.** A survey of the contribution of sociologists to theory and research in social psychology including theories of social control; conformity and deviation; reference groups; and interaction process. Mr. Bonacich, Mr. Grusky, Mr. Rabow

**155. Intergroup Conflict and Prejudice.** A study of the causes and consequences of group conflict, with emphasis upon majority-minority relations, prejudice and discrimination. Special attention is given to alternative sociological and psychological theories of prejudice; the effects of minority status upon the individual; and the possibilities for attitude and behavior change. Mr. Seeman

**156. The Social Psychology of Encounter.** Prerequisite: upper division standing. The course will focus on the nature of encounter, the relationship of encounter to small group theory and findings, and the contrast of encounter to psychotherapy. Encountering both as a social movement and as an educational mechanism will be evaluated. An experiential component to the class may be required. Mr. Rabow

**157. Sociology of Mental Illness.** Sociological approaches to the definition, identification and treatment of the mentally ill. Distinguishing between the criminal and the insane. Worlds of the mentally ill. Insanity as a social phenomenon. Mr. Emerson, Mr. Goldstein, Mr. Pollner

**M158. Death and Suicide: Psychological and Sociological Aspects.** (Same as Psychology M163.) Junior required. This course is offered on both a pass/not pass and letter grade basis. The definition and taxonomy of death; the new permissiveness and taboos relating to death; the romanticization of death; the role of the individual in his own demise; the modes of death; development of ideas of deaths through the life span; ways in which ideas of death influence the conduct of lives; the impact of dying on the social structure surrounding the individual; preventive, interventive and postpositive practices in relation to death and suicide; partial death; megadeath; lethality; the psychological autopsy; the death of institutions and cultures. Mr. Shneidman

**159. The Sociology of Consciousness.** Prerequisite: course 18. The course will focus on alternative forms of consciousness. The works of selected intellectual figures dealing with the nature of reality, thought and knowledge will be considered. A second aspect of the course will be upon group context of awareness. Both experiential and cognitive aspects of knowledge, reality and thought will be examined via lectures, small group discussion and class exercises. Mr. Pollner, Mr. Rabow, Mr. TenHouten

### CORE AREA VI: SOCIAL POLICY AND APPLIED SOCIOLOGY

(Note: Until additional courses are approved in this Core Area, Sociology 160 may be applied to Core Area IV.)

**160. The Demography and Sociology of Women's Economic Roles.** Prerequisites: course 1, course 18, or Mathematics 50, or

Psychology 41, or Economics 140 or Public Health 160A or by consent of the instructor. A demographic and sociological analysis of the factors affecting women's economic roles in the world of work and the family. Topics to be considered include demographic determinants of women's socioeconomic roles, women's changing place in the occupational structure, men's and women's contribution to the socioeconomic status of the family, the socioeconomic position of women without men to support them, future trends, and social policy affecting women's status. Ms. Oppenheimer

#### Advanced Studies

**181-186. Undergraduate Seminars.** Prerequisites: upper division standing, major in Sociology, and permission of the instructor. These courses are listed under each of six core areas, with 181 in Core Area I, 182 in Core Area II, etc. The Staff

**199. Special Studies. (½ to 2 courses)** Prerequisite: senior standing, 3.0 grade-point average in major, course 1 and 18 or the accepted equivalent required, consent of instructor and department chairman. A course of independent study designed for graduate or senior undergraduate students who (a) desire a more advanced or specialized treatment of an area covered in the regular course list and who present that course as a prerequisite; or (b) desire work in an area of sociological analysis currently not covered by an upper division course. Only 8 units are allowed. See Undergraduate Counselor for course contact. The Staff

**199HA-199HB-199HC. Special Study for Honors.** Prerequisite: Admission to the Sociology Department Honors Program.

**199HA.** Design of a research project to serve as the student's honors thesis. A research proposal, detailed bibliography, and regular meetings with the sponsoring faculty member will be required;

**199HB.** Continuation of work initiated in 199HA. A series of progress reports will be prepared in consultation with the instructor;

**199HC.** Completion of the written report or honors thesis. The Staff

#### Graduate Courses

**201A-201B. Proseminar in Sociology.** Prerequisite: graduate status. A comprehensive survey of basic concepts and theories in the major fields of sociology. Designed primarily for graduate students in the first year of residence. Mr. Lopez

**210A-210B. Intermediate Quantitative Methods I-II.** Prerequisite: course 18 or equivalent. An intermediate level treatment of fundamentals of statistical theory and procedures: probability theory, basic distributions (normal, binomial,  $t$ , chi-square,  $F$ , etc.), their interrelations, and statistical procedures based on them; analysis of contingency tables; multiple and partial correlation and regression; analysis of variance and experimental designs; the general linear model; systems of equations. Additional special topics that can include: use of computers; loglinear models; factor analysis, discriminant function analysis; scaling and measurement; sampling design; nonparametric techniques and measures; matrix algebra if used in coverage of listed topics. The course is offered on an In Progress basis, which requires students to complete the full two-quarter sequence, at the end of which time a grade is given for each quarter. Mr. Bonacich, Mr. McFarland, Mr. TenHouten

**210C. Intermediate Quantitative Methods III.** Prerequisite: 210B. Not required for the M.A. or Ph.D. degrees in sociology. This course will cover additional and more advanced multivariate techniques of particular value to sociologists. Mr. Bonacich

**212A-212B. Marxist Methodology.** Prerequisite: course 112 or consent of instructor. Practice in the dialectical method of attaining scientific knowledge about society as a process and mode of production. A critical examination of methodological issues and techniques, and practical field researches. Mr. Horton

**213A-213B. Techniques of Demographic and Ecological Analysis.** Prerequisite: course 210A or equivalent. Procedures and techniques for the collection, evaluation, and analysis of demographic and ecological data; models of population and ecological structure and change; applications to the study of social structure and social change. Mr. Sabagh

**214A-214B. The Measurement of Sociological Variables.** Prerequisite: courses 210A-210B and consent of the instructor. Theory and technique of measurement in sociology and social psychology; construction, application and evaluation of measurement techniques, especially the forms of scaling. This course is offered on an In Progress basis, which requires students to complete the full two-quarter sequence, at the end of which time a grade is given for all quarters of work. Mr. TenHouten

**215A-215B. Experimental Sociology.** Prerequisite: course 210A or equivalent and consent of the instructor. A course designed to provide students with the basic fundamentals of the experimental method, particularly as it is used in social psychology. This course is offered on an In Progress basis, which requires students to complete the full two-quarter sequence, at the end of which time a grade is given for all quarters of work. Mr. Grusky, Mr. Rabow, Mr. Shure

**216A-216B. Survey Research Methods.** Course in methodology and techniques: formulation of research problem; study design; hypotheses; sampling; measurement; questionnaire and schedule construction; interviewing and data collection; processing and

tabulation; analysis and interpretation; presentation of findings; cross-national, replicative, panel and other complex survey designs. Students participate in survey research project. This course is offered on an In Progress basis, which requires students to complete the full two-quarter sequence, at the end of which time a grade is given for all quarters of work. Mr. Levine, Mr. Treiman

**217A-217B. Ethnographic Field Work.** Prerequisite: consent of the instructor. Theories and techniques of ethnographic field work. This course will consider the kinds of problems amenable to ethnographic approaches, methods and techniques for doing field work, and ethical problems involved in such research. This course is offered on an In Progress basis, which requires students to complete the full two-quarter sequence, at the end of which time a grade is given for all quarters of work. Mr. Emerson, Mr. Pollner

**218A-218B. Ethnomethodological Methods.** Prerequisite: consent of the instructor. Examination of techniques used in ethnomethodological research, practice in the critical evaluation of research, and directed experience in the conduct of an extended investigation employing ethnomethodological procedures. This course is offered on an In Progress basis, which requires students to complete the full two-quarter sequence, at the end of which time a grade is given for all quarters of work. Mr. Garfinkel

**219. Theory of Sociological Inquiry.** Prerequisite: course 210A and consent of the instructor. A general review of procedures followed by social scientists in attempts to achieve valid theoretical knowledge. Focuses on inductive inference and theory testing: control and randomization, experimental and nonexperimental research designs, association and causality, models, measurement theory, sampling theory. Mr. TenHouten

**220. Role Theory.** Prerequisite: graduate status and consent of the instructor. A review of theories and research dealing with social roles, with special emphasis on roles in social interaction and in formation of the social self. Mr. Turner

**224. Problems in Social Psychology.** Survey of theories and problems in social psychology with emphasis on the major sociological contributions to this area. Mr. Grusky, Mr. Rabow, Mr. Seeman

**225A-225B. Demographic Perspectives on the Relationship of Family and Economic Systems.** Prerequisite: course 210A-210B or consent of the instructor. An examination of the interrelationship of family and economic systems in societies at different levels of economic development, focusing particularly on the U.S. experience. Central to the course is: (1) an analysis of how demographic factors affect economic and family systems; (2) how these systems, and changes in them, affect demographic variables; and (3) how this two-way process influences the relationship of family and economic systems over time. The first quarter will be primarily devoted to lectures and readings. The second quarter carries students into individual research projects involving a term paper and class room reports of results. Ms. Oppenheimer

**226. Leadership and Comparative Social Structure.** A comparative analysis of leadership in different social structures with particular attention to the development, maintenance, and disintegration of leadership corps and cadres. Mr. Surace

**227. The Sociology of Knowledge.** Prerequisite: graduate status or consent of the instructor. A survey of theories and research concerning social determinants of systems of knowledge and the role of intellectual and artistic elites in Western societies. Mr. Horton

**230. Theories of Deviance.** An examination of various sociological approaches to the study of deviant behavior with emphasis on anomie theory as the major orientation today. Special attention given to the problems of defining deviance and the articulation of sociological and psychological levels of explanation. Mr. Emerson, Mr. Rabow, Mr. Surace

**234. Sociology of Community Organization.** Prerequisite: graduate status and consent of the instructor. A survey of recent and classical research and literature dealing with predominantly political institutions, the problem of order, and the organization of communal life in the village and the metropolis. The Staff

**235. Social Structure and Social Movements.** Prerequisite: graduate status or consent of the instructor. A survey of some social science theories bearing on the analysis of large scale social movements and upheavals. The causes, course and consequences of selected social movements, insurrections and revolutions will be examined. Mr. Surace

**236. Social Change in the Middle East.** An analysis of the sources, extent, and types of social change in the Middle East with an emphasis on the origin and consequences of industrialization and urbanization. Mr. Sabagh

**237. Social Stratification in the Middle East.** Modes of social differentiation in traditional Middle Eastern societies, localism and tribalism, the counter influence of processes leading to the recurrent emergence of societies of large scale and their distinctive structural characteristics. Mr. Sabagh

**238A-238B. Field Work in Minority Communities.** Prerequisite: graduate standing and consent of the instructor. This two-quarter sequence is designed to supply graduate students with the theoretical and methodological equipment necessary for studying disadvantaged minority communities. Special emphasis is given to the Black ghetto and the barrio. Nonstandard language forms (mainly Black English, and Chicano) are especially focused upon instrumentally. In the field students will gather empirical data that sheds light on the ways in which data of greater validity and practi-

cal utility might be collected among these groups. This course is offered on an In Progress basis, which requires students to complete the full two-quarter sequence, at the end of which time a grade is given for all quarters of work. Mr. Levine

**240. Mathematics of Population.** Prerequisites: introductions to matrices, calculus, and probability theory. Discrete and continuous deterministic and probabilistic models of the growth and composition of a one-sexed population classified by age, plus selected topics on more complicated population models. Mr. McFarland

**247. Neurosociology.** Prerequisite: graduate standing and consent of the instructor. Relations between aspects of social structure and higher cortical functions. Mr. TenHouten

**M249A. Sociocultural Aspects of Health and Illness.** (Same as Public Health M249A.) Prerequisite: Public Health 149 or graduate standing in sociology, anthropology or psychology, and consent of the instructor. The relationship between the sociological, cultural, and psychosocial factors in the etiology, occurrence, and distribution of morbidity and mortality. Emphasis is on life styles and other socioenvironmental factors associated with disease and mortality. Mr. Goldstein, Mr. Reeder

**M249B. Sociocultural Aspects of Health and Illness.** (Same as Public Health M249B.) Prerequisite: graduate standing in Social Sciences or Public Health and consent of instructor. A sociological examination of the concepts "health" and "illness" and role of various health professionals especially physicians. Professionalization and professional-client relationships within organization settings. Mr. Goldstein

**M249C. Sociocultural Aspects of Health and Illness.** (Same as Public Health M249C.) Prerequisite: graduate standing and consent of the instructor. Sociocultural factors in illness behavior. Emphasis on the processes affecting differential patterns of use of health services. Mr. Reeder

#### Seminars

**250. Methodological Problems.** Mr. Bailey, Mr. TenHouten

**251. Topics in the Problem of Social Order.** Mr. Garfinkel

**252. Criminology.** Mr. Rabow

**253. Quantitative Methods in Sociology.** Mr. Bailey, Mr. Bonacich, Mr. Freeman

**254A-254B. Sociology of Law.** Social control functions of law and legal institutions with particular attention to the contrast between law-ways of stateless and tribal societies and contemporary American legal processes and institutions, primarily those of criminal law. Mr. Emerson, Mr. Prager

**255A-255B. Systematic Sociological Theory.** Course 255A is prerequisite to 255B. Mr. Alexander

**256. Demography.** Mr. Bailey, Mr. Sabagh

**257. Sociology of the Arts.** Mr. Horton

**258. Sociology of Religion.** The Staff

**259. Social Structure and Economic Change: Historical and Comparative Perspectives.** Ms. Hirata, Mr. Surace, Mr. Zeitlin

**260. Industry and Society.** Mr. Light, Mr. Surace

**261. Ethnic Minorities.** Mr. Levine, Mr. Seeman

**262. Selected Problems in Urban Sociology.** Mr. Light

**263. Social Stratification.** Mr. Treiman

**264. Professions in the American Society.** Ms. Nilson, Ms. Oppenheimer

**265. Problems in Organization Theory.** Mr. Grusky, Ms. Zucker

**266. Selected Problems in the Analysis of Conversation.** Prerequisite: course 144A or consent of the instructor. Mr. Schegloff

**267. Selected Problems in Communication.** Mr. Pollner, Mr. Schegloff

**268. Historical and Interpretive Sociology.** Mr. Surace

**269. Collective Behavior.** Mr. Turner

**270. Selected Problems in Socialization.** Mr. Turner

**271. Ethnomethodology.** Mr. Garfinkel

**272. Topics in Political Sociology.** Mr. Roy, Mr. Surace, Mr. Zeitlin

**273. Attitudes and Social Structure.** Mr. Seeman

**274. Selected Problems in the Sociology of Africa.** Prerequisite: graduate standing and consent of the instructor. Selection of problems in the sociology of Africa from among the following fields: urbanization; racial and ethnic relations, national integration, and political change. The Staff

**275. Seminar in Comparative Social Structure: Developed Societies.** The comparison of social structures among developed societies, including the comparative analysis of the main institutional features, social class arrangements, social mobility characteristics, and the like. Comparisons will involve the U.S. and developed countries in Western Europe, Asia and Oceania. Mr. Treiman

**276. Selected Topics in the Sociology of East Asia.** Prerequisite: graduate standing and consent of the instructor. The semi-



nar will analyze selected problems in China, or in China and Japan comparatively. Possible topics include: 1. China's Great Proletarian Cultural Revolution; 2. Internal contradictions in Chinese society: male-female relations, the city and the countryside, minority nationalities, class struggle under socialism, etc.; 3. China and Japan: two models of development. Ms. Hirata

**277. Sociology of Science.** Mr. TenHouten

**279. Sociology of the Theatre.** Seminar on different movements in the theatre, or expressions of the Theatre (e.g., Theatre of the Absurd, Contemporary Experimental Theatre), with emphasis on the theatrical performance as it relates to the envisioning society, responds to, or reacts against, theatrical conventions, socializes the players to the performance, and creates its own social world. Mr. Horton

**280. Seminar in Evaluation Research.** Prerequisite: graduate standing. The seminar covers both the technical and political aspects of implementing evaluation research studies. The role of evaluation research in social policy development is considered as well as procedures for undertaking process and impact evaluations. Graded S/U. Mr. Freeman

**281. Selected Problems in Mathematical Sociology.** Prerequisite: Mathematics 2C or consent of the instructor. An exploration of some mathematical models of sociological processes. Possible topics include models of small groups, social mobility, kinship relations, organizations, social interaction. Mr. Bonacich, Mr. McFarland

**282. Organizations and the Professions.** The Staff

**284. Topics in Mental Health and Illness.** Prerequisite: course 157 or equivalent and graduate standing. Mr. Emerson, Mr. Grusky, Mr. Pollner

**291. Moral Solidarity in Communities.** Comparative analysis of social solidarity and the collapse of social solidarity in voluntary and traditional communities. Contrasts more and less solidary types with special reference to urban communities and developmental processes. Mr. Light

**292A-292B-292C. Research Development.** The Staff

**495. Supervised Teaching of Sociology.** Prerequisites: Teaching Assistant status in the Department of Sociology, or equivalent. A special course for teaching assistants. It is designed to deal with the problems and techniques of teaching introductory sociology. The Staff

### Individual Study and Research

**596. Directed Research and Study in Sociology.** (½ to 2 courses) The Staff

**597. Individual Study for Examinations.** Preparation for the dossier for the master's degree or the qualifying examination for the Ph.D. The Staff

**599. Research in Sociology for Ph.D. Degree Candidates.** (1 to 2 courses) The Staff

## SPANISH AND PORTUGUESE

(Department Office, 5303 Rolfe Hall)

Shirley L. Arora, Ph.D., *Professor of Spanish*  
 José R. Barcia, Lic. F. y L., *Professor of Spanish*  
 Rubén A. Benitez, Ph.D., *Professor of Spanish*  
 Claude L. Hulet, Ph.D., *Professor of Spanish and Portuguese*  
 Carroll B. Johnson, Ph.D., *Professor of Spanish (Chairman of the Department)*  
 C.P. Otero, Ph.D., *Professor of Spanish and Romance Linguistics*  
 Stanley L. Robe, Ph.D., *Professor of Spanish*  
 Julio Rodríguez-Puertolas, Ph.D., *Professor of Spanish*  
 John A. Crow, Ph.D., *Emeritus Professor of Spanish*  
 John E. Englekirk, Ph.D., *Emeritus Professor of Spanish*  
 Donald F. Fogelquist, Ph.D., *Emeritus Professor of Spanish*  
 Anibal Sánchez-Reulet, Ph.D., *Emeritus Professor of Spanish*  
 Marion A. Zeitlin, Ph.D., *Emeritus Professor of Spanish and Portuguese*  
 Gerardo Luzuriaga, Ph.D., *Associate Professor of Spanish*  
 Richard M. Reeve, Ph.D., *Associate Professor of Spanish*  
 Enrique Rodríguez-Cepeda, Ph.D., *Associate Professor of Spanish*  
 Paul C. Smith, Ph.D., *Associate Professor of Spanish*  
 Susan Plann, Ph.D., *Assistant Professor of Spanish*  
 A. Carlos Quicoli, Ph.D., *Assistant Professor of Portuguese and Romance Linguistics*  
 A. John Skirius, Ph.D., *Assistant Professor of Spanish*  
 Mariá L. de Lowther, M.A., *Assistant Professor of Spanish, Emeritus*

José M. Cruz-Salvadores, M.A., *Lecturer in Spanish*  
 E. Mayone Dias, Ph.D., *Lecturer in Spanish and Portuguese*  
 George L. Voyt, J.D., *Lecturer in Spanish*

The following courses are primarily designed to serve the department's three B.A. programs: the B.A. in Spanish (Plan A), the B.A. in Spanish and Linguistics (Plan B), and the B.A. in Portuguese, as well as to prepare students for its three graduate programs: the M.A. in Spanish, the M.A. in Lusio-Brazilian Languages and Literatures, and the Ph.D. in Hispanic Languages and Literatures. The department's courses are also functionally supportive of such

extradepartmental programs as the Teaching Credential in Spanish, the B.A. and M.A. programs in Latin American Studies, the M.A. program in Folklore and Mythology, and the M.A. and Ph.D. programs in Comparative Literature and Romance Linguistics and Literature.

## SPANISH

### Preparation for the Major

Courses 5, 25, M42, and M44, or their equivalents.

### The Major

#### The Major, Plan A (Language and Literature)

Linguistics 100 is prerequisite to Spanish 100 and 103. Spanish majors may take it Pass/Non Pass or for a letter grade. It is applicable to the Breadth Requirement (Plan A and Plan B) as a course in Social Sciences.

Fifteen upper division courses distributed as follows: nine required courses: 100, 103, 105 or 109, 115 or M118, 120A-120B, 121A-121B, and 127; six elective courses: one in Spanish literature, one in Spanish American literature, and four selected from other Department offerings not including 160A-160B-160C.

#### The Major, Plan B (Spanish and Linguistics)

In addition to the normal preparation for the major, Plan B requires completion of six quarters of work in one other foreign language or three quarters in each of two other languages. Portuguese is recommended.

The major consists of thirteen upper division courses distributed as follows: four required courses in Spanish: 100, 103, 105 or 109, 119; six required courses in Linguistics: 100, 103, 110, 120A, 120B, 140; three electives in Spanish.

### General College Regulation

No credit will be allowed for completing a less advanced course after satisfactory completion of a more advanced course in grammar and/or composition.

### Honors Program

To qualify for graduation with departmental honors, students must achieve a 3.0 overall grade-point average, a 3.50 grade-point average in the major, and have completed two of the three Senior Seminars, 170A, 170B, 170C.

