

UCLA

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**All announcements herein are subject to revision.
Changes in the list of Officers of Administration and Instruction may be made subsequent to the date of publication.**

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Letters of inquiry concerning the University of California, Los Angeles, should be addressed to the Office of Admissions, University of California, 405 Hilgard Avenue, Los Angeles 24, California.

Letters of inquiry concerning the University in general should be addressed to the Registrar, University of California, Berkeley 4, California.

For the list of bulletins of information concerning the several colleges and departments, see page 3 of the cover of this bulletin.

In writing for information please mention the college, department, or study in which you are chiefly interested.



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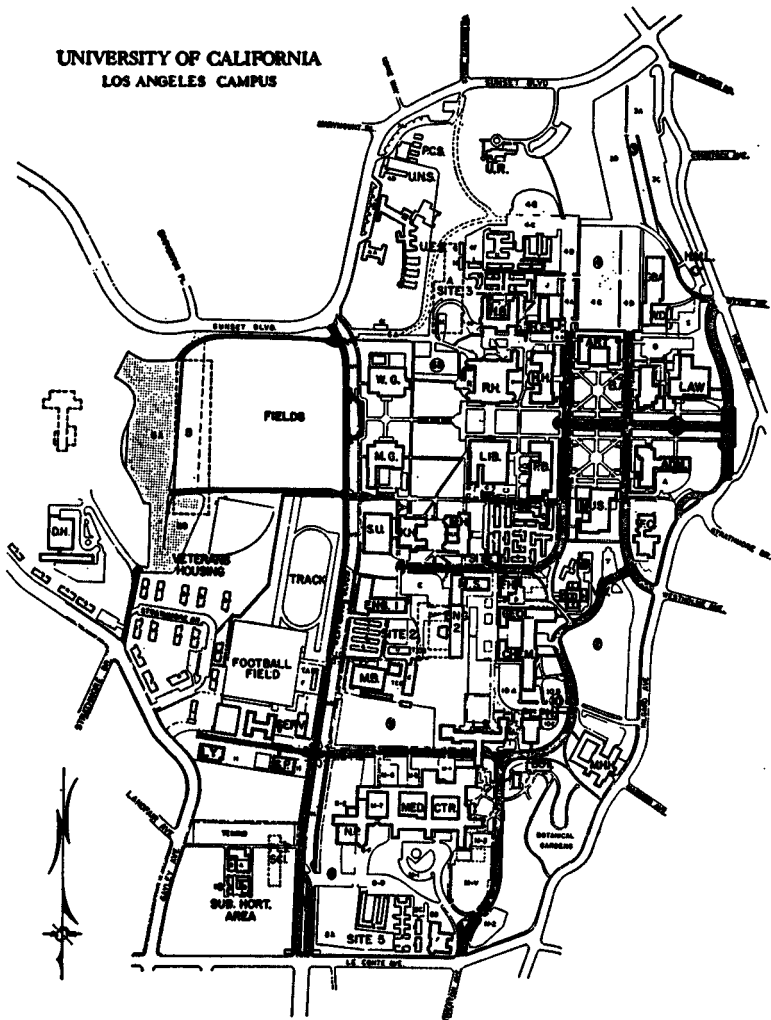
General Catalogue Issue

Fall and Spring Semesters

1961-1962

UNIVERSITY OF CALIFORNIA • LOS ANGELES

UNIVERSITY OF CALIFORNIA
LOS ANGELES CAMPUS



UNIVERSITY BUILDINGS

ADM	ADMINISTRATION	LIB	LIBRARY	UR	UNIVERSITY RESIDENCE
ART	DICKSON ART CENTER	LS	LIFE SCIENCES	VIV	VIVARIUM
BOT	BOTANY	MS	MATHEMATICAL SCIENCES	WD	WESTERN DATA PROCESSING CENTER
BAE	BUSINESS ADMINISTRATION AND ECONOMICS	MB	MECHANICS	WG	WOMEN'S GYMNASIUM
CHEM	CHEMISTRY	MED.CTR.	MEDICAL CENTER	SITE 1	TEMPORARY BUILDINGS
CYC	CYCLOTRON	MG	MEN'S GYMNASIUM	IM	AIR SCIENCE & TACTICS
DH	DYKSTRA HALL	MHH	MIRA HERSHEY HALL	SITE 2	TEMPORARY ENGINEERING BUILDINGS
ENG 1	ENGINEERING 1	MH	MOORE HALL	SITE 3	TEMPORARY BUILDINGS
ENG 2	ENGINEERING 2	MUS	MUSIC	SU	NUMERICAL ANALYSIS
FC	FACULTY CENTER	PL	PHYSICS-BIOLOGY	3V	THEATER ARTS
FH	FRANZ HALL	PL, PH	PLANT PHYSIOLOGY	SITE 5	TEMPORARY BUILDINGS
GEOG.	GEOLOGY	PL, SCI	PLANT SCIENCES	SABC	UNIVERSITY EXTENSION
GBA	GRADUATE SCHOOL OF BUSINESS ADMINISTRATION	PCS	PSYCHOLOGY CLINIC SCHOOL	50	MEDICAL SCHOOL-HOSPITAL
HH	HAINES HALL	RH	ROYCE HALL	5E	ATOMIC ENERGY PROJECT
HE	HOME ECONOMICS	SERV	SERVICE BUILDINGS	5F	MEDICAL SCHOOL
HML	HOME MANAGEMENT LAB.	SP	STEAM PLANT		
HB	HUMANITIES	SU	STUDENT UNION		
KM	KERCKHOFF HALL	TAB	TEMPORARY ATHLETIC BUILDING		
LY	LAUNDRY	UES	UNIVERSITY ELEMENTARY SCHOOL		
LAW	LAW	UNS	UNIVERSITY NURSERY SCHOOL		

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CALENDAR, 1961-1962

1961

FALL SEMESTER

*Aug. 1, Tuesday	Application for admission to graduate standing in the fall semester, with complete credentials and the application fee, must be filed with the Dean of the Graduate Division on or before this date (April 15 for Social Welfare).
Aug. 15, Tuesday	Last day to file applications for readmission in graduate standing by students returning after an absence.
*Aug. 15, Tuesday	Applications for admission to undergraduate standing in the fall semester, with complete credentials and the application fee, must be filed with the Director of Admissions on or before this date.
Aug. 28, Monday	Last day to file applications for readmission in undergraduate standing by students returning after an absence.
Sept. 4, Monday	Labor Day—academic and administrative holiday.
Sept. 5, Tuesday, to Sept. 9, Saturday	} Counseling of students.
Sept. 6, Wednesday	Examination in English for foreign students.
Sept. 6, Wednesday	Examination in Subject A.
Sept. 11, Monday	Fall semester begins.
†Sept. 11, Monday, to †Sept. 13, Wednesday	} Registration of new (includes old undergraduates entering graduate status for first time) and re-entering students only.
Sept. 14, Thursday	Registration of continuing students who did not register by mail.
Sept. 15, Friday	Special examination in Subject A.
Sept. 18, Monday	Instruction begins.
Sept. 29, Friday	Last day to file registration packets or to change study lists <i>without fee</i> .
Oct. 2, Monday	Last day to file applications