### Requirement for Teaching Credentials

Consult the UCLA ANNOUNCEMENT OF THE GRADUATE SCHOOL OF EDUCATION.

### The Master's Degree in Spanish

*General Requirements.* See Master's Degrees. The Department favors the Comprehensive Examination Plan, but, with departmental approval, the Thesis Plan may be followed.

*Departmental Requirements — Comprehensive Examination Plan.* (1) Foreign Language Requirement: a reading knowledge of one other foreign language approved by the graduate adviser. Portuguese is acceptable. This requirement must be met not later than the same quarter in which the tenth course is taken. (2) Course Requirement: ten courses with a minimum of seven in the 200 series, of which one must be a seminar. With the approval of the graduate adviser, a maximum of two courses may be taken at the graduate level in closely related fields. (3) The Comprehensive Examination: two three-hour written examinations to be given the next-to-the-last week preceding the final examination period of the Fall, Winter, and Spring quarters. The M.A. consists of three fields: Linguistics, Spanish Literature, and Spanish-American Literature. The student chooses one as his major field, the other two becoming his minor fields. He is examined for three hours in the major and one-and-one-half hours in each minor. Reading lists which constitute the basis of the examinations will be available to the student. Only those students who pass these examinations with distinction (High Pass) will be automatically eligible to enter the Ph.D. program.

*Departmental Requirements — Thesis Plan.* (1) Guidance Committee: the preparation and examination of each candidate will be the responsibility of a guidance committee composed of three members of the Department. The chairman of the committee will be the instructor under whom the candidate proposes to write his thesis. The other two members will be appointed by the chairman of the Department after consultation with the candidate and the chairman of the committee. The committee members shall be appointed to represent three different fields of interest within the Department. No committee shall be appointed before a candidate has completed one full quarter of work in graduate standing, including no less than seven courses in the Department, of which at least one must be in the 200 series. (2) Foreign Language Requirement: the same as the Comprehensive Examination Plan. (3) Course Requirement: nine courses of which a minimum of six must be in the 200 series. With the approval of the guidance committee a maximum of two courses may be taken at the graduate level in closely related fields. (4) Thesis and Examination: the subject and general plan of investigation for the thesis must be approved by the Department and the instructor concerned before a guidance committee can be appointed. After completion of the thesis, the candidate must pass a three-hour oral examination testing his knowledge of the field of his thesis and his general competence. A reading list which will constitute the basis for part of this examination will be available to the student. Only those students who pass these examinations with

distinction (High Pass) will be automatically eligible to enter the Ph.D. program.

### Ph.D. Degree in Hispanic Languages and Literatures

*General Requirements.* See Doctoral Degrees.

*Admission to the Doctoral Program.* The UCLA M.A. in Spanish or Lusio-Brazilian Language and Literatures, or its equivalent, is prerequisite. Students who hold the M.A. from UCLA fall into one of three categories and are so notified upon receipt of the degree. The categories are: a) *Low Pass* (Terminal M.A.) — Students who pass with terminal M.A.'s are not eligible for admission into the Ph.D. program; b) *High Pass* — Students who pass the M.A. "with distinction" are automatically eligible for admission to the Ph.D. program, and may file Form I ("Notice of Intention to Proceed Toward the Doctoral Degree") and form their guidance committee immediately; c) *Middle Pass* — Students in this category may continue toward the Ph.D. on the following probationary basis: 1) Take three graduate courses with three different members of the Department; 2) Find a tenured professor who is willing to direct the dissertation; 3) File Form I which is considered by the Graduate Advisers Committee in consultation with the professors with whom the student has studied. The entire Department then votes to accept or reject the student. If accepted, the student will be advised to form his guidance committee. Students who hold the M.A. from other institutions will not be assigned to a guidance committee until their second quarter of studies in the Department, after complying with the provisions set forth in the "Middle Pass" category. In some cases they may be required to pass the UCLA M.A. examination, normally in the second or third quarter of residence.

*Foreign Language Requirement.* In addition to Spanish and Portuguese, the candidate must have a reading knowledge of at least two other foreign languages to be chosen with the approval of the guidance committee in the light of the candidate's field of specialization. The candidate must pass the test in one of these two languages not later than in the third quarter of graduate studies and the other not later than in the seventh quarter.

*Fields of Specialization.* The Department recognizes the following fields of specialization, from which one major and four minor fields shall be selected: (a) Medieval and Renaissance Literature; (b) The Golden Age; (c) 18th and 19th Century Spanish Literature; (d) 20th Century Spanish Literature; (e) Colonial and 19th Century Spanish American Literature; (f) 20th Century Spanish American Literature; (g) Portuguese Literature; (h) Brazilian Literature; (i) Spanish and Portuguese Philology and Linguistics; (j) Spanish and Lusio-Brazilian Folklore. The field in which the candidate intends to present a dissertation will be designated as his major field. The minimum course requirement for the major field will be determined by the candidate's guidance committee. The minimum course requirement for a minor field is one graduate course (series 200-249) followed by a corresponding seminar (series 251-286) or the equivalent.

*Course Requirement.* Three upper division courses in Portuguese or Brazilian literature and a minimum, after the B.A., of 18 graduate courses and seminars, including Spanish M200, M201, M203A, and one additional graduate course in one of the above fields of specialization not chosen as a major or minor. Those students who choose Philology and Linguistics as their major field must also include Portuguese M203B, and have a specific knowledge of Classical and Vulgar Latin and of Old French or Old Italian.

*Qualifying Examinations.* The qualifying examinations will be given during the Fall, Winter, and Spring quarters and will consist of: (a) a three-hour written examination in the candidate's major field; (b) four one-hour written examinations in the minor fields; and (c) a two-hour oral examination. The qualifying examinations are normally taken no later than nine quarters after the B.A. and six quarters after receiving the M.A. At the time of the qualifying examinations, or subsequently, the committee may specify whether or not an oral examination is required after the acceptance of the dissertation in its final form.

*The Dissertation.* The dissertation may be on any subject within the general area of Spanish and Portuguese languages and literatures. If five years have elapsed since any of the requirements have been taken, these requirements must be reevaluated by the Department.

### Lower Division Courses

Lower Division Spanish at UCLA offers two methods of instruction in Spanish 1, 2, and 3, in order to appeal to two types of learners. The *Communicating in Spanish* method is for the student who must understand structure before he can assimilate language and the *Lengua y Cultura* method is for the student who accepts language more instinctively. Neither method is better. Each caters to different learning preferences.

*Communicating in Spanish* presents an intellectual approach to the learning of language by transferring the basic knowledge of English in order to facilitate the learning of Spanish. The text guides the student through a course of programmed instruction. The student is expected to complete the lessons outside of the classroom. The role of the instructor is then to reinforce new material and to aid in the practice of spoken Spanish.

*Lengua y Cultura* relies on an intuitive aptitude for the learning of language. This is Spanish taught entirely in Spanish — the student simultaneously learns to speak, listen, read, and write. New material

is presented in class by the instructor, who continuously builds on the existing framework. There is an emphasis on feeling the language and in the development of native-like responses. The text presents an integrated approach to language and culture. Odd-numbered sections of Spanish 1, 2, and 3 are for *Communicating in Spanish*. Even-numbered sections are for *Lengua y Cultura*.

**1. Elementary Spanish.** Meets five hours weekly; laboratory one hour. This course corresponds to the first year of high school Spanish. Not available for academic credit for those students who have completed more than one year of high school Spanish or the equivalent. The student will, however, be credited with four units toward their minimum progress requirement. The Staff

**1G. Reading Course for Graduate Students. (No credit)** Meets five hours weekly. The Staff

**2. Elementary Spanish.** Meets five hours weekly; laboratory one hour. Prerequisite: course 1 or one year of high school Spanish, or equivalent. Not available for academic credit for those students who have completed two years of high school Spanish or the equivalent. The students will, however, be credited with four units toward their minimum progress requirement. The Staff

**2G. Reading Course for Graduate Students. (No credit)** Meets five hours weekly. Prerequisite: course 1G or equivalent. The Staff

**3. Elementary Spanish.** Meets five hours weekly; laboratory one hour. Prerequisite: course 2, or two years of high school Spanish, or equivalent. The Staff

**4. Intermediate Spanish.** Meets five hours weekly; laboratory one hour. Prerequisite: course 3, or three years of high school Spanish, or equivalent. The Staff

**5. Intermediate Spanish.** Meets five hours weekly; laboratory one hour. Prerequisite: course 4 or four years of high school Spanish, or equivalent. The Staff

**8A-8B. Spanish Conversation. (½ course each)** Beginning each quarter. Meets three hours weekly. Prerequisite: course 8A is open to those who have completed course 4, or equivalent. Students who have completed course 3 with grade B or better may be admitted. The Staff

**9A-9B. Advanced Conversation. (½ course each)** Beginning each quarter. Meets three hours weekly. Prerequisite: course 8B or equivalent. The Staff

**25. Advanced Spanish.** Prerequisite: course 5 or equivalent. Concentration on the building of vocabulary and the attainment of a high degree of comprehension in preparation for the courses in literature. The Staff

**M42. Civilization of Spain and Portugal.** (Same as Portuguese M42.) Highlights of the Civilization of Spain and Portugal, with emphasis on their artistic, economic, social and historical development as background for upper division courses. Conducted in English. Required for the major. Mr. Cruz—Salvadores

**M44. Civilization of Spanish America and Brazil.** (Same as Portuguese M44.) Highlights of the Civilization of Spanish America and Brazil with emphasis on their artistic, economic, social and historical development as background for upper division courses. Conducted in English. Required for the major. Mr. Reeve, Mr. Skirius

#### Upper Division Courses

The basic prerequisite to all upper division courses except 160A-160B-160C is Spanish 25 or the equivalent.

**100. Phonology and Pronunciation.** Prerequisite: Linguistics 100. Meets four hours weekly, including one hour laboratory. Analysis of the phonetic and phonemic systems of Spanish with special emphasis on the correlation between the phonemic and graphemic systems. Interrelation of phonological and morphological phenomena. Exercises and drills directed toward individual needs. Required for major (Plan A and Plan B). Ms. Plann, Mr. Robe

**103. Syntax.** Prerequisite: Linguistics 100. A study of sentence types and their variations. The lexicon and its features. Interrelation of syntactic, semantic and morphological phenomena. Required for major (Plan A and Plan B). Mr. Otero, Ms. Plann

**105. Intermediate Composition.** Prerequisite: course 103. Paraphrasing, summarizing, and study of idiomatic expressions. The Staff

**109. Advanced Composition.** Prerequisite: course 103. Correction of student's original compositions and analysis of basic stylistic elements. The Staff

**115. Applied Linguistics.** Prerequisite: course 103. Meets three hours weekly. Survey of the major linguistic problems faced by the teacher of Spanish. Ms. Plann

**M118. History of the Portuguese and Spanish Languages.** Prerequisite: Spanish 100. (Same as Portuguese M118.) Meets four hours weekly. Major features of the development of the Portuguese and Spanish languages from the origins in Vulgar Latin to modern times. Contributions of other languages to the formation of Portuguese and Spanish. Mr. Dias, Mr. Otero, Mr. Smith

**119. Literary Analysis.** (Formerly numbered 147.) An introduction to the study of literary devices, figures of speech and the differentiation of literary genres. Strongly recommended as preparation for the required courses in literature. Required for major (Plan B). The Staff

**120A-120B. Survey of Spanish Literature.** Prerequisite: M42 for Spanish majors. Beginning each quarter. An introduction to the principal authors, works and movements of Spanish literature. Required for the major (Plan A). Mr. Johnson, Mr. Rodríguez—Cepeda

**121A-121B. Survey of Spanish American Literature.** Prerequisite: Spanish M44 for Spanish majors. Beginning each quarter. An introduction to the principal authors, works, and movements of Spanish American literature. Required for the major (Plan A). Mrs. Arora, Mr. Luzuriaga, Mr. Reeve

**122. Medieval and Renaissance Literature.** The main genres of Medieval and Renaissance Spanish literature with emphasis on at least one representative work for each. Recommended preparation 120A. Mr. Rodríguez—Puértolas

**124. The Golden Age.** The main genres of the Golden Age with emphasis on at least one representative work for each. Recommended preparation 120A. Mr. Johnson, Mr. Rodríguez—Cepeda

**127. Don Quijote.** Directed reading and intensive study of the novel. Required for the major (Plan A). Recommended preparation 120A. Mr. Johnson, Mr. Rodríguez—Cepeda

**128. Neoclassicism and Romanticism in Spain.** The main manifestations of thought and literature from 1700 to 1850 with emphasis on representative works. Recommended preparation 120B. Mr. Benítez

**130. Spanish Literature from 1850 to 1898.** The development of post-Romantic literature with emphasis on representative works. Recommended preparation 120B. Mr. Smith

**132A. Spanish Literature in the 20th Century: Poetry and Drama.** Spanish poetry and theater since 1898 with emphasis on several representative works for each genre. Recommended preparation 120B. Mr. Barcia, Mr. Benítez

**132B. Spanish Literature in the 20th Century: Fiction and the Essay.** Spanish prose genres since 1898 with emphasis on representative novels, short stories and essays. Recommended preparation 120B. Mr. Barcia, Mr. Benítez

**137. The Literature of Colonial Spanish America.** A study of the most important authors and movements in the various regions of Spanish America to 1810. Recommended preparation 121A. Mrs. Arora

**139. 19th Century Spanish American Literature.** A detailed study of the important writers and movements from 1810 to 1860. Recommended preparation 121A. Mr. Luzuriaga, Mr. Reeve, Mr. Skirius

**141. Mexican Literature.** A study of the major Mexican literary contributions to the development of a national culture. Recommended preparation, 121A-121B. Mr. Reeve, Mr. Skirius

**142A. Spanish American Literature in the 20th Century: Poetry and Drama.** A detailed study of the important lyrical and dramatic movements in Spanish America since 1880. Recommended preparation 121B. Mr. Luzuriaga, Mr. Skirius

**142B. Spanish American Literature in the 20th Century: Fiction and the Essay.** Spanish American prose genres since 1880 with representative novels, short stories and essays. Recommended preparation 121B. Mr. Reeve, Mr. Skirius

**M149. Folk Literature of the Hispanic World.** (Same as Folklore M149.) A study of the history and present dissemination of the principal forms of folk literature throughout the Hispanic countries. Mrs. Arora, Mr. Robe

**151. Folk Song in Spain and Spanish America. (½ course)** Meets three hours weekly. A study of the origins and development of Spanish folk music and the different types of folk songs and folk poetry peculiar to the various regions of Spain and Spanish America. The Staff

**160A-160B-160C. Hispanic Literatures in Translation.** (Formerly numbered 150A-150B.) Class readings and analysis of selected works in translation. Classroom discussion, papers and examinations will be in English. Meets three times weekly.

**160A. Spain and Portugal.** Mr. Johnson

**160B. Spanish America and Brazil.** Mr. Hulet

**160C. Don Quijote in English Translation.** Class reading and analysis of Cervantes: *Don Quijote*. Mr. Johnson

**170A. Senior Seminar: Topics in Spanish Literature.** Prerequisite: Spanish major, senior standing, 3.50 G.P.A. in the major. Directed research on topics within the general area of Spanish literature. Two senior seminars are required for Departmental Honors. Given Fall Quarter only. Mr. Barcia, Mr. Benítez, Mr. Rodríguez—Puértolas

**170B. Senior Seminar: Topics in Spanish American Literature.** Prerequisite: Spanish major, senior standing, 3.50 G.P.A. in the major. Directed research on topics within the general area of Spanish American literature. Two senior seminars are required for Departmental Honors. Given Winter Quarter only. Mrs. Arora, Mr. Luzuriaga, Mr. Reeve

**170C. Senior Seminar: Topics in Hispanic Linguistics.** Prerequisite: Spanish major, senior standing, 3.50 G.P.A. in the major. Directed research on topics within the general area of Hispanic linguistics. Two senior seminars are required for Departmental Honors. Given Spring Quarter only. Mr. Otero, Mr. Robe, Mr. Smith

**199. Special Studies. (½ to 1 course)** Prerequisite: consent of adviser and instructor. A maximum of two full courses may count toward the major. The Staff

#### Graduate Courses

**M200. Bibliography.** (Same as Portuguese M200.) Meets three hours weekly. Identification and analysis of bibliographical sources for work by doctoral candidates in their fields of specialization. Mr. Benítez, Mr. Rodríguez—Cepeda

**M201. Literary Criticism.** (Same as Portuguese M201.) Meets three hours weekly. Definition and discussion of methods of literary criticism. Mr. Benítez, Mr. Otero

**M203A-203B. The Development of the Portuguese and Spanish Languages.** (Same as Portuguese M203A-203B.) Prerequisites: course M118, 100 or consent of instructor. Intensive study of the historical development of the Portuguese and Spanish languages from their origin in spoken Latin. Mr. Otero, Mr. Smith

**M204A-204B. Transformational Grammar.** Meets three hours weekly. Prerequisite: course 204A is prerequisite to 204B, or consent of the instructor. A transformational approach to the Spanish language, with some consideration of the bearing of syntax, semiology, and phonology on style, metaphor and meter. Mr. Otero

**206. Linguistics.** Meets three hours weekly. Prerequisite: course 115 or equivalent. A study of theoretical synchronic linguistics as applied to Spanish. Mr. Otero, Ms. Plann

**209. Dialectology.** Meets three hours weekly. Prerequisite: course 100 or 115 or equivalent. The major dialect areas of Peninsular and American Spanish, with the distinguishing features of each. Influence and contribution of cultural and historical features, including indigenous languages, to their formation. Mr. Robe

**222. Medieval and Renaissance Poetry.** Meets three hours weekly. Readings and lectures on Spanish poetry from the beginnings to 1550. Mr. Rodríguez—Puértolas

**223. Medieval and Renaissance Prose.** Meets three hours weekly. Readings and lectures on Spanish prose from the beginnings to 1550. Mr. Rodríguez—Puértolas

**224. The Poetry of the Golden Age.** Meets three hours weekly. Readings and lectures on the main poets and poetic movements of the Golden Age. Mr. Rodríguez—Cepeda

**225. The Drama of the Golden Age.** Meets three hours weekly. Readings and lectures on the "comedia." Mr. Rodríguez—Cepeda

**226. Prose of the Golden Age.** Meets three hours weekly. Readings and lectures on fictional, didactic, religious, and historical writings. Mr. Johnson

**227. Cervantes.** Meets three hours weekly. Readings and lectures on the works of Cervantes. Mr. Johnson

**230. Neoclassicism and Romanticism.** Meets three hours weekly. Readings and lectures on representative works of the period. Mr. Benítez

**231. The 19th Century Novel.** Meets three hours weekly. Readings and lectures on the novel of the 19th century. Mr. Benítez, Mr. Smith

**232. The Generation of 1898.** Meets three hours weekly. Readings and lectures on representative works of the generation. Mr. Barcia

**233. Contemporary Spanish Drama.** Meets three hours weekly. Readings and lectures on the theater since 1898. Mr. Barcia

**234. Contemporary Spanish Poetry.** Meets three hours weekly. Readings and lectures on poetry since 1898. Mr. Barcia

**235. Contemporary Spanish Prose.** Meets three hours weekly. Readings and lectures on the novel, the short story, and the essay since 1898. Mr. Barcia

**237. Chroniclers of the Americas.** Meets three hours weekly. Readings and lectures on the "Cronistas de Indias." Mrs. Arora, Mr. Robe

**239. Neoclassic and Romantic Prose and Poetry in Spanish America.** Meets three hours weekly. Intensive study of Neoclassicism and Romanticism in Spanish America. The Staff

**240. The Modernist Movement.** Meets three hours weekly. An intensive study of the important writers of this movement during the period 1880-1916. Mr. Luzuriaga

**243. Contemporary Spanish American Poetry.** Meets three hours weekly. Intensive study of the important poets of Spanish America since 1916. The Staff

**244. Contemporary Spanish American Novel and Short Story.** Meets three hours weekly. A study of the important novelists and short story writers from Modernism to the present. Mr. Reeve

NOTE: For key to symbols, see page 51

**245. Contemporary Spanish American Essay.** Meets three hours weekly. Intensive study of the important essayists of the 20th century. Mr. Skirius

**246. Contemporary Spanish American Theater.** Meets three hours weekly. A study of the principal dramatists and theater movements in the twentieth century. Mr. Luzuriaga

**M249. Hispanic Folk Literature.** (Same as Folklore M249 and Portuguese M249.) Meets three hours weekly. An intensive study of folk literature as represented in a) ballad and poetry; b) narrative and drama; c) speech. Mrs. Arora, Mr. Robe

### Seminars

**M251. Studies in Galegan-Portuguese and Old Spanish.** (Formerly numbered 253 and same as Portuguese M251.) Prerequisite: course M203A-203B. Problems related to the historical development of Galegan-Portuguese and Old Spanish. Mr. Otero

**256A-256B. Studies in Linguistics and Dialectology.**

256A. Studies in Linguistics. Prerequisite: course 206. Mr. Otero

256B. Studies in Dialectology. Prerequisite: course 209. Mr. Robe

Meets two hours weekly. Problems in the analysis and description of the contemporary language. Directed toward independent research.

**262A-262B-262C. Studies in Medieval and Renaissance Literature.**

262A. Lyric Poetry. Meets two hours weekly. Prerequisite: course 222. Mr. Rodríguez-Puertolas

262B. Epic Poetry. Meets two hours weekly. Prerequisite: course 222. Mr. Rodríguez-Puertolas

262C. Prose Writers. Meets two hours weekly. Prerequisite: course 223. Mr. Rodríguez-Puertolas

**264A-264D. Studies in the Golden Age.**

264A. Poetry. Meets two hours weekly. Prerequisite: course 224. Mr. Johnson, Mr. Rodríguez-Cepeda

264B. The "Comedia." Meets two hours weekly. Prerequisite: course 225. Mr. Johnson, Mr. Rodríguez-Cepeda

264C. Studies in Prose of the Golden Age. Meets two hours weekly. Prerequisite: course 226. Mr. Johnson, Mr. Rodríguez-Cepeda

264D. Don Quijote. Meets two hours weekly. Prerequisite: course 227. Mr. Johnson, Mr. Rodríguez-Cepeda

**270A-270B. Studies in 18th and 19th Century Spanish Literature.**

270A. Poetry, Drama and Prose. Meets two hours weekly. Prerequisite: course 230. Mr. Benitez

270B. The Novel Meets two hours weekly. Prerequisite: course 231. Mr. Benitez, Mr. Smith

**272A-272D. Studies in 20th Century Spanish Literature.**

272A. The Novel. Meets two hours weekly. Prerequisite: course 232 or 235. Mr. Barcia

272B. The Theater. Meets two hours weekly. Prerequisite: course 233. Mr. Barcia

272C. Poetry. Meets two hours weekly. Prerequisite: course 234. Mr. Barcia

272D. The Essay. Meets two hours weekly. Prerequisite: course 235. Mr. Barcia

**277. Studies in Colonial Spanish American Literature.** Meets two hours weekly. Prerequisite: course 237. Mrs. Arora

**278. Studies in 19th Century Spanish American Literature.** Meets two hours weekly. Prerequisite: course 239. The Staff

**280A-280D. Studies in Contemporary Spanish American Literature.**

280A. Modernist Poetry. Meets two hours weekly. Prerequisite: course 240. Mr. Luzuriaga

280B. Post-Modernist Poetry. Meets two hours weekly. Prerequisite: course 243. The Staff

280C. Novel and Short Story. Meets two hours weekly. Prerequisite: course 244. Mr. Reeve

280D. The Essay. Meets two hours weekly. Prerequisite: course 245. Mr. Skirius

**M286A-286B-286C. Studies in Hispanic Folk Literature.** (Same as Folklore M286A-286B-286C.)

286A. The Romancero. Meets two hours weekly. Prerequisite: course 222. Mr. Rodríguez-Puertolas

286B. Narrative and Drama. Meets two hours weekly. Prerequisite: course 239 or M249. Mrs. Arora, Mr. Robe

286C. Ballad, Poetry and Speech. Meets two hours weekly. Prerequisite: course M249. Mrs. Arora, Mr. Robe

### Professional Courses

**310. The Teaching of Spanish in the Elementary School.** Meets three hours weekly. Prerequisite: course 115. The Staff

**370. The Teaching of Spanish in the Secondary School.** Meets three times weekly. Prerequisite: course 115. The Staff

**372. The Language Laboratory.** (½ course) Meets three hours weekly. Preparation of materials. Equipment, techniques, and problems related to the operation of the language laboratory. Mr. Otero

### Individual Study and Research

**596. Directed Individual Study or Research.** (1 to 2 courses) Prerequisite: approval of graduate adviser and of Chairman of the Department. Study or research in areas or on subjects not offered as regular courses. Work evaluated on letter grade basis. No more than one full course may count toward the M.A. course requirement. Limited to a maximum of two full courses in any graduate program. The Staff (F,W,Sp)

**597. Preparation for Graduate Examinations.** (1 to 2 courses) Prerequisite: official acceptance of candidacy by the department, and approval of graduate adviser. Individual preparation for the comprehensive examination for the M.A. degree or the qualifying examinations for the Ph.D. degree. Graded satisfactory/unsatisfactory. May be taken only once for each degree examination and only in the quarter that comprehensive or qualifying examinations are to be taken. The Staff (F,W,Sp)

**598. Research for M.A. Thesis.** (1 to 2 courses) Prerequisite: consent of the guidance committee. Research in preparation of the master's thesis. Graded satisfactory/unsatisfactory. The Staff (F,W,Sp)

**599. Research for Ph.D. Dissertation.** (1 to 2 courses) Prerequisite: restricted to those who have passed the qualifying examinations for the doctor's degree. Research for and preparation of the Ph.D. dissertation. Graded satisfactory/unsatisfactory. The Staff (F,W,Sp)

## PORTUGUESE

### Preparation for the Major

Courses 3, 25, M42 and M44, or their equivalent.

### The Major in Portuguese

Thirteen upper division courses distributed as follows: Seven required courses: 100, 103, M18, 120A, 120B, 121A, 121B. The remaining six courses may consist of six electives in Portuguese, or four electives in Portuguese plus two courses supportive of the student's program and approved by the department in history, philosophy, linguistics, or another language or literature.

*General College Regulation.* No credit will be allowed for completing a less advanced course after satisfactory completion of a more advanced course in grammar and/or composition.

*Requirement for Teaching Credentials.* Consult the UCLA ANNOUNCEMENT OF GRADUATE SCHOOL OF EDUCATION.

### The Master's Degree in Luso-Brazilian Language and Literatures

*General Requirements.* See the Graduate Division. The Department favors the Comprehensive Examination Plan, but, with departmental approval, the Thesis Plan may be followed. See Thesis and Comprehensive Examination.

### Departmental Requirements — Comprehensive Examination Plan.

(1) Foreign Language Requirement: a reading knowledge of one other foreign language approved by the graduate adviser. Spanish is acceptable. This requirement must be met at least one quarter before the awarding of the degree. (2) Course Requirements: Nine upper division and graduate level courses of which a minimum of six will be graduate courses in the 200 series, including one seminar; two graduate courses in closely related fields may be taken with the approval of the graduate adviser; a maximum of three upper division courses, excluding those required or elective courses in the preparation of the major, may be taken; (3) The examination will be divided into three major parts. In the first, the student will be expected to show a general knowledge of the history and structure of the Portuguese language. In the second and third parts, the student will be expected to show a thorough acquaintance with the authors, works, and movements of both Portuguese and Brazilian literature. Reading lists which will constitute the basis for the second and third examinations will be available to the student. Only those students who pass these examinations with distinction will be encouraged to proceed to the candidacy for the Ph.D.

*Departmental Requirements — Thesis Plan.* (1) Guidance Committee: the preparation and examination of each candidate will be the responsibility of a guidance committee composed of three members of the Department. The chairman of the committee will be the instructor under whom the candidate proposes to write his thesis.

The other two members will be appointed by the chairman of the Department after consultation with the candidate and the chairman of the committee. The committee members shall be appointed to represent three different fields of interest within the Department. No such committee shall be appointed before a candidate has completed one full quarter of work in graduate standing, including no less than two courses in the Department, of which at least one must be in the 200 series. (2) Foreign Language Requirement: the same as for the Comprehensive Examination Plan. (3) Course Requirements: same as for the Comprehensive Examination Plan, except that the student will be required to enroll in Portuguese 598, Research on Master's Thesis, which will count as one of the nine required courses. (4) Thesis and Examination: the subject and general plan of investigation for the thesis must be approved by the Department and the instructor concerned before a guidance committee can be appointed. After completion of the thesis, the candidate must pass a three-hour oral examination testing his knowledge of the field of his thesis and his general competence. A reading list which will constitute the basis for part of this examination will be available to the student. Only those students who pass these examinations with distinction will be encouraged to proceed to candidacy for the Ph.D.

*Ph.D. Degree in Hispanic Languages and Literatures.*

*General Requirements.* See the Graduate Division.

### Lower Division Courses

**1. Elementary Portuguese.** Meets five hours weekly; laboratory one hour. The Staff

**2. Elementary Portuguese.** Meets five hours weekly; laboratory one hour. Prerequisite: course 1 or equivalent. The Staff

**3. Intermediate Portuguese.** Meets five hours weekly; laboratory one hour. Prerequisite: course 2 or equivalent. The Staff

**8A-8B. Portuguese Conversation.** (½ course each) Meets three discussion hours weekly. Prerequisite: open to students who have completed Portuguese 3 with Grade B or better. The Staff

**25. Advanced Portuguese.** Meets four hours weekly. Prerequisite: course 3 or equivalent. The Staff

**M42. Civilization of Spain and Portugal.** (Same as Spanish M42.) Highlights of the Civilization of Spain and Portugal, with emphasis on their artistic, economic, social and historical development as background for upper division courses. Conducted in English. Required for the major. Mr. Cruz-Salvadores

**M44. Civilization of Spanish America and Brazil.** (Same as Spanish M44.) Highlights of the Civilization of Spanish America and Brazil with emphasis on their artistic, economic, social and historical development as background for upper division courses. Conducted in English. Required for the major. Mr. Reeve, Mr. Skirius

### Upper Division Courses

**100. Phonology and Pronunciation.** Meets four hours weekly, including one hour in laboratory. Analysis of the phonetic and phonemic systems of Portuguese with special emphasis on the correlation between the phonemic and graphic systems. Exercises and drills directed toward individual needs. Mr. Dias, Mr. Quicoli

**101A. Advanced Reading and Conversation.** Meets three hours weekly. Reading and discussion of writings by modern Brazilian and Portuguese authors. Mr. Hulet

**101B. Advanced Composition and Style.** Meets three hours weekly. Correction of student's composition and analysis of basic stylistic elements. Mr. Hulet

**102A-102B. Intensive Portuguese.** Prerequisite: advanced foreign language experience (other than Portuguese) or consent of the instructor. An intensive course stressing both speaking and reading skills designed to cover the equivalent of four quarters of the traditional pattern, to meet the peculiar needs of advanced (upper division and graduate) students who are specializing primarily in foreign languages, linguistics, comparative or romance literature. The Staff

**103. Syntax.** Meets four hours weekly. A review of the patterns of the Portuguese language: the verb system, syntax of preposition, word pattern and word distribution. Mr. Dias, Mr. Quicoli

**M118. History of the Portuguese and Spanish Languages.** (Same as Spanish M118.) Meets four hours weekly. Prerequisite: Portuguese 100. Major features of the development of the Portuguese and Spanish languages from their origins in Vulgar Latin to modern times. Contributions of other languages to the formation of Portuguese and Spanish. Mr. Dias, Mr. Otero, Mr. Smith

**120A. Survey of Portuguese Literature.** Meets four hours weekly. First half of an introduction to the principal movements, authors, and works of Portuguese Literature. Mr. Dias

**120B. Survey of Portuguese Literature.** Meets four hours weekly. Second half of an introduction to the principal movements, authors, and works of Portuguese Literature. Mr. Dias

**121A. Survey of Brazilian Literature.** Meets four hours weekly. First half of an introduction to the principal movements, authors and works of Brazilian Literature. Mr. Hulet

**121B. Survey of Brazilian Literature.** Meets four hours weekly. Second half of an introduction to the principal movements, authors, and works of Brazilian Literature. Mr. Hulet

**124. Medieval Portuguese Literature.** The main genres of Medieval Portuguese and Galician literature with emphasis on at least one representative work for each. Mr. Dias

**126. Renaissance and Baroque Portuguese Literature.** The main genres of Renaissance and Baroque literature with emphasis on at least one representative work for each. Mr. Dias

**127. Colonial Brazilian Literature.** A study of the most important authors and literary currents to 1830. Mr. Hulet

**128. 18th and 19th Century Portuguese Literature.** The main manifestations of thought and literature from 1700 to 1900 with emphasis on representative works. Mr. Dias

**129. Romanticism in Brazil.** A study of representative trends and authors. Mr. Hulet

**135. Naturalism, Realism and Parnasianism in Brazil.** A study of representative trends and authors. Mr. Hulet

**136. Contemporary Portuguese Literature.** A study of representative trends and authors. Mr. Dias

**137. Contemporary Brazilian Literature.** A study of representative trends and authors. Mr. Hulet

**199. Special Studies. (½ to 1 course)** Prerequisite: consent of adviser and instructor. A maximum of two full courses may count toward the major. The Staff

### Graduate Courses

**M200. Bibliography.** (Same as Spanish M200.) Meets three hours weekly. Identification and analysis of bibliographical sources for work by doctoral candidates in their fields of specialization. Mr. Benitez, Mr. Rodriguez-Cepeda

**M201. Literary Criticism.** (Same as Spanish M201.) Meets three hours weekly. Definition and discussion of methods of literary criticism. Mr. Benitez, Mr. Otero

**M203A-203B. The Development of the Portuguese and Spanish Languages.** (Same as Spanish M203A-203B.) Prerequisite: course 100 and 118 or consent of instructor. Intensive study of the historical development of the Portuguese and Spanish languages from their origin in spoken Latin. Mr. Otero

**204A-204B. Transformational Grammar.** Prerequisite: consent of instructor; course 204A or consent of instructor is prerequisite to 204B. A transformational approach to the Portuguese language, focussed especially on the syntactic component and its relations with other aspects of grammar. The Staff

**206. Portuguese Linguistics.** Lecture, three hours. Prerequisite: Portuguese 115 or equivalent or consent of instructor. A study of theoretical synchronic linguistics of Portuguese.

**242A-242B-242C. Special Topics in Portuguese Literature.**

242A. Medieval and Renaissance Literature. Meets two hours weekly. Prerequisite: consent of instructor.

242B. 18th and 19th Century Literature. Meets two hours weekly. Prerequisite: consent of instructor.

242C. 20th Century Literature. Meets two hours weekly. Prerequisite: consent of instructor.

**243A-243B-243C. Special Topics in Brazilian Literature.**

243A. Colonial Literature. Meets two hours weekly. Prerequisite: consent of instructor.

243B. 19th Century Literature. Meets two hours weekly. Prerequisite: consent of instructor.

243C. 20th Century Literature. Meets two hours weekly. Prerequisite: consent of instructor.

**M249. Hispanic Folk Literature.** (Same as Folklore and Spanish M249.) Meets three hours weekly. An intensive study of folk literature. Mrs. Arora, Mr. Robe

**M251. Studies in Galegan-Portuguese and Old Spanish.** (Same as Spanish M251.) Prerequisite: course M203A-203B. Problems related to the historical development of Galegan-Portuguese and old Spanish. Mr. Otero

**252A-252D. Special Studies in Portuguese Literature.**

252A. The Novel. Meets two hours weekly. Prerequisite: consent of instructor.

252B. The Poetry. Meets two hours weekly. Prerequisite: consent of instructor.

252C. The Theater. Meets two hours weekly. Prerequisite: consent of instructor.

252D. The Short Story and Essay. Meets two hours weekly. Prerequisite: consent of instructor.

**253A-253D. Special Studies in Brazilian Literature.**

253A. The Novel. Meets two hours weekly. Prerequisite: consent of instructor.

253B. The Poetry. Meets two hours weekly. Prerequisite: consent of instructor.

253C. The Theater. Meets two hours weekly. Prerequisite: consent of instructor.

253D. The Short Story and Essay. Meets two hours weekly. Prerequisite: consent of instructor.

**370. The Teaching of Portuguese in the Secondary School.** For future teachers in this field. Mr. Hulet

### Individual Study and Research

**596. Directed Individual Study or Research. (1 to 2 courses)** Prerequisite: approval of graduate adviser and of Chairman of the Department. Study or research in areas or on subjects not offered as regular courses. Work evaluated on letter grade basis. No more than two full courses may count toward the M.A. course requirement. Limited to a maximum of three full courses in any graduate program. The Staff

**597. Preparation for Graduate Examination. (1 to 2 courses)** Prerequisite: official acceptance of candidacy by the department, and approval of graduate adviser. Individual preparation for the comprehensive examination for the M.A. degree. Graded satisfactory/unsatisfactory. May be taken only once for each degree examination and only in the quarter that comprehensive or qualifying examinations are to be taken. The Staff

**598. Research for M.A. Thesis. (1 to 2 courses)** Prerequisite: consent of the guidance committee. Research in preparation of the master's thesis. Graded satisfactory/unsatisfactory. The Staff

**599. Research on Dissertation. (½ to 2 courses)** Research for and preparation of the doctoral dissertation. Restricted to those who have passed the Qualifying Examinations for the doctor's degree. Graded S/U. The Staff

## SPEECH

(Department Office, 232 Royce Hall)

Donald Erwin Hargis, Ph.D., *Professor of Communication Studies*

Waldo Woodson Phelps, Ph.D., *Professor of Speech*

Harrison Manly Karr, Ph.D., *Emeritus Professor of Speech*

Charles Wyatt Lomas, Ph.D., *Emeritus Professor of Communication Studies*

Daniel Vandraegen, Ph.D., *Emeritus Professor of Speech*

Ralph Richardson, Ph.D., *Associate Professor of Speech*

Paul Irwin Rosenthal, Ph.D., *Associate Professor of Communication Studies (Chairman of the Department)*

Eugenie Bernstein, Ph.D., *Lecturer in Speech*

Marde S. Gregory, *Lecturer in Speech*

Harry Howell, III, Ph.D., *Lecturer in Speech*

The Department of Speech is in the process of being phased out and is no longer offering degree programs. The courses listed below are offered by the faculty as a service to the general instructional program of the University.

### Lower Division Courses

**1. Principles of Oral Communication.** Prerequisite: Subject A. Theory and practice of informal public speaking, including selection of content, organization of ideas, language and delivery; practice in extemporaneous and manuscript speaking; training in critical analysis through reading and listening to contemporary speeches. The Staff

**2. Public Speaking and Discussion.** Prerequisite: course 1. A continuation of course 1, with special emphasis on group discussions, panels, symposia, debates, and formal public speaking. Critical analysis of speeches in both contemporary and historical settings. The Staff

### Upper Division Courses

**101. Introduction to Public Address.** Analysis of rhetorical principles. Application to informative and persuasive speaking, to problem-solving discussion, and to the criticism of contemporary speeches. Open to upper division students who do not have credit for Speech 1 and 2. May not be counted as part of upper division major. The Staff

**103. Phonetics of English.** A study of the physical production and acoustic characteristics of the sounds of American English. Mr. Hargis

**107. Principles of Argumentation.** Analysis of propositions, tests of evidence, briefing. Study of hindrances to clear thinking, ambiguity of terms, and prejudices. The critical analysis of selected argumentative speeches. Mr. Howell

**108. The Deliberative Process.** The nature and function of deliberative speaking in public meetings and parliamentary bodies. Rules of parliamentary speaking. Parliamentary debate on public issues. Critical analyses of selected speeches. The Staff

**109. Principles of Audience Analysis.** Theory of audience analysis and adaptation. Preparation and delivery of the occasional speech. Mr. Phelps

**112. Oral Interpretation of Literature.** A study of the literary, aesthetic, and oral bases for the analysis of communication of (112A.) prose and (112B.) poetry. Mr. Hargis

**113. Readers Theater.** The concepts and practices of the oral interpretation of non-dramatic literature within the framework of the readers theater. Lectures, readings, reports, and performance practice. Mr. Hargis

**137A-137B. American Public Address.** Critical study of speeches by leading American orators. Relationships of speakers to issues and social movements of their day.

137A. Colonial period to 1865; 137B. 1865-1930.

Mr. Richardson

**138. Contemporary American Public Address.** Critical study of American oratory from 1930 to the present with emphasis upon movements and issues such as the Depression, World War II, Civil Rights, and the Cold War, etc. Selected foreign speakers are studied insofar as they affect American issues. Mr. Phelps

**144. Speech and Community Action.** Consent of the instructor required. An intensive laboratory-based, observation-oriented study of speech and communication practices of action groups, protest groups, and public officials involved with the metropolitan Los Angeles urban crises. Mr. Richardson

**170. Rhetoric of Winston Churchill.** An intensive study of the speeches of Winston Churchill during the wilderness years the 30's and during the wartime years. The background and the impact of these speeches also are examined. Mr. Phelps

**172. Rhetoric of Harry S. Truman.** An intensive study of the major speeches of President Harry S. Truman. The background and the impact of these speeches are examined in relation to the social and political context of the Truman years.

**175. The Speeches of Abraham Lincoln.** Students will be introduced to the full span of Lincoln's speaking career. His methods of preparation, the influence of associates, his style, his delivery, and lastly, his effect upon the nation will be studied. Mr. Richardson

**190A-190B. Forensics. (½ course each)** Prerequisite: consent of the instructor. May be repeated once for credit. The Staff

**191. Analysis and Briefing. (½ course)** Intensive study of selected political or social issues; preparation of bibliography; analysis and evaluation of issues and arguments. May be repeated once for credit. The Staff

**197. Proseminar in Rhetoric: The Rhetoric of Harry Truman.** Prerequisite: consent of instructor. An intensive study of the rhetoric of Harry Truman with major emphasis on the 1948 presidential campaign. Tapes of major campaign speeches and of the Whistle Stops will be played and analyzed. Public opinion and impact data will be presented and discussed. Selected speeches of Dewey will be included. Students will write a term paper and take a final examination. Mr. Phelps

**199. Special Studies. (½ to 1 course)** Prerequisite: senior standing and consent of instructor. The Staff

### Graduate Courses

**237. Modern Rhetorical Theory; 1850 to the Present.**

Mr. Phelps, Mrs. Rich

### Individual Study and Research

**596. Directed Individual Study or Research. (½ to 1 course)**

The Staff

**597. Preparation for the Comprehensive Examination for the Master's Degree or for the Qualifying Examination for the Ph.D. (½ to 1 course)**

The Staff

**599. Research for and Preparation of the Doctoral Dissertation. (½ to 2 courses)**

The Staff

### Professional Course in Methods

**370. The Teaching of Speech in the Secondary School.** Required of candidates for the general secondary credential with the major or minor in speech. Mr. Phelps

**490. Exposition for College Teaching.** The nature of oral communication, its theory and application; preparation and delivery of information; observation and critical evaluation of oral communication experiences. Closed circuit television for various communication projects. Mr. Phelps

**495. Teaching Rhetoric in Colleges and Universities.** Study of problems and methodologies associated with teaching rhetorical communication. Includes observation of selected classroom situations. Mr. Richardson

## STATISTICS

Studies in statistics and related areas are possible in various academic departments. Detailed information may be found in the announcements of the individual departments listed below.

**Anthropology**

Course in statistical methods.

**Architecture and Urban Planning**

Quantitative methods in planning.

**Biomathematics**

Introductory and advanced courses in Biomathematics including stochastic modeling in biology. M.S. and Ph.D. degrees.

**Dentistry**

Elementary statistics course.

**Economics**

Upper division and graduate offerings in econometrics.

**Education**

Graduate offerings in experimental design and in measurement.

**Engineering**

Upper division and graduate offerings in statistics and probability.

**Geography**

Quantitative methods in statistics.

**Management**

Master of Science and Ph.D. degree programs with specialization in business statistics offered by the Quantitative Methods Division.

**Mathematics**

Probability and statistics available as a field in the Ph.D. program in mathematics and the applied mathematics program.

**Pharmacology**

Bioassay.

**Political Science**

Upper division course in quantitative methods.

**Psychology**

Course work in statistics, factor analysis, scaling.

**Public Health**

Introductory and advanced courses in biostatistics. A Master of Science and Ph.D. degree in Biostatistics are given by the Biostatistics Division. An M.P.H. and Dr. P.H. with concentration in Biostatistics are given by the School of Public Health.

**Social Welfare**

Survey research statistics.

**Sociology**

Offerings in statistics, measurement, demography.

Dan F. McLaughlin, M.A., *Associate Professor of Theater Arts.*  
William H. Menger, M.A., *Associate Professor of Theater Arts.*  
Carl R. Mueller, Ph.D., *Associate Professor of Theater Arts.*  
Ruth E. Schwartz, Ph.D., *Associate Professor of Theater Arts.*  
Howard Suber, Ph.D., *Associate Professor of Theater Arts.*  
William D. Ward, M.F.A., *Associate Professor of Theater Arts.*  
Theodore Apstein, Ph.D., *Adjunct Associate Professor of Theater Arts.*  
Gary A. Gardner, Ph.D., *Assistant Professor of Theater Arts.*  
Stephen D. Mamber, Ph.D., *Assistant Professor of Theater Arts.*  
Margaret L. Wilbur, M.F.A., *Assistant Professor of Theater Arts.*  
— *Assistant Professor of Theater Arts.*

Raymond S. Bevitt, Ph.D., *Lecturer in Theater Arts.*  
John D. Boehm, M.A., *Lecturer in Theater Arts.*  
Robert Bookman, J.D., *Lecturer in Theater Arts.*  
Edgar L. Brokaw, B.A., *Lecturer in Theater Arts.*  
Shirley M. Clarke, A.A., *Lecturer in Theater Arts.*  
Gordon Davidson, M.A., *Lecturer in Theater Arts.*  
Lenore DeKoven, B.A., *Lecturer in Theater Arts.*  
Anthony DeLongis, B.A., *Lecturer in Theater Arts.*  
Teshome H. Gabriel, M.A., *Lecturer in Theater Arts.*  
Hugh M. Grauel, M.A., *Lecturer in Theater Arts.*  
H. Peter Guber, LL.M., *Lecturer in Theater Arts.*  
John Ingle, M.A., *Lecturer in Theater Arts.*  
Robert E. Lee, D.Litt., *Lecturer in Theater Arts.*  
Mark McCarty, M.A., *Lecturer in Theater Arts.*  
Joanne T. McMaster, M.F.A., *Lecturer in Theater Arts.*  
Sylvia E. Moss, B.A., *Lecturer in Theater Arts.*  
Thomas J. Orth, M.F.A., *Lecturer in Theater Arts.*  
Jorge R. Preloran, B.A., *Lecturer in Theater Arts.*  
Beverly J. Robinson, M.A., *Lecturer in Theater Arts.*  
Robert Rosen, M.A., *Lecturer in Theater Arts.*  
Delia N. Salvi, Ph.D., *Lecturer in Theater Arts.*  
Robert Trachinger, *Lecturer in Theater Arts.*  
Lyne S. Trimble, M.S., *Lecturer in Theater Arts.*  
Frank A. Valert, *Lecturer in Theater Arts.*  
George Van Buren, *Lecturer in Theater Arts.*  
Karen A. VanHoy, M.Ed., *Lecturer in Theater Arts.*  
Charles Vernon, *Lecturer in Theater Arts.*  
Richard Walter, M.A., *Lecturer in Theater Arts.*  
William T. Wheatley, Ph.D., *Lecturer in Theater Arts.*

The Department of Theater Arts bases its work in theater, motion pictures, and television on a solid foundation in the liberal arts. The purpose of the curriculum is to develop in its students a scholarly, creative and professional approach to the theater arts. The aim of the Department is to train graduates who will eventually make original contributions in the field of their work.

The student majoring in theater arts must complete the requirements of the College of Fine Arts and the requirements under one of the two majors: theater, motion picture/television.

**Preparation for the Major**

*Theater.* Courses 5A-5B-5C, 10, 20 and English 90.

*Motion Picture/Television.* Students electing to specialize in motion picture/television for their B.A. degrees should complete the general University and College Requirements before entering the program.

**The Major**

*Theater.* Courses 130A, 140A, 141A, 142A, 143A, 160A, 170, 172 (repeated four times), two units chosen from 122, 144A, 146B, 149A, 174, 190A or 190B; and 24 units of approved upper division Theater Arts electives, to bring the total to 60 upper division units. Through certain required courses listed above, all students during each quarter of residence are responsible for completing specific production assignments related to production activity of the Theater curriculum.

*Motion Picture/Television.* Admission to this major is not automatic. Applicants may not apply until just prior to achieving full status as a Junior in the University. They must obtain departmental permission by 1) filing a letter of intention; 2) giving evidence of creative or critical ability when requested; 3) and providing additional material as determined by the department.

No student in Motion Picture/Television may begin the major, consisting of 60 upper division units, before the Junior year, and during their Junior and Senior years they must take 10B, 134, 179A (double course), and one of the following television courses: 180B, 184A, 184B, 184C, 185, plus 2 courses selected from 106A, 106B, 106C, 106D, 106E, 110A and 110B, and one upper division course chosen from the history, theory, and/or criticism course listings in Theater Arts. It is recommended that the majority of these required courses be completed during the Junior year.

In addition to the required courses, students must take a minimum of 28 units of upper division Motion Picture/Television electives which may include advanced classes in the fields of filmmaking, writing, animation, television production, news and documentary, and critical studies. Students must consult with the Department undergraduate counselor to plan a program. Admission to advanced classes frequently requires consent of the instructor or senior standing. The student should be mindful of the exigencies inherent in filmmaking, and be prepared to meet the additional demands of time and costs.

NOTE: Students are required to perform assignments on each other's projects. In addition, the Department of Theater Arts reserves the right to hold for its own purposes, examples of any

work done in classes and to retain for distribution such examples as may be selected.

**Teaching Credentials**

Students may earn credentials for teaching theater arts, English and other subjects in California elementary and secondary schools. Some majors are more advantageous than others for professional preparation. Completion of the Teacher Credential Program in the Teacher Education Laboratory is required. Consult with the Graduate School of Education, 201 Moore Hall, for information.

**Admission to Graduate Status**

Most areas in the Department of Theater Arts accept students into the Graduate Program in the Fall Quarter only. Consult the Department for further information.

In addition to meeting the general requirements of the Graduate Division, the student will usually be expected to have completed his or her bachelor's degree in theater arts or its equivalent. Students whose theater arts preparation is deficient, as determined by the appropriate admissions committee, will be required to take work additional to the degree program to make up such deficiencies.

The applicant who has done his or her preparatory work elsewhere must provide the Department with the results of certain diagnostic tests and letters of reference. Further information should be obtained from the Student Affairs Office of the Department at least eight months prior to the beginning of the quarter in which the student plans to enroll.

A student pursuing a M.A. degree in Motion Picture/Television may, at the option of the Critical Studies Committee, be required to demonstrate competence in a foreign language if necessary to support the research in the student's area of specialization.

**Requirements for the Master of Arts Degree**

In planning a course of study, the student will place his or her emphasis on theater, motion pictures or television.

*Theater.* The Theater Program follows the Thesis Plan. This program requires the completion of a minimum of nine and one-half courses (38 units) in at least one year (three quarters) of intensive study and laboratory exercises and research leading to the completion of a written thesis in the history, aesthetics, criticism or techniques of theater. The student in Theater is required to take an active part in the production program of the Department as partial fulfillment of the degree requirements. The required courses are 200, 245A-245B, and 272A-272B-272C (a two-unit, in-progress course with grade and units awarded only upon completion of 272C in the third quarter). After being advised, the student will select six courses, including one from each of the following two groups: Group I: 201, 205A or 205B; Group II: 213, 240, 241, 290A or 290B. A handbook of regulations for the M.A. in Theater may be obtained from the Student Affairs Office of the Department.

*Motion Picture/Television.* The Motion Picture/Television Program follows the Comprehensive Plan. The general requirements are: (1) Completion of a minimum of nine courses, five of which must be 200 level courses in film and/or television history, theory, criticism, and in addition one course in research methodology, all of which must be completed with grades of "B" or better; the specific courses are selected in consultation with an adviser; (2) Passing of a two-part Comprehensive Examination, the first part of which consists of a written test of a broad body of knowledge and the second part of which consists of a scholarly essay of some fifty pages dealing with an area of specialization chosen by the student in consultation with the faculty; (3) Demonstration, by submission of the student's personally created film, television program, or script, of his or her knowledge of the basic skills of production and scriptwriting.

Students who have completed the B.A. program in Motion Picture/Television at UCLA will already have demonstrated their basic knowledge of production, scriptwriting, and history. Students entering the program from elsewhere may submit for consideration film and television work done at other universities — confirmed by the instructors originally involved as the student's personal work — as evidence of their history background and their production and scriptwriting competence. Or, alternatively, students may be required to take such courses as will fulfill these requirements, though these courses will not count towards the minimum of nine courses required for the M.A. degree. The student's program will be determined in consultation with an adviser and is subject to the approval of the Critical Studies Committee. The Comprehensive Examination will reflect course work, individual interests, and a broad knowledge of film and/or television. Students will be provided with guidelines and a suggested bibliography and filmography by the Department. Part I of the Comprehensive Examination, testing the student's breadth of knowledge, may be taken no earlier than the end of the third quarter of residence or its equivalent and no later than the end of the fifth quarter of residence or its equivalent.

Concurrently with their efforts to obtain a broad understanding of film and television studies, students will develop an area of specialization requiring intensive individual work. Part II of the Comprehensive Examination consists of the writing of a scholarly essay of some fifty pages under faculty guidance on this specialized topic. The essay must be completed and approved by the Critical Studies Committee no later than two quarters after the student has completed Part I of the Comprehensive Examination. Upon completion of both Parts I and II of the Comprehensive

**SUBJECT A: ENGLISH COMPOSITION**

(Department Office, 306 Royce Hall)

Everett L. Jones, M.A., *Director of Freshman English.*

**Subject A.**

Every student who does not satisfy the Subject A requirement by presenting transfer credit or by passing an acceptable examination is required to take, in the quarter immediately following his admission to the University, the course in Subject A. The Staff

**THEATER ARTS**

(Department Office, 2310 Macgowan Hall)

John R. Cauble, M.A., *Professor of Theater Arts.*  
Robert F. Corrigan, M.A., *Professor of Theater Arts.*  
Donald B. Crabs, M.A., *Professor of Theater Arts.*  
Arthur B. Friedman, Ph.D., *Professor of Theater Arts.*  
Henry Goodman, Ph.D., *Professor of Theater Arts.*  
Richard C. Hawkins, M.A., *Professor of Theater Arts.*  
Melvyn B. Helstien, Ph.D., *Professor of Theater Arts.*  
John H. Jones, M.A., *Professor of Theater Arts.*  
Walter K. Kingson, Ed.D., *Professor of Theater Arts.*  
Frank D. LaTourette, M.Litt., *Professor of Theater Arts.*  
Darell E. Ross, M.F.A., *Professor of Theater Arts.*  
Louis C. Stoumen, B.A., *Professor of Theater Arts.*  
Abe V. Wollock, Ph.D., *Professor of Theater Arts.*  
John W. Young, M.A., *Professor of Theater Arts (Chairman of the Department).*  
Walden P. Boyle, Ph.D., *Emeritus Professor of Theater Arts.*  
Michael Gordon, M.F.A., *Emeritus Professor of Theater Arts.*  
Hugh J. Gray, Ph.D., *Emeritus Professor of Theater Arts.*  
Edward Hearn, M.A., *Emeritus Professor of Theater Arts.*  
William W. Melnitz, Ph.D., *Emeritus Professor of Theater Arts.*  
Samuel Selden, Litt.D., *Emeritus Professor of Theater Arts.*  
William B. Adams, M.A., *Associate Professor of Theater Arts.*  
William Frogg, B.J., *Associate Professor of Theater Arts.*  
Robert H. Hethmon, Ph.D., *Associate Professor of Theater Arts.*

Examination, the Critical Studies Committee will render one of the following judgments: 1. Pass with Distinction; 2. Pass; 3. Fail. If one or more sections of Part I of the examination are not passed, the student may repeat such parts one more time in the following quarter. The maximum residency allowed for this program is seven quarters.

#### Master of Fine Arts Degree

The Department offers a two-year program leading towards an M.F.A. degree in either theater, motion pictures or television. (See below for requirements by subject area.) In addition to formal courses the student must complete certain projects in writing, direction, acting, design or technical direction.

For admission to the program a student must have completed the UCLA undergraduate program in theater arts in the area of his proposed specialization, or its equivalent. Candidates for the M.F.A. programs in theater or motion picture/television must provide a portfolio of creative work. Students with a portfolio may be admitted to the program with deficiencies when an undergraduate degree has been completed in some field other than theater arts, or when an undergraduate degree in theater arts has had different requirements. In such cases the student can anticipate extra time to remove the deficiencies.

**Theater.** The Department of Theater Arts follows the Comprehensive Plan for the M.F.A. in theater. The M.F.A. projects may be in writing, direction, scenic design, costume design, acting, technical direction, puppetry or management, and a candidate must arrange with his adviser a program of a minimum of 18 courses which involve him in the successful completion of required work and his project series.

**Motion Picture/Television.** The M.F.A. in motion pictures or television can be taken in either filmmaking, television production or writing. There is a minimum residence of two years. A program of a minimum of 18 courses must be arranged with a graduate adviser.

1. **Filmmaking.** The base of this program is the B.A. in motion picture production at UCLA or its equivalent (see undergraduate programs above).

2. **Television Production.** The base of this program is the B.A. in television at UCLA or its equivalent (see undergraduate programs above).

Students entering motion picture/television graduate studies from other disciplines or other institutions may be required to take make-up courses in deficient areas. Additional courses will be determined in consultation with a graduate adviser. The end projects at the graduate level will be one or more major productions, demonstrating originality and the creative ability of the student as well as his professional mastery of the medium.

3. **Writing.** The base of this program is successful completion of an undergraduate program in writing (see UCLA requirements under description of undergraduate curriculum). The thesis project will be a feature length script.

In addition to the filmmaking, television production, and writing specializations, there are other programs available to the student seeking the M.F.A. degree. Entrance into these programs requires faculty approval.

#### Doctor of Philosophy Degree in Theater Arts

The program of study for the Ph.D. in Theater Arts has two specializations: studies of history, theory and criticism in Theater and studies of history, theory and criticism in Motion Picture/Television. One foreign language is required and other languages are demanded if needed for the individual's studies and dissertation subject.

A limited number of students will be accepted each year for the Ph.D. in Theater Arts. Admission will depend both on scholarship and evidence of professional competence in the applicant's chosen specialization. Proof of completion of a M.A. or M.F.A. degree is required; for the theater program this degree must have been achieved in theater.

*Note: Check the Schedule of Classes for courses restricted to majors only.*

*Italian Majors please note under Italian Department listing for Area Studies in Theater courses.*

#### Lower Division Courses

##### THEATER AREA

**5A. History and Drama of the Theater from Primitive Times to 1640.** Lecture, three hours; discussion, one hour. Required of theater majors. The history of the influence of different cultures, traditions and technologies on the development of theater as a social institution. Mr. Mueller

**5B. History and Drama of the Theater from 1640 to 1900.** Lecture, three hours; discussion, one hour. Required of theater majors. The history of the influence of different cultures, traditions and technologies on the development of theater as a social institution. Mr. Mueller

**5C. History and Drama of the Theater from 1900 to the Present.** Lecture, three hours; discussion, one hour. Required of theater majors. The history of the influence of different cultures,

traditions and technologies on the development of theater as a social institution. Mr. Mueller

**10. Fundamentals of Theater Production.** Lecture, three hours; laboratory, three hours. Required in the first quarter of residence for theater arts majors specializing in theater. A basic study of the relationship of acting, stage management, scenery, lighting, costume and sound to the production of the play. Emphasis will be placed on the planning, procedures, materials, equipment and disciplines of theater production.

**20. Acting Fundamentals.** Lecture/laboratory, four hours. Required of theater majors. An introduction to the interpretation of drama through the art of the actor. Development of individual insights, skills, and disciplines in the presentation of dramatic material to an audience.

#### Upper Division Courses

##### THEATER AND GENERAL SECONDARY CREDENTIAL AREAS

**100. The Teaching of Theater.** Lecture, three hours. Prerequisites: 160A and 160B or consent of instructor. Study of current methods and problems of production as related to the secondary level. Highly recommended for students pursuing a secondary teaching credential. Mr. Ingle

**101. Introduction to Theater Arts. (½ course)** Lecture, two hours; laboratory, two hours. Not open for credit to theater arts majors. A survey of theater, motion pictures, television and radio, together with critical analysis of their roles in contemporary culture, leading to an appreciation and understanding of the theater arts. A nontechnical presentation for the general student. To be taken on a Pass/Not Pass basis only.

**102A. Selected Topics on the History of the European Theater.** Lecture, three hours. Prerequisite: course 5A or the equivalent and/or consent of the instructor. An investigation in depth of a selected area of study in theater history from the Greeks through the Renaissance. May be repeated for a maximum of 12 units of credit. Mr. Mueller

**102B. Selected Topics on the History of the European Theater.** Lecture, three hours. Prerequisite: course 5B or the equivalent and/or consent of the instructor. An investigation in depth of a selected area of study in theater history from the Baroque to the present. May be repeated for a maximum of 12 units of credit. Mr. Mueller

**102D. History of the European Theater.** Lecture, three hours. Prerequisite: consent of the instructor. A survey of the development of the theater from the Greeks to the present. May not be taken for credit by students who have had more than one course from the 5A, 5B, and 5C series. Mr. Mueller

**102E. Theater of the Non-European World.** Lecture, three hours; discussion, one hour. A survey of theater forms of the non-European world in which primary attention will be concentrated on an examination and analysis of the traditional dance-drama and puppet theaters of East Asia, Southeast Asia, South Asia, the Middle East and Africa. Analogous forms from European theater will be included for comparative purposes. Mr. Helstien

**103A. Black People's Theater in America, Slavery to 1930.** Lecture, three hours. An exploration of all extant materials on the history and literature of the theater as developed and performed by Black artists in America from Slavery to 1930.

**103B. Black People's Theater in America, 1930 to the Present.** Lecture, three hours. An exploration of all extant materials on the history and literature of the theater as developed and performed by Black artists in America from 1930 to the present.

**104A. History of the American Theater.** Lecture, three hours. The history of the American theater from the Revolutionary War to WWI. Mr. Hethmon

**104B. History of the American Theater.** Lecture, three hours. The history of the American theater from WWI to the present. Mr. Hethmon

**105. Main Currents in Theater.** Lecture, three hours. Prerequisite: consent of instructor. Critical examination of the leading theories of theater from 1887 to the present. Study and discussion of modern styles of production. Mr. Mueller

**117. The Puppet Theater. (½ course)** Lecture/laboratory, four hours. Prerequisite: consent of the instructor. Study of the history and practice of the art of puppetry. An examination of the materials and methods of construction. Staging of puppet productions as laboratory practice. May be repeated for a maximum of six units credit. Mr. Helstien

**118A. Creative Dramatics.** Lecture/laboratory, four hours. Studies of the principles and procedures of the improvisational approach to drama as done with children from nursery school to Junior High.

**118B. Advanced Creative Dramatics. (½ course)** Discussion, one hour; laboratory, two hours. Prerequisites: course 118A or consent of instructor. Practical application of the methods and principles introduced in 118A. May be repeated for a maximum of six units.

**119. Theater for the Child Audience.** Lecture/laboratory, four hours. Principles of production and performance for the child audience.

**120. Acting for the Stage.** Lecture/laboratory, four hours. Prerequisites: course 20 and consent of instructor. Study and practice of the art of acting through scenes from dramatic literature throughout the ages. No student may receive more than 12 units of credit for any combination of courses 120 and 120A-120B-120C or 121A-121B-121C and 137A-137B-137C. The total number of units from both groups together not to exceed a maximum of 16 units.

**122. Make-up for the Stage. (½ course)** Studio, two hours. The art of make-up and its relation to the production as a whole. History, aesthetics, materials, and procedures of make-up. Mr. Jones

**124. Voice for the Stage.** Lecture/laboratory, six hours. Prerequisite: consent of instructor. Development of voice techniques for the stage. Includes work on relaxation, limbering, breathing, articulators, and resonators. Ms. Wilbur

**125. Movement for the Actor.** Lecture/laboratory, six hours. Physical awareness for the actor, concentrating on warming up the body, relaxation, control, stunts and gymnastics. Mr. Orth

**130A. Fundamentals of Playwriting I.** Lecture, three hours. Required of theater majors. Course designed to stimulate the student's critical and creative faculties through the preparation of original material for the theater. Guidance in the completion of a one-act play. Mr. Gardner

**130B. Fundamentals of Playwriting II.** Lecture, three hours plus conference. Prerequisites: course 130A and consent of writing staff. Study in original material for the theater, its preparation and development. The course is designed to give further insight into the critical and creating aspects of the short and full-length play and guidance in the completion of the one act and full-length play. May be repeated for a maximum of twelve units credit. Mr. Gordon

**132. Manuscript Evaluation for the Theater.** Lecture, three hours. Prerequisite: course 130A and consent of the instructor. May be repeated for a maximum of eight units. Principles and practices in the evaluation of manuscripts for theater. Mr. Gordon

**136. Intermediate Acting for the Stage.** Lecture/laboratory, four hours. Prerequisites: course 20, upper division standing and consent of instructor. Designed for students as an evaluation course for entrance into the continuum course in acting. Not open for credit to students who have taken 120C.

**137A-137B-137C. Continuum Study in Acting for the Stage.** Lecture/laboratory, four hours. Prerequisite: consent of instructor. The technique of characterization and performance in advanced and complex acting styles. No student may receive more than 12 units of credit for any combination of 120 and 120A-120B-120C or 121A-121B-121C and 137A-137B-137C. The total number of units from both groups together not to exceed a maximum of 16 units.

**138. Special Problems in Performance Techniques.** Lecture/laboratory, four hours. Prerequisite: consent of instructor. Study of complex problems in voice, movement and acting. May be repeated for a maximum of 12 units. Not open for credit for students who have taken 121D-121E-121F.

**140A. Scenic Techniques for the Stage.** Lecture, three hours; laboratory, six hours. Prerequisites: course 10 and consent of instructor. Required of theater majors. An intensive study of scenic materials, construction techniques, production organization and the rigging of scenery. (Courses 140A, 141A and 142A may be taken in any sequence, but not concurrently).

**140B. Advanced Scenery for the Stage.** Lecture/laboratory, four hours. Prerequisite: course 140A. Advanced study of technical problems in staging theater productions, including design analysis and planning related to rigging, shifting and construction techniques.

**141A. Lighting Techniques for the Stage.** Lecture, three hours; laboratory, six hours. Prerequisites: course 10 and consent of instructor. (Courses 141A, 140A, and 142A may be taken in any sequence, but not concurrently). Required of theater majors. An intensive study of theater lighting with emphasis on the relationship of lighting instruments and control equipment to lighting design. Mr. Ward

**141B. Advanced Lighting for the Stage.** Lecture/laboratory, four hours. Prerequisite: course 141A. The detailed study of stage lighting as an art, with emphasis given to design concepts. The interpretation of a script or score through the control of light and color in relation to actor and audience. Mr. Crabs, Mr. Ward

**142A. Theater Costuming Techniques.** Lecture, three hours; laboratory, six hours. Prerequisites: course 10 and consent of instructor. (Courses 142A, 140A, and 141A may be taken in any sequence, but not concurrently). Required of theater majors. The study of costumes analysis and the interpretation of theatrical costume design through the use of patterns, fabrics, and related costume materials. Ms. Moss

**142B. Advanced Costuming for the Stage.** Lecture, three hours; laboratory, four hours. Prerequisite: course 142A or consent of the instructor. Special problems in the procuring, designing, construction and management of costumes used in theatrical productions. Ms. Moss

**143A. Scenic Design for the Theater. (½ course)** Lecture, two hours. Prerequisites: course 10 and consent of instructor. Required of theater majors. Basic principles of design as applied to the

interpretation and presentation of the visual aspects of dramaturgy. Study of styles, techniques and methods of design for the theater arts. The translation of ideas into visual forms.

Mr. Corrigan, Mr. Crabs

**143B. Advanced Scenic Design for the Theater.** Lecture, two hours; laboratory, four hours. Prerequisites: course 143A and consent of the instructor. Further study of the design of scenery for the theater, and translation of the design into actual visual form. Solving design problems for the complicated play. Consideration of experimental ideas, and the investigation of new materials.

Mr. Corrigan

**144A. Theater Sound Techniques.** (½ course) Lecture, two hours; laboratory, two hours. Prerequisite: course 10 or approved equivalent. A study of the equipment and techniques utilized in the recording and reproduction of sound for the theater.

Mr. Ward

**144B. Advanced Theater Sound.** Lecture, three hours; laboratory, four hours. Prerequisite: course 144A or consent of the instructor. A detailed study of theater sound with emphasis on the composition and execution of theater sound tracks, recording techniques, and acoustic reinforcement.

Mr. Ward

**145. Costume Design for Theater.** Lecture/laboratory, four hours. Prerequisite: consent of the instructor. Design of costumes for theatrical presentations. The study of the use of silhouette, fabrics, color, and decoration as related to theatrical characterizations.

Mr. Jones

**146B. Scene Painting Techniques.** (½ course) Lecture/laboratory, three hours. Prerequisite: consent of the instructor. The study of scenic painting techniques and materials, and their relation to the realization of color design and elevations.

Mr. Corrigan

**148. Special Courses in Design and Technical Theater.** Lecture, three hours. Prerequisite: consent of the instructor. Group study of selected subjects in design and technical theater. May be repeated for a maximum of 12 units. Not open for credit to students who have taken 148A-148B-148C.

**149A. Basic Drafting Techniques for the Stage.** (½ course) Lecture/laboratory, four hours. Prerequisite: course 10 or consent of instructor. Studies of the basic skills and techniques of drafting for the stage, through the execution of floor plans and elevation drawings.

Mr. Ward

**149B. Advanced Drafting for Theater Arts.** Lecture/laboratory, four hours. Prerequisite: course 149A or consent of instructor. An advanced course in the technical sketching and drafting of working drawings essential in the development of the design of sets and properties for theater, television and motion picture productions.

Mr. Corrigan

**160A. Fundamentals of Play Direction.** Lecture/laboratory, four hours. Required of theater majors. Basic theories of play direction and their application through the preparation of scenes under rehearsal conditions.

Mr. Gordon, Mr. Helstien

**160B. Intermediate Play Direction.** (½ course) Lecture/discussion, two hours; laboratory, five hours. Prerequisite: course 160A and consent of the instructor. A course in the application of stage direction techniques to the one-act play. Each student will direct a one-act play to be performed under rehearsal conditions. Material will be drawn from published sources.

Mr. Hearn

**161. Advanced Play Direction.** Lecture, four hours; laboratory, six hours. Prerequisites: course 160A and consent of the instructor. Special problems in the direction of original one-act plays under production conditions. May be repeated for a maximum of eight units credit, with consent of the instructor.

Mr. Hearn

**170. Theater Laboratory.** Lecture, four hours; laboratory, eight hours. Prerequisites: courses 140A, 141A, 142A, and 143A. Required of theater majors. Laboratory in theater production under supervision. The translation of ideas and concepts into the dramatic form.

**171A. Advanced Theater Laboratory.** (½ or 1 course) Hours to be arranged. Prerequisite: consent of the instructor. May be taken for a maximum of one course. Creative participation as an actor or stage manager in the public presentation of departmental productions.

**171B. Advanced Theater Laboratory.** (½ or 1 course) Hours to be arranged. Prerequisite: consent of the instructor. May be taken for a maximum of one course. Creative participation in the realization of production elements related to the public presentation of department productions.

**172. Technical Theater Laboratory.** (½ course) Hours to be arranged. Prerequisite: consent of the instructor. Required of theater majors. A laboratory in various aspects of theater production. The student must repeat the course four times, each assignment to be made in a different aspect of production. Maximum 8 units credit.

**174. Techniques of Stage-Managing.** (½ course) Lecture, four hours. The professional duties of the stage manager. The problems of unions, professional auditions, organization, scheduling, out-of-town openings, Broadway openings, and the responsibilities of a lengthy run.

**190A. The Role of the Producer in the Professional Theater.** (½ course) Lecture, two hours. A study of the structure governing

the economic and artistic decision-making processes in the professional theater of America.

Mr. Cauble

**190B. The Role of Management in the Educational and Community Theater.** (½ course) Lecture, two hours. A study of the artistic, social and economic criteria in the administration of educational and community theater.

Mr. Cauble

**191. The Touring Company.** (2 or 3 courses) Lecture, 20 hours; laboratory, 22 hours. Prerequisite: consent of instructor. Rehearsal and technical preparation of a theatrical work for touring, and the performance of that work on tour.

Mr. Jones

#### MOTION PICTURE/TELEVISION AREAS

**\*15106A. History of the American Motion Picture.** Lecture and screening, six hours; discussion, one hour. Prerequisite: consent of the instructor. An historical and critical survey, with examples, of the American motion picture both as a developing art form and as a medium of mass communication. May be repeated for credit (maximum 2 courses) with departmental consent.

**\*15106B. History of the European Motion Picture.** Lecture and screening, six hours; discussion, one hour. Prerequisite: consent of the instructor. An historical and critical survey, with examples, of the European motion picture both as a developing art form and as a medium of mass communication. May be repeated for credit (maximum 2 courses) with departmental consent.

**106C. History of African, Asian and Latin American Film.** Lecture and screening, six hours; discussion, one hour. Prerequisite: consent of the instructor. A critical, historical, aesthetic and social study together with an exploration of the ethnic significance of Asian, African, Latin American and Mexican films.

**106D. The Development of Film in Europe and the United States: From WWI through the Depression.** Lecture/screening, eight hours; discussion, one hour. Prerequisite: consent of instructor. An interdisciplinary and comparative approach to the development of film in Europe and the United States from the silent era through the depression. Particular stress will be given to the interrelationship of film with its historical context and to the social dimensions of film structure, aesthetics, and language. (Part of two quarter sequence, that can be taken jointly or separately.) Not open for credit to students who have taken 198B in Winter Quarter, 1975.

Mr. Rosen

**106E. The Development of Film in Europe and the United States: From WWII to the Present.** Lecture/screening, eight hours; discussion, one hour. Prerequisite: consent of instructor. An interdisciplinary and comparative approach to the development of film in Europe and the United States from the end of the 30's through the present. Particular stress will be given to the interrelationship of film with its historical context and to the social dimension of film structure, aesthetics, and language. (Part 2 of the two quarter sequence, but may be taken separately.) Not open for credit to students who have taken 198C in Spring Quarter, 1975.

Mr. Rosen

**107. Experimental Film.** Lecture and screening, six hours; discussion, one hour. Prerequisite: consent of the instructor. A study and analysis of unconventional developments in the motion picture.

**108. History of Documentary Film.** Lecture and screening, six hours; discussion, one hour. Prerequisite: consent of instructor. The philosophy of the documentary approach in the motion picture. The development of critical standards, and an examination of the techniques of teaching and persuasion used in selected documentary, educational, and propaganda films.

**110A. History of Broadcasting.** Lecture/viewing, six hours; discussion, one hour. Prerequisite: consent of instructor. Critical survey of broadcasting here and abroad. Consideration of the social responsibilities and educational implications of broadcasting. Not open for credit if student has credit for 110.

Ms. Schwartz

**110B. Problems and Issues in Broadcast Media.** Lecture, four hours; discussion, two hours; laboratory, to be arranged. Prerequisite: consent of instructor. Study of the current issues and problems related to public and commercial broadcast programming and management, including analysis of contemporary criticism of the broadcast media. Open for credit if student has credit for 110.

Ms. Schwartz

**111. Film Distribution and Exhibition.** Lecture, three hours; laboratory, to be arranged. Prerequisite: consent of instructor. History and theory of organization of theatrical and nontheatrical distribution and exhibition of motion pictures and analysis of their interrelationships with production practices.

**112. Film and Social Change.** Lecture and screening, six hours; discussion, one hour. Prerequisite: consent of the instructor. The development of documentary and dramatic films in relation to and as a force in social development.

**\*15113. Film Authors.** Lecture and screening, six hours; discussion, one hour. Prerequisite: consent of the instructor. May be repeated for credit (maximum 2 courses) with departmental consent. A study in depth of a specific film author (director or writer).

**\*15114. Film Genres.** Lecture and screening, six hours; discussion, one hour. Prerequisite: Consent of the instructor. May be repeated for credit with departmental consent (maximum 2 courses). Study of a specific film genre, e.g., the Western, the

gangster cycle, the musical, the silent epic, the comedy, the social drama.

**115. Producers and Their Films.** Lecture and screening, six hours; discussion, one hour. Prerequisite: consent of the instructor. A consideration of the individual or corporate producers as they have affected the art and industry of the motion picture. Course content will vary, considering the work of a studio such as Paramount, Metro-Goldwyn-Mayer, Warner Brothers, etc. or of an individual such as Samuel Goldwyn, Stanley Kramer, Hal Wallis, etc. May be repeated for credit (maximum 2 courses).

**\*15116. Criticism.** Lecture, four hours; laboratory, to be arranged. May be repeated for credit (maximum 2 courses) with departmental consent. Study of and practice in criticism for the theater, motion pictures and television.

**126A. Advanced Acting for Television and Motion Pictures.** Laboratory, six hours. Prerequisite: course 20 or consent of the instructor. Projects in acting for television and motion pictures. Video tape recording of selected acting exercises and readings. May be repeated for credit for a maximum of 12 units.

**126B. Broadcast Speech.** Laboratory, six hours. Field visits as required. Prerequisite: consent of instructor. Intensive study of effective speech for the performer in Television and Radio. Audio and television recordings of selected individual and group readings. Playbacks, analysis and criticism. May be repeated for a maximum of 12 units.

Mr. Friedman, Mr. Kingdon

**126C. Sportscasting.** Lecture, two hours; laboratory, four hours. Prerequisite: consent of instructor. Intensive study of Sportscasting; laboratory emphasis on studio and field training; videotaping and playback of straight sportscasts, play by play, color, interviews, commentary and editorials. Students required to write original material for all exercises. Extensive training re hand-held field equipment; use of the remote truck. Field exercises. Students rotate in production positions. May be repeated for a maximum of 12 units.

Mr. Friedman

**127. The Film Image.** Lecture, one hour; discussion, two hours; laboratory, one hour. Prerequisite: course 179A and consent of the instructor. Pro-seminar in the craft of film aesthetics. The Visual Revolution. Biophysical nature of perception. Lenses, perspective, graphic styles. Principles of composition, screenwriting, sound, editing. Problems of time and movement. How a director views his work and his world.

Mr. Stoumen

**131. Non-Theatrical Motion Picture/Television Writing.** Discussion, three hours. Prerequisites: 179A and/or consent of instructor. A course in the research and writing of documentary, technical, educational, industrial and propaganda scripts. May be repeated for a maximum of three courses.

Mr. Adams

**134. Motion Picture/Television Writing.** Discussion, three hours. Prerequisites: restricted to Motion Picture/Television majors and consent of instructor. Introduces students to problems in motion picture/television writing.

**135. Advanced Motion Picture/Television Writing. (2 courses)** Discussion, three hours. Prerequisite: course 134 and/or consent of instructor. A course in motion picture/television writing offered each quarter. Original motion picture/television material to be developed. May be repeated for a maximum of 24 units. No student may receive more than 24 units of credit for any combination of 135, 135A, 135B, 135C.

**150A. Basic Motion Picture/Television Photography.** Lecture, three hours; laboratory, four hours. Prerequisites: course 179A, restricted to Motion Picture/Television majors. Introduction to image control in film photography through exposure, lighting, and selection of film, camera, and lens. Supervised projects in photography to complement material covered in the lecture.

Mr. Valert

**150B. Advanced Motion Picture/Television Photography.** Lecture, three hours; discussion, one hour; laboratory, eight hours. Prerequisites: course 150A, and consent of instructor; restricted to Motion Picture/Television majors. Supervised exercises in studio and location film photography to develop skill in lighting and management of the photographic process as applied to motion pictures and television. May be repeated for a maximum of 12 units.

Mr. Valert

**151. Design for Motion Pictures and Television.** Lecture, three hours; laboratory to be arranged. Prerequisites: course 179A and consent of instructor; restricted to Motion Picture/Television majors. The techniques of art direction. If the course is repeated, the student is required to design and complete a short film. May be repeated for a maximum of 12 units.

**152A. Motion Picture/Television Sound Recording.** Lecture, three hours; laboratory, to be arranged. Prerequisites: course 179A and one course chosen from 154AB or C; restricted to Motion Picture/Television majors. Introduction to principles and practices of motion picture and television sound recording, including supervised exercises.

Mr. Adams

**152B. Motion Picture/Television Sound Re-Recording.** Lecture, three hours; laboratory, five hours. Prerequisites: course 179A and one course chosen from 154AB or C; restricted to Motion Picture/Television majors. Introduction to re-recording studio procedures including track and cue sheet preparation, and responsibilities and functions of the re-recording mixer. Course includes supervised practical exercises. May be repeated for a maximum of 12 units.

Mr. Adams

**153C. Color Cinematography.** Lecture, three hours. Prerequisite: consent of instructor. History and theories of color photography with emphasis on present-day methods in motion picture and television production. A comparative study of additive and subtractive systems as employed by Technicolor, Ansco, Kodak, and others. Mr. Trimble

**154A. Motion Picture/Television Editing.** Lecture, three hours; laboratory, to be arranged. Prerequisites: course 179A, restricted to Motion Picture/Television majors. A study of the role of editing the fictional and non-fictional production with emphasis on the techniques and procedures used in manipulation of the visual image for both dynamic and continuity effects. Mr. Brokaw

**154B. Motion Picture/Television Editing.** Lecture, three hours; laboratory, to be arranged. Prerequisites: course 179A, restricted to Motion Picture/Television majors. A study of the role of editing the fictional and non-fictional production with emphasis on the techniques and procedures used in manipulation of the sound track in sync dialog cutting, post-synching, and music and sound effects cutting, including offscreen narration, dialogue substitution and playback tracks. Mr. Brokaw

**154C. Motion Picture/Television Editing.** Lecture, three hours; laboratory, to be arranged. Prerequisites: course 179A, restricted to Motion Picture/Television majors. A study of the role of editing the fictional and non-fictional production with emphasis on the finishing stages including title preparation, the use of optical effects and blowups, preparation for the supervision of the mix, and the cutting of originals for single strand and A&B printing. Mr. Brokaw

**163. Direction of Actors for Motion Pictures/Television.** Laboratory, six hours. Prerequisites: course 179A and consent of the instructor. Exercises in analysis of script and character for the purpose of directing actors in motion picture and television productions. Emphasis on eliciting the best possible performance from the actor. May be repeated for a maximum of 12 units credit. Ms. Salvi

**164. Direction for Motion Pictures.** Laboratory, to be arranged. Prerequisites: course 179A and consent of the instructor. A study of the problems faced by a motion picture director and various approaches to their solution. May be repeated for a maximum of 12 units credit.

**165. Direction for Television.** Laboratory, six hours. Prerequisites: courses 134, 179A, 185 and 186A. Instruction and supervised exercises in television direction with emphasis on the creative use of cameras, sound, composition, and communication with those in front of and behind the camera. May be repeated for credit; maximum three courses.

**179A. Film Project 1. (2 courses)** Hours, to be arranged. Prerequisites: junior standing and completion of all lower division requirements of the University and the College of Fine Arts. Restricted to the Motion Picture/Television majors. The completion of a first film, including its writing, production and editing. Required in the Motion Picture/Television major. Production Faculty

**179B. Motion Picture Production. (1, 2 or 3 courses)** Hours to be arranged. Prerequisites: course 179A and consent of Production Faculty. The completion of a motion picture production, including its writing, production and editing. May be repeated for a maximum of 16 units. Production Faculty

**179D. Motion Picture Production.** Hours, to be arranged. Prerequisites: courses 179A and 179B and consent of the instructor. A course to augment the production skills of students demonstrating difficulties in basic techniques. May not be repeated. May not be applied to the major. Production Faculty

**179E. Motion Picture/Television Production. (1 or 2 courses)** Hours to be arranged. Prerequisites: course 179A and consent of instructor. Completion of a group film or videotape production with three or more students collectively responsible for its conception, writing, direction and production.

**180A-180B-180C. Workshop in Broadcast News and Documentary.** Discussion, three hours; laboratory, five hours. Prerequisites: consent of the instructor. Instruction and supervised exercises in writing, reporting, editing, and producing radio and television news, public affairs, and documentary programs. Mr. LaTourrette

**181A. Animation Design in Theater Arts.** Lecture, three hours; laboratory, three hours. Prerequisite: consent of the instructor. History and use of speech, rhythm, and graphic design to form effective communication on film. Mr. McLaughlin

**181B. Writing for Animation. (1 or 2 courses)** Lecture, six hours; laboratory to be arranged. Prerequisites: course 181A, consent of the instructor and a storyboard at the first class meeting. Research and practice in creative writing and planning for the animated film. May be repeated for credit; maximum four courses (16 units). Mr. McLaughlin

**181C. Animation Workshop. (1 or 2 courses)** Lecture, six hours; laboratory to be arranged. Prerequisites: course 181A, consent of the instructor and a storyboard at the first class meeting. Organization and integration of the various creative arts used in animation to form a complete study of a selected topic. May be repeated for credit; maximum four courses (16 units). Mr. McLaughlin

**184A-184B-184C. Community Television Programming and Management.** Laboratory, eight hours. Prerequisite: consent of the

instructor. Supervised operation and programming of a community television station. Class participation in semi-weekly campus broadcasts. Mr. LaTourrette

**185. Television Production.** Laboratory, eight hours. Prerequisite: consent of instructor. Instruction and supervised exercises in the basic technique of using cameras, lighting, and sound in the production of television programs.

**186A-186B-186C. Television Laboratory. (1 or 2 courses)** Laboratory, to be arranged. Prerequisites: one course chosen from 180B, 184A, 184B, 184C or 185 and consent of the instructor. The conception, direction, and production of an original television program.

**187A-187B-187C. Remote Television Broadcasting. (1 course each)** Laboratory, three hours plus additional hours to be arranged. Prerequisite: one course chosen from 180A, 184A, 184B, 184C or 185 and consent of instructor. Instruction and supervised exercises in the planning and production of remote on-location television programs. Mr. Trachinger

**188. The Aesthetics of Visual Communication.** Lecture, three hours. Prerequisites: upper division standing and consent of instructor. An introduction to the study of communication in art, with an emphasis on the problem of aesthetic perception and its proper role in the experience of contemporary visual arts.

**189. Overview of the Motion Picture Industry.** Discussion, three hours. Prerequisite: consent of instructor. Evolution of economic and business structure of Motion Pictures from early beginnings to present, stressing methods of operation and the influence of social and economic pressures that contributed to the changing financial, distribution and exhibition practices. Not open for credit to students who have taken 198D in Fall Quarter, 1975. Mr. Grauel

**192. Motion Picture and Television Internship. (1 or 2 courses)** Laboratory, ten or 20 hours weekly; field experience. Prerequisite: consent of instructor. An internship at various film and television studios accentuating the creative contribution, the organization, and the work of professionals in their various specialties. May be repeated once for a maximum of 12 units.

**193A. Film Curatorship.** Lecture, two hours; discussion, two hours; laboratory, four hours. Prerequisite: consent of the instructor. Study of the principles and techniques of film curatorship and research, including but not limited to acquisitions, cataloguing, storage and retrieval systems. Special attention will be devoted to the application of new technology, equipment, and program materials to film archival-library design for research and teaching. Not open for credit to those who have taken course 194A.

**193B. Television Curatorship.** Lecture, two hours; discussion, two hours; laboratory, four hours. Prerequisites: consent of the instructor. Study of the principles and techniques of television curatorship and research, including but not limited to acquisitions, cataloguing, storage and retrieval systems. Special attention will be devoted to the application of new technology, equipment, and program materials to television archival-library design for research and teaching. Not open for credit to those who have taken 194B. Ms. Schwartz

**195. Independent Production of Feature Films.** Prerequisite: course 189 and consent of instructor. Survey of financial and business aspects involved in packaging, distributing and exhibiting motion pictures today from the various perspectives of prominent industry leaders. May be repeated for credit (maximum 2 courses) with department consent.\*

\*Determined on basis of change in instructors.

#### SPECIAL STUDIES FOR ALL SPECIALIZATIONS

**199. Special Studies in Theater Arts. (¼ to 2 courses)** Hours to be arranged. Prerequisites: senior standing, 3.0 GPA in major and consent of the instructor. May be repeated for a total of two courses.

#### Graduate Courses

Certain graduate courses concerned with individual student projects may be repeated for credit upon recommendation of the departmental graduate adviser. Not open to undergraduate students. See College of Fine Arts, Unit Requirements.

**200. Bibliography and Methods of Research in Theater Arts.** Section 1. Theater. Mr. Hethmon

Section 2. Motion Pictures. Mr. Suber

Section 3. Television-Radio. Ms. Schwartz

**201. Seminar in Modern Production Theories.** Lecture, three hours. Selected topics from European and American theater studies. Mr. Hethmon

**202A. Seminar in Classical Theater.** Discussion, three hours. Prerequisite: graduate standing and consent of the instructor. Studies of the development of theatrical production and dramatic form in the Greek, Hellenistic, and Roman periods. Mr. Mueller

**202B. Seminar in Medieval Theater.** Discussion, three hours. Prerequisite: graduate standing and consent of the instructor. Studies of theatrical production and dramatic form in the Middle Ages. Mr. Hethmon

**202C. Seminar in Renaissance and Baroque Theater.** Discussion, three hours. Prerequisites: graduate standing and consent of the instructor. Studies in theater architecture, theatrical production, and dramatic form in English and Continental theater from 1485 to the early 18th century. Mr. Goodman

**202D. Seminar in 18th and 19th Century Theater.** Discussion, three hours. Prerequisites: graduate standing and consent of the instructor. Studies in theater architecture, theatrical production, and dramatic form in English and Continental theater from 1700 to 1870. Mr. Goodman

**202E. Seminar on the Modern Consciousness in Theater.** Discussion, three hours. Prerequisites: graduate standing and consent of the instructor. Study of the prototypes of modern experience as encountered in the work of Ibsen and Strindberg. Mr. Goodman, Mr. Mueller

**202F. Seminar in Naturalism and Expressionism.** Discussion, three hours. Prerequisite: graduate standing and consent of the instructor. Study of the modern theater's response to scientific thought and industrialism. Mr. Goodman

**202G. Seminar in Symbolism.** Discussion, three hours. Prerequisites: graduate standing and consent of the instructor. Adaptations of the religious impulse in such artists as Maeterlinck, Yeats, Meyerhold, Appia, Craig, Andreyev, Claudel, and Eliot. Mr. Goodman

**202H. Seminar in Surrealism.** Discussion, three hours. Prerequisite: graduate standing and consent of the instructor. Study of the development from Rimbaud to the present of the basic concepts of Surrealism as they relate to the theater. The seminar will deal with certain major writers such as Apollinaire, Jarry, and Cocteau, but will also take up the theatrical techniques which the movement has fostered. Mr. Mueller

**202J. Seminar on Theater and Social Order.** Discussion, three hours. Prerequisites: graduate standing and consent of the instructor. Study of the concept of order as it underlies theater which attempts to correct, reform, explain, or argue with the ethical or metaphysical condition of the period. The work of such playwrights as Shaw, Brecht, Sartre, and Arthur Miller will be investigated together with the theatrical styles the movement developed.

**202K. Seminar in Colonial and 19th Century American Theater.** Discussion, three hours. Prerequisite: graduate standing and consent of the instructor. Studies in the development of theatrical production and dramatic writing in American theater from 1665 to the 20th Century. Mr. Hethmon, Mr. Wollock

**202M. Seminar in 20th Century American Theater.** Discussion, three hours. Prerequisites: graduate standing and consent of the instructor. Study of the American theater's search to define the place of American experience in the modern world. Mr. Hethmon

**202N. Seminar in Theater Architecture from the Baroque Playhouse to the Present.** Discussion, three hours. Prerequisites: graduate standing and consent of the instructor. Study of the influence of modern experience on architectural thought in the modern theater. Mr. Crabs, Mr. Hearn

**203. Seminar in Film and the Fine Arts.** Discussion, three hours; laboratory, six hours. Prerequisites: graduate standing and consent of the instructor. Studies in the interrelationship between film and the fine arts, with particular emphasis on the ways in which contemporary theories and practices in painting, music, and dance have influenced the evolving art of film.

**204. Seminar in Film and the Performing Arts.** Discussion, three hours. Prerequisites: graduate standing and consent of the instructor. Studies in the interrelationship between film and theater, in its broadest sense, with particular emphasis on the impact of acting and mise-en-scene in contemporary and past films.

**205A. The Background of Theatrical Art.** An analysis of the aesthetic principles and content of the tragic theater.

**205B. The Background of Theatrical Art.** An analysis of the aesthetic principles and content of the comic theater.

**206A. Seminar in European Motion Picture History.** Prerequisites: course 106B and consent of the instructor.

**206C. Seminar in American Motion Picture History.** Prerequisites: course 106A and consent of the instructor. May be repeated for a maximum of two courses (8 units) credit.

**207A. Seminar in Realism, Naturalism, and the Film.** Prerequisites: graduate standing and consent of the instructor. Study of the influence of the Realist and Naturalist movements in literature on form and content of both the silent and the sound film in America and Europe, and particularly on the work of such directors as Von Stroheim, Renoir, and Feyder.

**207B. Seminar in Expressionism and Film.** Prerequisites: graduate standing and consent of the instructor. Study of the impact of the Expressionist school in literature, art, and architecture, and its effect on the form and content of motion pictures, especially in the decade following World War I on such directors as Lang, Murnau, and Pabst.

**207C. Seminar in Social Realism and Film.** Prerequisites: graduate standing and consent of the instructor. Study of art in the service of ideology as illustrated by the effect of new standards of social, political, and aesthetic values on the development and content of motion pictures, especially in the Marxist countries from 1917 to the present day.



**207D. Seminar in Surrealism and Film.** Prerequisites: graduate standing and consent of the instructor. Study of the influence of the Surrealist movements as articulated by Breton and Apollinaire and reflected in the films of such directors as Germaine Dulac, Antonin Artaud, Luis Bunuel, and Arthur Penn.

**207E. Seminar in Neo-Realism and Film.** Prerequisites: graduate standing and consent of the instructor. Study of the development of cinema after World War II, notably in Italy, under the influence of French directors such as Renoir and the novels of Hemingway, Dos Passos, Faulkner, and Malraux, and climaxing in the work of such directors as Fellini, Antonioni, and Pasolini.

**208A. Seminar in Film Structure.** Prerequisites: graduate standing and consent of instructor. An examination of various film conventions, both fictional and nonfictional, and of the role of structure in the motion picture.

**208B. Film Aesthetics.** Prerequisite: graduate standing and consent of the instructor. Study and analysis of the film in relation to other art forms.

**208C. Advanced Aesthetics.** Prerequisites: course 208B, graduate standing and consent of the instructor. Detailed examination and evaluation through study of selected films of the aesthetics of motion pictures as formulated to date and as the foundation for further development of the arts.

**209A. Seminar in Documentary Film.** Prerequisite: graduate standing and consent of the instructor. The nonfictional film and its relation to contemporary culture.

**209B. Seminar in Fictional Film.** Prerequisite: graduate standing and consent of the instructor. Film as fiction and its relation to contemporary culture. May be repeated for a maximum of two courses (8 units) credit.

**M209C. Ethnographic Film.** (Same as Anthropology M247A.) Prerequisites: graduate standing and consent of instructor. The ethnographic film as a form of realist cinema and its relations to cultural anthropology. Offered in the fall quarter.

Mr. Boehm, Mr. Hawkins, Mr. Moerman

**210. Seminar in Contemporary Broadcast Media.** Prerequisite: graduate standing and consent of instructor. Recent and current developments in radio, television, satellites, cable and cartridge television, and telecommunication centers. Commercial broadcasting and alternative systems at home and abroad.

Mr. Kingson

**211. Historiography.** Prerequisites: graduate standing and consent of the instructor. Examination of the function and methods of writing film and television history as seen in the works of key historians in the United States and Europe. The development of the discipline from a journalistic pursuit of disparate facts to a coherent examination of the development of the media will be examined in relation to the principles that have guided leading writers.

**212. Theory of Action and Motive in Drama.** Discussion, three hours. Prerequisites: graduate standing and consent of the instructor. Examination of the history and meaning of these basic concepts. Study of a variety of approaches to definition of these and related terms.

**213. Seminar in the History of Scenic Design.** Discussion, three hours. Prerequisites: graduate standing and consent of the instructor. Study of principal designers and modes of scenic expression.

Mr. Corrigan, Mr. Jones

**214. Seminar on Social and Economic Factors in Contemporary American Theater.** Discussion, three hours. Prerequisites: graduate standing and consent of the instructor. Study of the background of theater in terms of community support, foundation support, independent financing, community planning, audience development, and other factors affecting artistic presentations.

Mr. Cauble

**216. Seminar in Critical Methods.** Discussion, four hours. Prerequisites: graduate standing and consent of instructor. Examination of the principal contemporary modes of criticism, including archetypal, sociological, phenomenological, and Aristotelian, with particular emphasis on their value in the study of theater and film.

**217. Seminar in the Puppet Theater.** Lecture, three hours. Prerequisites: consent of instructor. Studies in the puppet theaters of the world: techniques, literature, aesthetics.

Mr. Helstien

**219. Film, Television and Society.** Prerequisites: graduate standing and consent of the instructor. Studies in the ways in which film and television affect the attitudes, beliefs, standards, and behavior of society, and the means by which society in turn shapes the evolution and production of film and television.

**221. Seminar in Film Authors.** Prerequisites: graduate standing and consent of the instructor. Intensive examination of the works of outstanding creators of film.

**222. Seminar in Film Genres.** Prerequisite: graduate standing and consent of the instructor. Studies of coherent patterns, styles, and themes as they have defined selected genres such as the Western, gangster, war, and science fiction film.

**223. Seminar in Visual Perception.** Prerequisite: graduate standing and consent of the instructor. The aesthetic, psychological, and physiological principles of vision as they relate to the ways in which man "sees" film and television, with emphasis on the ways in which these are different from other visual experiences.

**224. The Expanding Visual Media.** Prerequisites: graduate standing and consent of the instructor. Studies of the means by which technological and aesthetic advances are re-defining the future of film, television, and the other visually-oriented means of communication and expression. The implications of such developments as mixed-media, video cassettes, holography, satellite relays, and computer-generated images may receive special attention.

**230A-230B-230C. Advanced Playwriting.** Lecture, three hours. Prerequisite: course 130A graduate standing and consent of instructor. Guided completion of a full-length play, or study and preparation for the writing of a thesis play.

Mr. Gardner

**240. The Contemporary Playhouse.** Discussion, four hours. Prerequisites: graduate standing and consent of instructor. Advanced study of the concept, form and function of the contemporary playhouse and its equipment.

**241. Research in Technical Theater.** Lecture, four hours. Prerequisites: graduate standing and consent of instructor. Research in technical processes and equipment in theater.

**243A-243B-243C. Advanced Problems in Design for the Theater.** Lecture, four hours. Prerequisites: graduate standing and consent of instructor. Advanced study and practice in the design of stage productions. Determination of approach and style in scenic design.

Mr. Corrigan

**245A-245B. Production Planning in Theater.** Lecture, two hours; laboratory, two hours. Prerequisites: graduate standing and consent of instructor. Development of planning procedures through the execution of a complete plan for producing a multi-scene production. Courses must be taken in sequence.

Mr. Corrigan, Mr. Crabs

**247. Production Planning in Television.** Seminar, three hours; plus field studies in professional motion picture and television studios.

**251. Advanced Design for Motion Pictures.** (½ to 1 course) Hours to be arranged. Prerequisites: course 151 and/or consent of the instructor. May be repeated for a maximum of three courses credit. Advanced study and practice of techniques and methods of design for motion pictures. Art direction for advanced workshop productions in the project sequence.

**264. Seminar in Film and Television Direction.** Prerequisite: graduate standing and consent of instructor. A study, with professional guests, of their work, attitudes, and solutions to problems in directing fictional and documentary films and television.

**M265A-265B. Ethnographic Film Direction.** (1 or 2 courses each) (Same as Anthropology M267B-267C.) Prerequisites: course 209C, graduate standing and consent of the instructor. Advanced study of problems in the production of ethnographic films. M265A is offered in the winter quarter and M265B is offered in the spring quarter.

Mr. Boehm, Mr. Hawkins, Mr. Moerman

**270. Seminar in Film and Television Criticism.** Prerequisites: graduate standing and consent of the instructor. An analysis of key aesthetic questions and their application to criticism of motion pictures and television as evidenced in the writing of students in the course and professional critics.

**272A-272B-272C. Production and Performance Laboratory.** (½ course) Laboratory, to be arranged. Prerequisites: admission to the M.A. program in theater specialization and consent of instructor. Credit for creative production assignments required of all M.A. students during the first three quarters of residence. Credit will be granted only upon completion of TA 272C.

**275A. Seminar in Television Drama.** Prerequisite: graduate standing and consent of instructor. A critical survey and analysis of the drama written and produced specifically for television from the so-called Golden Age of the medium to the present.

**275B. Seminar in Television Documentary.** Prerequisite: graduate standing and consent of instructor. A critical survey and analysis of the structure and content of the documentary as specifically created, written, and produced for television.

**288. Seminar in Educational Television.** Prerequisite: graduate standing and consent of the instructor. An historical survey and critical analysis of public, educational, and instructional television in the United States and abroad.

Mr. Kingson

**289. Current Business Practices in Motion Picture/Television.** Discussion, three hours. Prerequisite: consent of instructor. Examination of current status of Financing-Production-Distribution Agreements; Union Agreements; Music; Copyright; etc.; necessary to an understanding of the Motion Picture/Television industry. Not open for credit to students who have taken 198E in Winter Quarter, 1976.

Mr. Grauel

**290A. The Role of Management in Artistic Decision Making in the Theater.** Lecture, four hours. Prerequisite: consent of instructor. A descriptive study of the criteria for decision making in artistic institutions including the role of the institution in society, the economic environment of the arts, and the artistic value systems of arts organizations.

Mr. Cauble

**290B. Programming and Planning Policies in the Theater.** Lecture, four hours. Prerequisite: consent of instructor. An analysis of the social, artistic and economic roles of the arts as reflected in programming policy. An examination of the social goals pursued in establishing relationships between the arts and their environment.

Mr. Cauble

**291. The Role of Management in Motion Pictures.** Prerequisite: graduate standing and consent of instructor. A study of the artistic, social, and economic criteria for decision making in the production and distribution of motion pictures.

Mr. Grauel

**298A-298B. Special Studies in Theater Arts.** (½ to 1 course each) Lecture/discussion, two or four hours. Prerequisites: graduate standing and consent of instructor. May be repeated once for credit. Seminar study of problems in theater arts, organized on a topic basis.

## Professional Courses

**417. Production Project for the Puppet Theater.** (2 courses) Laboratory, 30 hours weekly; five hours consultation. Prerequisites: restricted to M.F.A. students; consent of the instructor. The design, construction and performance of a full-length production with puppets as the culminating exercise for the candidate for the M.F.A. degree in the Puppet Theater. Students will be expected to present the full argument for the design style and techniques used in the construction of the puppets, the rationale for the use of puppets for the particular project presented, and a final justification and analysis of the completed work.

Mr. Helstien

**420A. Advanced Techniques in Acting.** Lecture/laboratory, six hours. Prerequisites: restricted to M.F.A. acting candidates in Theater and consent of instructor. Exercises in sense memory, personalization, and objectives to help the student respond truthfully to real and imaginary stimuli by developing concentration, awareness, imagination and spontaneity.

Ms. Salvi

**420B. Advanced Techniques in Acting.** Lecture/laboratory, six hours. Prerequisites: restricted to M.F.A. acting candidates in Theater and consent of instructor. Extended work in improvisations and exercises in order to apply these techniques to a role. Beginning with monologues the work progresses to two-person scenes. Through these efforts the student will begin to personalize the character's emotional needs and drives.

Ms. Salvi

**420C. Advanced Techniques in Acting.** Lecture/laboratory, six hours. Prerequisites: restricted to M.F.A. acting candidates in Theater and consent of instructor. Preparation and presentation of two-person scenes utilizing sensory work and "objectives" on a more refined basis. The student will now be able to find the similarities and differences between himself and the character and be able to play these elements truthfully and spontaneously.

Ms. Salvi

**421A. Advanced Projects in Acting.** (1 or 2 courses) Lecture/laboratory, six hours. Prerequisites: restricted to M.F.A. acting students in Theater and consent of instructor. Preparation, presentation, and critique of scenes. Systematic role analysis and exercises in acting.

**421B. Advanced Projects in Acting.** (1 or 2 courses) Lecture/laboratory, six hours. Prerequisites: restricted to M.F.A. acting students in Theater and consent of instructor. Preparation, presentation and critique of scenes. Systematic role analysis and exercises in acting.

**421C. Advanced Projects in Acting.** (1 or 2 courses) Lecture/laboratory, six hours. Prerequisites: restricted to M.F.A. acting students in Theater and consent of instructor. Class exercises in acting. Preparation and presentation of roles under performance conditions.

**423. Advanced Directing of the Actor for Motion Pictures and Television.** Laboratory, eight hours. Prerequisites: course 163 and consent of the instructor. The Director learns how to build scenes and characters logically and how to sustain these along with emotional and physical continuity. This class utilizes a video-tape recorder in order to simulate the conditions of directing actors before the camera. May be repeated for a maximum of 12 units credit.

Ms. Salvi

**424A-424B-424C. Advanced Techniques in Voice for the Stage.** (½ course each) Lecture/laboratory, two hours. Prerequisites: restricted to M.F.A. acting candidates in Theater and consent of instructor. Development of voice techniques for the stage. Includes work on relaxation, limbering, breathing, articulators, and resonators. Special vocal problems for the actor.

Ms. Wilbur

**424D-424E-424F. Special Problems in Voice for the Actor.** (½ course each) Lecture/laboratory, two hours. Prerequisites: restricted to M.F.A. acting candidates in Theater and consent of instructor. An extension of the first year work with increased demands on voice. Range and breathing capacity extension. Articulation and the phonetic alphabet. Advanced voice problems.

Ms. Wilbur

**425A-425B-425C. Advanced Techniques in Movement for the Stage.** (½ course each) Lecture/laboratory, two hours. Prerequisites: restricted to M.F.A. acting candidates in Theater and consent of instructor. Physical awareness for the actor. Special emphasis on: warming up the body, relaxation, gymnastics (balance, falls, stunts), movement techniques and stage combat.

Mr. Orth

**425D-425E-425F. Special Problems in Movement for the Actor.** (½ course each) Lecture/laboratory, two hours. Prerequisites: restricted to M.F.A. acting candidates in Theater and consent of instructor. Physical awareness for the actor, concentrating on individual problems in terms of space, movement, and time. Special emphasis: natural rhythms, relaxation and balance.

Mr. Orth

**430A-430B-430C. Advanced Studies in Playwriting.** Seminar, to be arranged. Prerequisites: courses 230A-230B-230C and consent of instructor. Guidance in the completion of these plays.

Mr. Apstein

**432. Manuscript Evaluation.** Lecture, four hours; laboratory, to be arranged. Prerequisites: course 132 and consent of instructor or admission to M.F.A. writing program and consent of the instructor. May be taken twice for credit (once each year of M.F.A. residence). Evaluation of manuscripts of beginning writers including but not limited to those produced in the beginning writing course Theater Arts 134.

**434. Advanced Motion Picture/Television Writing. (2 courses)** Discussion, three hours. Prerequisite: course 135 and consent of the instructor. Advanced problems in the writing of original motion picture/television material. May be repeated for a maximum of 24 units.

**437. Nontheatrical Writing for Motion Picture/Television.** Discussion, three hours. Prerequisite: consent of the instructor. Advanced problems in the field of documentary and special feature programs with emphasis on research and pre-production.

**442A-442B-442C. Advanced Problems in Costume Design.** Lecture/discussion, four hours. Prerequisite: consent of the instructor. Study of costume design for theatrical productions. Development of costume designs from theatrical scripts with emphasis upon production styles and character revelation. The scripts vary in period and style to give design practice in the major costume periods and artistic styles. Restricted to M.F.A. candidates.

Mr. Jones

**443. Problems in Design. (½ or 1 course)** Lecture/laboratory, four hours. Additional hours as required. Prerequisite: consent of instructor. Study and practice in design techniques for the theater. May be repeated for a maximum of 12 units.

Mr. Corrigan

**444. The Development of Costume Design Construction Technologies for Theater.** Discussion, three hours. Prerequisites: restricted to M.F.A. candidates and consent of instructor. A study of the effect of artistic and stylistic ideas on the mode and dress of men and women. May be repeated for a maximum of 12 units.

Mr. Jones

**446. Production Planning in Motion Pictures. (½ or 1 course)** Lecture, three hours; laboratory to be arranged. Prerequisite: consent of the instructor.

Mr. Grauel

**452A. Advanced Motion Picture/Television Sound.** Lecture, four hours; laboratory, four hours. Prerequisites: course 152A and/or consent of the instructor. Applications of electronic and acoustic theory to film and television recording and reproduction, including practical demonstrations.

**452B. Music Recording Workshop.** Lecture, four hours; laboratory, eight hours. Prerequisites: course 452A and/or consent of the instructor. Supervised exercises in studio music recording techniques, with emphasis on special requirements for motion pictures and television.

**452C. Advanced Motion Picture/Television Sound Re-Recording.** Laboratory, eight hours. Prerequisites: courses 152B, 452A, and/or consent of the instructor. Techniques of preparation and execution of re-recording using multi-track pickup recording technology, including supervised operational experience.

**457. Design for Television.** Lecture, one hour; laboratory, three hours. Prerequisite: consent of the instructor. Study and practice in design of television productions. Consideration of style as it relates to all elements of design in live and recorded television programs.

Mr. Wollock

**460A. Problems in Advanced Direction for the Stage.** Lecture, to be arranged. Prerequisites: restricted to M.F.A. candidates and consent of instructor. Preparation and presentation of a published one-act play or its equivalent under rehearsal conditions. Discussion and critique of work in progress.

Mr. Gordon

**460B. Problems in Advanced Direction for the Stage.** Lecture, to be arranged. Prerequisites: restricted to M.F.A. candidates and consent of instructor. Preparation and presentation of a published play under rehearsal conditions. Discussion and critique of work in progress.

Mr. Gordon

**460C. Problems in Advanced Direction for the Stage.** Lecture, to be arranged. Prerequisites: restricted to M.F.A. candidates and consent of instructor. Preparation and presentation of a full-length original play under rehearsal conditions. Discussion and critique of work in progress.

Mr. Gordon

**462. Production Project in Direction for the Stage.** Lecture, to be arranged. Prerequisites: restricted to M.F.A. students and consent of instructor. Preparation and presentation of an original play under minimal production conditions. Discussion and critique of work in progress.

**463. Production Project in Direction for the Stage. (2 courses)** Prerequisite: consent of the instructor. Preparation and presentation of play under fully produced theater conditions. Restricted to M.F.A. students.

**464A-464B. Motion Picture Direction. (1 or 2 courses each)** Hours to be arranged. Prerequisite: consent of the instructor. Special problems in the direction of fictional and documentary motion pictures.

**466A-466B. Advanced Television Direction. (1 or 2 courses each)** Lecture, two hours; laboratory, six hours. Prerequisite: con-

sent of the instructor. Special problems in the direction of dramatic and documentary television programs.

**472. Production and Performance Laboratory. (½ course)** Hours to be arranged. Prerequisite: admission to the M.F.A. program. Credit for creative production projects required of all M.F.A. students during the first three quarters of residence. May be repeated for a maximum of 8 units of credit.

**479A-479B-479C. Film Project 3. (1, 2 or 3 courses each)** Hours to be arranged. Prerequisite: consent of the instructor. The completion of a third film, including its writing, design, production and editing.

**480A-480B-480C. Workshop in Radio and Television News.** Laboratory, eight hours. Prerequisite: consent of the instructor. Instruction and supervised exercises in reporting, writing, editing, and producing radio and television news, public affairs, and documentary programs.

Mr. LaFourette

**482A-482B. Advanced Animation Workshop. (1 or 2 courses each)** Lecture, three hours; laboratory to be arranged. Prerequisites: courses 181A-181B-181C and consent of the instructor. Organization and integration of various creative arts used in animation, resulting in the production of a complete animated film.

Mr. McLaughlin

**485A-485B-485C. Advanced Television Production. (1 or 2 courses each)** Laboratory, 16 hours. Prerequisites: Project 1 (course 179A), 185, 186A-186B-186C and consent of instructor. Instruction in the creation, preparation, and production of advanced television programs.

**488A-488B-488C. Educational Television Workshop.** Laboratory, eight hours. Prerequisite: consent of instructor. Instruction and supervised exercises in directing and producing television programs for educational purposes.

**495A. Problems in the Teaching of Theater Arts.** Lecture/laboratory, to be arranged. Prerequisites: graduate standing and consent of the instructor. Study of and practice in the teaching of Theater Arts at the college and university level.

**495B. Problems in the Teaching of Theater Arts.** Lecture/laboratory, to be arranged. Prerequisites: graduate standing and consent of the instructor. Demonstration of competence in theater, film, or television production through successful completion of a major teaching production assignment as technical director, designer, film or television maker.

**495C-495D. The Problems in the Teaching of Theater Arts. (0 to 1 course)** Laboratory, to be arranged. Prerequisites: graduate standing and consent of instructor. Demonstration of competence in theater production through successful completion of a major teaching production assignment as theater director. Course to be conducted as a two-quarter sequence offered in Winter and Spring quarters only. Credit will be granted only upon completion of sequence. In-progress grade only.

**496. The Practice of Teaching Theater Arts. (½ course)** Discussion, two hours. Prerequisite: Required: concurrent appointment as a Teaching Assistant or Associate in the Department of Theater Arts. Orientation and preparation of graduate students who have the responsibility for assistant teaching undergraduate courses in the Department; discussion of problems common to the teaching experience. This 2 unit course will not count toward the M.A., M.F.A., or Ph.D. TAs may repeat the course. Graded S/U.

Senior Faculty

**498. Professional Internship in Theater Arts. (1 or 2 or 3 courses)** Full or part-time at a studio or on a professional project. Prerequisites: Graduate status plus advanced standing in the M.F.A. program and consent of instructor. An internship at various film, television or theater facilities accentuating the creative contribution, the organization and the work of professionals in their various specialties. Given only when projects can be scheduled.

**501. Cooperative Program. (½ to 2 courses)** Prerequisite: approval of Graduate Adviser and Graduate Dean. Approval of host campus Instructor, Department Chairman and Graduate Dean. The course is used to record the enrollment of UCLA students in courses taken under cooperative arrangements with neighboring institutions. To be graded S/U.

### Individual Study and Research

**596A. Directed Individual Studies: Research. (½ to 3 courses)** Hours to be arranged. Prerequisite: graduate standing. May be repeated by consent of the instructor.

**596B. Directed Individual Studies: Writing. (½ to 3 courses)** Hours to be arranged. Prerequisite: graduate standing. May be repeated by consent of the instructor.

**596C. Directed Individual Studies: Directing. (½ to 3 courses)** Hours to be arranged. Prerequisite: graduate standing. May be repeated by consent of the instructor.

**596D. Directed Individual Studies: Design. (½ to 3 courses)** Hours to be arranged. Prerequisite: graduate standing. May be repeated by consent of the instructor.

**596E. Directed Individual Studies: Acting. (½ to 3 courses)** Hours to be arranged. Prerequisite: graduate standing. May be repeated by consent of the instructor.

**596F. Directed Individual Studies: Production. (½ to 3 courses)** Hours to be arranged. Prerequisite: graduate standing. May be repeated by consent of the instructor.

**597. Preparation for the Qualifying Examination for the Ph.D. in Theater Arts. (½ to 2 courses)** May be repeated for a total of three courses.

**598. M.A. Thesis in Theatre Arts. (½ to 2 courses)** Research and writing for the M.A. thesis. Limited to students who have been advanced to candidacy. May be repeated for a total of three courses.

**599. Dissertation in Theater Arts. (½ to 2 courses)** Research and writing for the doctoral dissertation. Limited to students who have been advanced to candidacy. May be repeated for a total of three courses.

### Related Courses in Other Departments

**Classics 142. Ancient Drama.**

**Dance 152A. Lighting Design for Dance Theater.**

**152B. Costume and Scenic Design for Dance Theater.**

**English 10A-10B-10C. English Literature.**

**90. Shakespeare.**

**112. Children's Literature.**

**135A-135B-135C. Creative Writing: Drama.**

**167. The Drama, 1842 to the Present.**

**Humanities 1A-1B. World Literature.**

**Integrated Arts 1A-1B-1C.**

**Music 135A-135B-135C. History of Opera.**

### ZOOLOGY

The departments of Botanical Science and Zoology have merged to form the Department of Biology. Students currently enrolled as majors in Botanical Science or Zoology may complete requirements as stated in the 1971-1972 General Catalog (or the Supplement to the 1971-1972 General Catalog), or they may petition to change their majors to Biology.

Advising appointments and sample curricula are available in the Biology Student Affairs Office.

### ADMINISTRATIVE OFFICERS

#### REGENTS EX OFFICIO

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*Governor of California and President of The Regents*

Mervyn M. Dymally

*Lieutenant Governor of California*

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Charles D. Field

*Vice President of the Alumni Association of the University of California\*\**

David S. Saxon

*President of the University*

\*New or changed wording.

\*\*Cheryl F. Biles and Forrest A. Plant, Regents designate (non-voting).

#### APPOINTED REGENTS†

†Terms of Regents expire during the year named in parentheses, with names arranged in order of original accession to the Board. The Governor appoints all Regents except the student Regent (last name in list), who is appointed by the Board for a one-year term beginning July 1 and ending June 30. Regents appointed before March 1, 1976, are serving sixteen-year terms. Those appointed after that date serve twelve.

Edward W. Carter (1982)

Frederick G. Dutton (1978)

William K. Coblenz (1980) *Chairman of the Board*

DeWitt A. Higgs (1982)

Glenn Campbell (1984)

William French Smith (1986)

Robert O. Reynolds (1986) *Vice Chairman of the Board*

Dean A. Watkins (1984)

Joseph A. Moore (1990)

John H. Lawrence, M.D. (1988)

William A. Wilson (1988)

Gregory Bateson (1988)

Wilma Martinez (1990)

Verne Orr (1988)

John F. Henning (1989)

Stanley K. Sheinbaum (1989)

Yori Wada (1980)

Michael B. Salerno (1978)

Theodora Kroeber—Quinn (1978)

NOTE: For key to symbols, see page 51

**PRINCIPAL OFFICERS OF THE REGENTS**

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*General Counsel*

Owsley B. Hammond  
*Treasurer*

Miss Marjorie J. Woolman  
*Secretary*

*Faculty Representative to the Board of Regents*  
William B. Fretter (September 1, 1976 to August 31, 1977)  
John S. Galbraith (September 1, 1977 to August 31, 1978)

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President of the University  
*David S. Saxon*

Vice President of the University  
*Chester D. McCorkle, Jr.*

Academic Vice President  
*Donald C. Swain*

Vice President — Academic and Staff Personnel Relations  
*Archie Kleingartner*

Vice President — Agriculture and University Services  
*James B. Kendrick, Jr.*

Special Assistant to the President for Governmental Relations  
*Lowell J. Paige*

Assistant President — Coordination and Review  
*Dorothy E. Everett*

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*David A. Wilson*

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*Clark Kerr*

*President of the University, Emeritus, and Professor, Emeritus, of Economics*  
*Charles J. Hitch*

*Vice President of the University, Emeritus, and Dean of the College of Agriculture, Emeritus:*  
*Claude B. Hutchison*

*Vice President of the University, Emeritus, Professor, Emeritus, of Agricultural Economics, and Agricultural Economist, Emeritus:*  
*Harry R. Wellman*

*Vice President, Emeritus, and Secretary and Treasurer of the Regents, Emeritus:*  
*Robert M. Underhill*

*General Counsel of the Regents, Emeritus:*  
*Thomas J. Cunningham*

*Vice President — Educational Relations, Emeritus and Professor, Emeritus, of Economics*  
*Frank L. Kidner*

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*Chancellor at Berkeley:*  
*Albert H. Bowker*

*Chancellor at Davis:*  
*James H. Meyer*

*Chancellor at Irvine:*  
*Daniel G. Aldrich, Jr.*

*Chancellor at Los Angeles:*  
*Charles E. Young*

*Chancellor at Riverside:*  
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# Index

- Academic Counseling, 9  
 Accounting, 161, 162, 163, 166  
 Administrative Officers, 233  
 Admission to the University, 5  
   *application for*, 5  
   *by examination*, 6  
   *from another campus of the University*, 8  
   *from other colleges*, 6  
   *from other countries*, 7  
   *from out-of-state*, 6  
   *in advanced standing*, 7  
   *in freshman standing*, 5  
   *in graduate status*, 7  
   *renewal*, 8  
   *to the School of Architecture and Urban Planning*, 31  
   *to the Graduate School of Business Administration, (See Graduate School of Management)*, 42  
   *to the School of Dentistry*, 34  
   *to the Graduate School of Education*, 34  
   *to the School of Engineering and Applied Science*, 7, 37  
   *to the School of Law*, 42  
   *to the Graduate School of Library and Information Science*, 42  
   *to the Graduate School of Management*, 42  
   *to the School of Medicine*, 44  
   *to the School of Nursing*, 44  
   *to the School of Public Health*, 45  
   *to the School of Social Welfare*, 47  
   *to Summer Sessions*, 5, 8  
  
 Advanced Standing, 6  
 Advancement to candidacy, 49  
 Aerospace studies, 52  
 African languages, 160  
 African studies, 24, 52, 147  
 Afro-American studies, 25  
 Air Force R.O.T.C., 20, 52  
   *Financial Assistance*, 15  
 Akkadian, 183  
 Algebra, number theory, logic, 168, 169  
 Alumni scholarships, 14  
 American history and institutions, 11  
 Amharic, 182  
 Analysis, 169, 170  
 Anatomy, 53  
   *Medical History Division*, 54  
 Ancient Egyptian, 180  
 Ancient Near East, 180  
 Anthropology, 55, 228  
 Application fee, 5, 7, 12  
   *renewal of*, 8  
   *review and notice of admission*, 5, 7  
 Applied Linguistics (interdepartmental), 60  
 Applied mathematics program, 170, 171  
 Appointed Regents, 233  
 Arabic, 180  
 Aramaic, 182  
 Archaeology, 58, 61, 146, 180, 187  
 Architectural and Urban Analysis, 32  
 Architecture and Urban Design Programs, 31  
 Architecture and Urban Planning, School of, 31, 62  
 Armenian, 181  
 Army R.O.T.C., 20, 173  
   *Financial assistance*, 15  
 Army Reserve Officers' Training Corps (Military Science), 20  
  
 Art—courses, 66  
   *exhibits*, 4  
   *galleries*, 4, 70  
 Art History, 66, 67  
 Asian American Studies, 24  
 Assistantships, 13  
 Associated Students, 19  
   *membership fee*, 12  
 Astronomy, 70  
 Athletics, 19  
 Atmospheric Sciences, 71  
  
 Bachelor of Arts degree—  
   *College of Fine Arts*, 29  
   *College of Letters and Science*, 20  
 Bachelor of Science degree—  
   *College of Letters and Science*, 20  
   *School of Engineering and Applied Science*, 37  
   *School of Nursing*, 45  
   *School of Public Health*, 45  
 Bacteriology (Microbiology), 73  
 Baltic, 126, 219  
 Bambara, 160  
 Bantu, 160  
 Bashkir, 183  
 Basic Educational Opportunity Grant, 13  
 Behavioral science, 166  
 Behavioral sciences, 146, 212, 214  
 Berber, 181  
 Biblical studies, 181  
 Biochemistry, 75, 82  
   *See Departments of Biological Chemistry, Biology and Chemistry*  
 Biological chemistry, 75  
 Biology, 76  
   *and culture*, 56  
 Biomathematics, 80, 228  
   *computer*, 89  
 Biostatistics, 46, 212, 213, 214  
 Board and lodging, 15  
 Botanical gardens, 4  
 Botanical Sciences (See Department of Biology), 76  
 Botany, 77  
 Breadth requirements, 21  
 Bulgarian, 219  
 Business Administration—See Graduate School of Management  
   *Graduate School of*, 42  
   *courses*, 161  
   *computer sciences*, 89  
   *statistics*, 228  
 Business economics, 162, 166  
   *major for business teachers*, 100  
 Business education (See Department of Economics)  
   *courses*, 100, 103  
   *credential*, 100  
   *major for business teachers*, 100  
 Business law, 166  
  
 Calendar, IV  
 California Student Aid, 14  
 Campuses of the University, 1  
 Campus Activities Service Office, 18  
 Campus Programs and Activities Office, 18  
 Candidacy for a Degree, 11  
 Candidate in Philosophy Degree, 49  
 Career Planning and Placement, 18  
 Caucasian languages, 181  
  
 Cell Biology and Virology, 173  
 Centers—  
   *African Studies*, 2  
   *Afro-American Studies*, 2  
   *American Indian Studies*, 2  
   *Asian American Studies*, 2  
   *Chicano Studies Center*, 2  
   *Comparative Folklore and Mythology*, 3  
   *Computer-based Behavioral Studies*, 3  
   *Grunwald Center for the Graphic Arts*, 4  
   *Latin American Studies*, 3  
   *Learning Skills Center*, 18  
   *Medieval and Renaissance Studies*, 3  
   *Mental Retardation Research Center*, 3  
   *The Gustave E. vonGrunebaum Center for Near Eastern Studies*, 3  
   *Russian and East European Studies*, 3  
   *Survey Research Center*, 3  
 Center for the Study of Evaluation, 37  
 Ceramics and Ceramic Processing, 68, 69, 109, 115  
 Certificate in teaching English as a second language, 122  
 Chagatay, 183  
 Change of college major, 11, 23  
 Chemical, Nuclear, and Thermal Engineering, 39, 111  
 Chemistry, 81  
 Chicano studies, 25  
 Chinese, 187  
 Clark Memorial Library, 1  
 Classics, 85  
 Classification and numbering of courses, 51  
 College Entrance Examination Board Scholastic Aptitude Test, 5  
 College of Fine Arts, 29  
 College of Letters and Science, 20  
 College Work-Study (Federal), 14  
 Commencement, 11  
 Communication Studies, 87  
   *major in*, 26  
 Community health education, 212, 213  
 Comparative government, 199  
 Comparative Literature, 88  
 Comprehensive Examination, 49  
 Computer sciences, 39, 89, 105, 111  
   *Mathematics*, 27  
 Computing and Information Systems, 4  
 Computing Services, 18  
 Concerts, 4  
 Concurrent Degree programs, 34, 50  
 Concurrent enrollment, 9, 20, 30, 49  
 Contemporary problems, 57  
 Cooperatives, 15  
 Correspondence instruction, 4  
 Council on Education Development, 90  
 Counseling Division, 18  
 Courses—classification, 51  
 Courses of instruction, 51  
 Credentials, teaching, 31, 36, 48, 76, 100, 119, 122, 127, 139, 168, 175, 193, 224, 226  
 Credit, courses, 51  
   *by examination*, 9, 23, 36  
   *for work taken in other colleges*, 6  
 Cultural and Recreational Affairs, Office of, 19  
 Curricula, Survey of, 1  
 Cybernetics, 26  
 Czechoslovak, 219  
  
 Dance, 4, 90, 124  
 Danish, 137

- Dean of Students Office, 18  
 Declaration of major, 23  
 Degree, summary, 1  
   *announcement of candidacy*, 11  
   *advancement to candidacy*, 49, 50  
   *general University requirements*, 10, 21  
   *bachelor's and first professional*, 23, 24, 29, 32, 37, 45  
 Dentistry—  
   *predental curricula*, 28  
   *predental hygiene curriculum*, 28  
   *predental requirements*, 34  
   *School of*, 34  
 Dentistry (Oral Biology), 91  
 Departmental Scholar Program, 49  
 Design, 31, 32  
 Dickey Collection, 4  
 Discipline, 11  
 Dismissal—scholarship, 10  
 Dissertation, 50  
 Diversified Liberal Arts (Special Program In), 24  
 Doctoral committee, 50  
 Doctoral Degrees other than the Ph.D., 50  
 Doctor's degrees, 35, 41, 43, 46, 49, 50  
 Dormitories, 15  
 Double major, 23  
 Duplication of degrees, 8  
 Dutch-Flemish and Afrikaans, 137
- Earth and Space Sciences, 92  
 Earthquake engineering, 117  
 East Asian Studies, 26  
 Economics, 97, 228  
 Economics-System Science, 26  
 Education Abroad Program, 5  
 Education—Graduate School of, 34, 100  
   *counseling*, 36  
   *courses*, 100, 228  
 Educational Career Services, 18  
 Educational Fee Grants, 14  
 Educational Fee Loan, 14  
 Educational Testing Service, 6, 7, 40  
 Egyptian, 180  
 Electrical Sciences and Engineering, 39, 105, 113  
 Elementary teaching credential, 36  
 Eligibility Index Table, 6  
 Emergency loans, 14  
 Employment Opportunities, 14, 15, 18  
 Endocrinology, 54  
 Engineer Degree (Requirements for the), 41  
 Engineering and Applied Science—School of, 37, 105, 228  
   *admission*, 37  
   *applicants from other countries*, 7  
   *computer sciences*, 39, 89  
   *courses*, 107  
   *executive program*, 41  
   *graduate study in*, 39  
 Engineering systems, 39, 89, 106, 114  
 English, 118  
 English as a second language, 122  
   *courses*, 123  
   *(See Subject A)*  
   *for foreign students*, 7, 122  
 Enrollment in classes, 9  
   *summer session courses*, 8  
 Environmental health, 211, 212, 214  
 Environmental management, 32  
 Environmental Science and Engineering  
   (Interdepartmental), 123
- Environmental technology, 32  
 Epidemiology, 212, 213, 215  
 Ethiopic, 182  
 Ethnic Arts, interdisciplinary studies, 26, 31, 124  
 Ethnic collections, 4  
 Ethnography, 56  
 Examinations—advanced placement, 23  
   *chemistry, placement*, 81  
   *comprehensive*, 49  
   *in English as a second language*, 7, 10  
   *final*, 10  
   *for credit*, 20, 23, 36  
   *graduate record*, 36, 40  
   *graduate study in business*, 42  
   *health*, 17  
   *law school admission*, 42  
   *mathematics placement*, 168  
   *medical school admission*, 44  
   *Subject A*, 5, 10  
 Expenses of students, 11  
 Experimental Educational Programs (Office of), 19  
 Extension, University, 4, 29, 36
- Failures and conditions, 10  
 Federal Insured Student Loan, 14  
 Fees, 11  
   *regular students*, 12  
 Fernald school, 210  
 Fields of Concentration—  
   *College of Fine Arts*, 29  
   *College of Letters and Science*, 20  
   *in Business Administration (See Management)*  
   *in Education*, 34  
   *in Engineering*, 37  
   *in Management*, 42  
   *in Public Health*, 45  
   *higher degrees*, 48  
 Films, 4  
 Final examinations, 10  
 Final Oral Examination, 50  
 Finance, 162, 164  
 Financial aids for students, 13  
 Fine Arts—College of, 29  
 Finnish, 137  
 Finno-Ugric, 126  
 Flemish, 137  
 Folklore and Mythology Group, 125  
 Foreign language—  
   *credit in, foreign students*, 7  
   *Fine Arts requirements*, 30  
   *for higher degrees*, 49, 50  
   *Letter and Science requirement*, 21  
 Foreign language training, 5  
 Foreign literature in translation, 127  
 Foreign students—  
   *admission from foreign schools*, 6, 7  
   *courses in English for*, 10, 122  
   *language credit in mother tongue*, 7  
   *special examination in English for*, 5, 7, 10  
   *Subject A requirement applied to*, 10  
 Fraternities, 15  
 French, 127  
 Fula, 160
- General regulations, 8  
 General and teacher training (Mathematics), 169  
 Genetics, 130  
 Geochemistry, 95, 130, 134
- Geography, 130  
 Geology (See Earth and Space Sciences), 134  
 Geometry, 170  
 Geophysics and planetary physics, 134  
 Geophysics and Space Physics, (See Earth and Space  
 Sciences), 135  
 Georgian, 181  
 Germanic languages, 135  
 Gothic, 136  
 Grade points, 10  
 Grades and Scholarship Requirements, 10  
 Graduate Admissions, 7  
 Graduate Cross-Enrollment Program, 8  
 Graduate degrees,  
   *requirements*, 48  
 Graduate Division, 48  
   *minimum requirements*, 48  
 Graduate Program, 48  
 Graduate School of Business Administration (See Graduate  
 School of Management)  
 Graduate Status, 7, 8  
 Graduate Students Association, 19  
   *membership fee*, 12  
 Graduate study in engineering and computer science, 39  
 Graduate study, preparation for, 48  
 Grant In-Aid, 14  
 Grants, 14  
 Greek, 86  
 Guidance committee—for Ph.D., 50
- Hausa, 160  
 Health education, 46  
 Health requirements, 17  
 Health insurance, 7, 16  
 Health services, 16  
 Hebrew, 181  
 Herbarium, 4  
 Hieroglyphics, (Ancient Egyptian), 180  
 High School Proficiency Examination, 6  
 High School—subject requirements, 5  
 Hindi, 160  
 Hispanic Languages and Literatures, 224  
 History, 138  
 History and Development of the University, 1  
 Honors, 20, 31  
 Honors program, 20, 31  
 Hospital administration, 211, 214  
 Humanities, 22, 30, 145  
 Hungarian, 126, 137
- Icelandic, 138  
 Igbo, 160  
 Immunology, 74, 75, 78, 145, 172  
 Indigenous Languages of the Americas, 160  
 Individual major, 23, 31  
 Individual Ph.D., Program, 49  
 Indo-European studies, 27, 145  
 Industrial relations, 2, 162, 164  
 Infectious and tropical diseases, 212, 213  
 Institutes—  
   *American Cultures*, 2  
   *Archaeology*, 3  
   *Brain Research*, 3  
   *Dental Research*, 2  
   *Geophysics and Planetary Physics*, 2  
   *Industrial Relations*, 2  
   *Jules Stein Eye*, 3  
   *Medical Engineering*, 2

- Molecular Biology*, 2  
*Rehabilitation and Chronic Diseases*, 3  
*Social Science Research*, 3  
*Survey Research Center*, 3  
*Western Management Science*, 3
- Insurance, 16  
 Integrated Arts, 146  
 Intention to register, 5  
 Intercampus Transfer, 8  
 Interdepartmental degree programs, 24, 50  
 Interdisciplinary colloquia, 146  
 Interdisciplinary Major Area Studies, 24  
 International relations, 24, 198  
 International Students and Scholars (Office of), 19  
 Intramural sports, 19  
 Introduction, 1  
 Iranian, 182  
 Irish, 122  
 Islamics, 182  
 Islamic studies, 147  
 Italian, 148
- Japanese, 187  
 Jewish Studies, 182  
 Journalism, 150
- Key to footnote symbols, 51  
 Kinesiology, 151
- Laboratory of Nuclear Medicine and Radiation Biology, 2
- Languages—for admission, 5  
   for bachelor's degree, 21, 30  
   courses—  
     African, 22, 23  
     Afrikaans, 137  
     Akan, 160  
     Akkadian, 183  
     Amharic, 183  
     Arabic, 22, 23, 180  
     Aramaic, 182  
     Armenian, 181  
     Baltic, 126, 219  
     Bambara, 160  
     Bantu, 160  
     Bashkir, 183  
     Berber, 181  
     Bulgarian, 219  
     Chagatay, 183  
     Chinese, 22, 23, 187  
     Coptic, 180  
     Czechoslovak, 219  
     Danish, 137  
     Dutch-Flemish, 137  
     Egyptian (Ancient), 180  
     Egyptian (Late), 180  
     Ethiopic (Old), 182  
     Finnish, 137  
     Finno-Ugric, 126  
     Flemish, 137  
     French, 22, 23, 127  
     Fula, 160  
     Georgian, 181  
     German, 22, 24, 135  
     Gothic, 136  
     Greek, 22, 24, 86  
     Hausa, 160  
     Hebrew, 22, 24, 181  
     Hindi, 160
- Hungarian, 126, 137  
     Icelandic, 138  
     Igbo, 160  
     Iranian (Old), 182  
     Irish, 122  
     Islamic, 147  
     Italian, 22, 24, 148  
     Japanese, 22, 24, 187  
     Latin, 22, 24, 86  
     Lithuanian, 220  
     Luganda, 160  
     Niger-Congo, 160  
     Norwegian, 137  
     Ottoman, 183  
     Pali, 187  
     Persian, 182  
     Phoenician, 182  
     Polish, 219  
     Portuguese, 22, 24, 226  
     Prakrits, 187  
     Quechua, 160  
     Romanian, 220  
     Russian, 126, 219  
     Sanskrit, 187  
     Saxon (Old), 136  
     Serbocroatian, 220  
     Slavic, 219  
     Slovak, 220  
     Sotho, 160  
     Spanish, 22, 24, 224  
     Sumerian, 180  
     Swahili, 160  
     Swedish, 137  
     Syriac, 182  
     Tagalog, 160  
     Thai, 160  
     Tibetan, 187  
     Turkic, 183  
     Turkish, 183  
     Ugaritic, 182  
     Ukrainian, 220  
     Urdu, 183  
     Uzbek, 183  
     Vedic, 182, 187  
     Welsh, 122  
     Xhosa, 160  
     Yiddish, 137  
     Yoruba, 160  
     Zulu, 160  
     credit in, foreign students, 7  
     for higher degrees, 49, 50
- Latin, 22, 24, 86  
 Latin American studies, 22, 24, 27, 43, 48, 50, 152  
 Law—School of, 42, 43, 155  
 Prelaw Studies, 29  
 Learning Skills Center, 18  
 Leave of absence, 8  
 Lectures, 4  
 Legal Services (Student), 19  
 Letters and Science—College of, 20  
 Libraries, 1  
 Library and Information Science—Graduate School of, 42, 156  
   courses, 156  
   computer sciences, 89  
 Life sciences, 22  
 Life, Physical and Biological Sciences, 30  
 Linguistics, 146, 157  
   computer sciences, 89  
   general linguistics, 159
- Living accommodations, 15  
 Loan, 14  
 Lockers, 12, 13  
 Logic and foundations, 170  
 Lower Division Program, The, 1  
 Luganda, 160
- Major subjects—**  
   *Fine Arts*, 29  
   *Letters and Science*, 20  
   *Architecture and Urban Planning*, 31  
   *Business Administration (See Management)*  
   *Dentistry*, 34  
   *Education*, 34  
   *Engineering*, 37  
   *Law*, 42  
   *Library and Information Science*, 42  
   *Management*, 42  
   *Medicine*, 44  
   *Nursing*, 44  
   *Public Health*, 45  
   *Social Welfare*, 47  
   graduate study, 48
- Management, in the Arts**, 43  
**Management, Graduate School of**, 42, 161  
**Management theory**, 162  
**Man and Culture, Development of**, 56  
**Marketing**, 162, 164, 165, 166  
**Married students' apartments**, 15  
**Mass communication**, 26  
**Master of Architecture Degree Program**, 32  
**Masters' degrees**, 48, 49  
   *School of Architecture and Urban Design*, 32, 33, 34  
   *Biostatistics*, 46  
   *Business Administration (See Management)*  
   *Computer Sciences*, 39  
   *Engineering*, 39, 40, 41  
   *Management*, 42, 43  
   *Nursing*, 45  
   *Public Health*, 46  
   *Social Welfare*, 48
- Master's degrees**,  
   graduate division, 48  
**Materials Engineering**, 39, 106, 115  
**Mathematics**, 167, 228  
   in behavioral sciences, 146  
**Mathematics—computer science**, 27  
**Mathematics—system science**, 27, 168  
**Mechanics and structures**, 40, 106, 115  
**Medical history**, 54, 171  
**Medical physics (Radiological Sciences)**, 216  
**Medicine, School of**, 44  
**Men's Intercollegiate Sports**, 19  
**Meteorology (See Atmospheric Sciences)**  
**Methodology and Computer-Aided Design**, 32  
**Microbiology**, 73, 74, 171, 172, 212  
**Microbiology and Immunology**, 171  
**Military science—courses**, 173  
**Minimum Progress**, 10, 21, 29  
**Minimum Requirements (Graduate Division)**, 48  
**Minimum Standards (University)**, 48, 50  
**Molecular Biology**, 74, 174  
**Mongolian**, 187  
**Motels and Trailer Courts**, 15  
**Motion Picture and Television Areas**, 230  
**Museums and Special Facilities**, 4  
   *UCLA Frederick S. Wight Art Gallery*, 4  
   *Museum of Cultural History*, 4  
   *Grunwald Center for Graphic Arts*, 4  
   *Botanical Gardens*, 4

- Computing and Information Systems, 4  
 Division of Laboratory Animal Medicine, 4  
 Natural Land and Water Reserves System, 4  
 Zoological collections, 4
- Music, 174  
 Musical events, 4  
 Mythology, 125
- National Direct Student Loans, 14  
 Naval R.O.T.C., 20, 178  
 Naval science, 178  
 Near Eastern Languages and Cultures—department, 179  
   *courses*, 182  
 Near Eastern studies, 3, 27  
 Neurology, 54, 195  
 Neurophysiology, 54, 55  
 Neuropsychiatric Institute School, 37  
 Neuroscience, 54, 55, 183  
 Niger-Congo, 160  
 Non-Discrimination Notice, 8  
 Nonresident students, tuition, 12  
   *reduced programs*, 12  
   *special requirements*, 6  
 Norwegian, 137  
 Number theory, 169  
 Numbering of courses, 51  
 Nursing—School of, 44, 183  
   *prenursing curriculum*, 28  
   *courses*, 184  
 Nutritional sciences—courses, 211, 212, 214, 215  
   *curriculum*, 46
- Oceanography, 94  
 Office of Special Services/Veteran Affairs, 18  
 Office of Student Services (Education), 36  
 Old Testament, 180  
 Ombudsman, 19  
 Organized Research Units, 2  
 Oriental languages, 186  
 Orientation program, 9  
 Ottoman, 183
- Paleontology, 77, 95, 96, 97  
 Pali, 187  
 Parking, 15  
 Part-time study, 12  
 Passed-Not Passed Grades, 10  
 Pathology, 188  
 Persian, 182  
 Pharmacology, 189, 228  
 Philosophy, 189  
 Phoenician, 182  
 Photography, 68, 69  
 Physical activities, 19  
 Physical education, (See Kinesiology)  
 Physical sciences, 22  
 Physics, 192  
 Physiology, 195  
 Placement and Career Planning Center, 18  
 Placement services, 18  
 Planetary and Space Science (See Geophysics and Space  
   Physics)  
 Planetary Physics, geophysics and, 134  
 Planning, 62  
 Plant science, 196  
 Polish, 219  
 Political science, 196, 228  
 Politics, 198  
 Portuguese, 226
- Prakrits, 187  
 Pre dental curriculum, 28  
 Pre dental hygiene curriculum, 28  
 Pre Health care advising, 28  
 Prelaw Studies, 29  
 Premedical studies, 28  
 Prenursing curriculum, 28  
 Preoptometry curriculum, 29  
 Prepharmacy curriculum, 29  
 Prephysical therapy curriculum, 29  
 Prepsychology major, 206  
 Prepublic health curriculum, 29  
 President's Work-Study, 15  
 Principal Items of Expense, 13  
 Principal Officers of the Regents, 234  
 Private Landlords, 15  
 Privately Operated Residences, 15  
 Prizes, 14  
 Probation, 10  
 Professional Curricula, 28, 29  
 Psychiatry and Biobehavioral Sciences, 201  
 Psychological and Counseling Services, 17  
   *Behavioral Division*, 17  
   *Counseling Division*, 18  
 Psychology, 205, 228  
   *clinic*, 210  
   *computer sciences*, 90  
 Public administration, 198, 199  
 Public Health—School of, 43, 45  
   *computer*, 90  
   *courses*, 210, 228  
 Public law, 199, 200  
 Public lectures, 4
- Qualifying examinations, 50
- Radiological sciences, 81, 215  
   *Medical physics*, 216  
 Readmission, 8  
 Recreation Services and Facilities, 19  
 Refund of fees, 11  
 Regents ex officio, 233  
 Regents' Scholarships, 14  
 Regents and University Loans, 14  
 Registration, 8  
   *fee*, 12  
 Regulations governing major, 23  
 Religion major, 27  
 Religious facilities and programs, 19  
 Religious studies, 27  
 Renewal of application, 8  
 Repetition of courses, 10  
 Requirements, general University and College, 21  
 Requirements, graduate degrees, 48  
 Reserve officers' training programs, 20  
 Research facilities, 2  
 Residence Hall Budget, 13  
 Residence—rules governing for fee purposes, 12  
 Requirements for degrees, 10, 20, 29, 48  
 Residence halls, 15  
 Romance Linguistics and Literature, 217  
 Romanian, 220  
 Russian, 126, 219
- Sanskrit, 187  
 Satisfactory-Unsatisfactory Grades, 10  
 Saxon, 136  
 Scandinavian, 137  
 Scholar Program, 49
- Scholarship—grades of, 10  
   *in Graduate status*, 10  
   *minimum requirements*, 5, 10, 29, 30  
   *requirements for admission*, 5, 6  
 Scholarships, 14  
 Semitics, 182  
 Senior residence, 11  
 Serbocroatian, 220  
 Site of the campus, 1  
 Slavic languages, 218  
 Slovak, 220  
 Social sciences, 22, 30  
 Social security benefits, 18  
 Social Welfare—School of, 47  
   *courses*, 220, 228  
 Sociology, 221, 228  
 Socio-physical Research and Design, 32  
 Sororities, 15  
 Sotho, 160  
 South Asian languages, 160  
 Spanish and Portuguese, 224  
 Spanish Speaking Mental Health Research, 210  
 Special Facilities, 4  
 Special Services/Veteran Affairs, 18  
 Special students, 6  
 Speech, 227  
 Statistics, 161, 162, 167, 169, 171  
 Student Counseling Services, 18  
 Student conduct and discipline, 11  
 Student employment, 14, 15, 18  
 Student health service, 16, 19  
 Student Legal Services, 19  
 Student Services and Activities, 16  
 Student union fee, 12  
 Study list, 9  
 Study-list limits, 9  
 Study and Research Facilities, 1  
 Study of Religion, 27  
 Subject A—English Composition, 5, 10  
 Subject A—examination, 5, 10  
   *courses*, 5, 10, 228  
 Subject requirements, 21, 30  
 Sumerian, 180  
 Summer Sessions, 5, 8  
 Sunset Canyon Recreation Center, 19  
 Supervised teaching, 104, 105  
 (Supplemental) Educational Opportunity Grants, 14  
 Survey of curricula, 1  
 Swahili, 160  
 Swedish, 137  
 Syriac, 182  
 System science, 40, 106, 117  
   *Mathematics*, 27
- Tagalog, 160  
 Teacher education laboratory, 36  
 Teacher placement, 18  
 Teacher preparation (Mathematics), 169  
 Teaching credentials, 31, 36, 48, 76, 100, 119, 122, 131  
   139, 142, 168, 175, 224, 228  
 Test—see examinations  
 Thai, 160  
 Theater Arts, 228  
   *events*, 4  
   *general secondary credential areas*, 229  
 Theory, History and Criticism, 32  
 Thesis, 49  
 Thesis or Comprehensive Examination, 49  
 Tibetan, 187



- Topology, 170  
 Transcripts of record, 5, 7, 11  
 Transfer of credit, 6  
 Transportation (Urban), 65  
 Transportation to campus and parking, 15  
 Tuition for nonresidents of California, 12  
 Turkic languages, 183  
 Turkish, 183
- Ugaritic, 182  
 Ukrainian, 220  
 Undergraduate status, 5, 8  
 Units of work and credits, 9, 51  
 University, Alumni, Endowed and Agency Scholarships, 14  
 University Elementary School, 37  
 University Extension, 4, 9, 21, 29, 30, 36  
 University Grants and Scholarships for Undergraduates, 14
- University Library, 1  
 University loans, 14, 15  
 University Minimum Standards, 48, 50  
 University Policies Commission, 19  
 University Recreation Association, 19  
 University Religious Conference, 19  
 University, The, 1  
 Urban land economics, 165  
 Urban Planning Program, 33  
 Urban Studies-Organizational Studies (Special Program in),  
     25  
 Urdu, 183  
 Uzbek, 183
- Vedic, 182, 187  
 Veterans—information, 18
- Welsh, 122  
 Withdrawal from the University, 11  
     *from a course*, 9  
 Women's Intercollegiate Athletics, 19  
 Women's Studies (Special Program in), 25  
 Work-Study Programs, 14
- Xhosa, 160
- Yiddish, 137  
 Yoruba, 160  
 Yugoslav, 220
- Zoology, (See Biology)  
     *Dickey collection*, 4  
 Zulu, 160



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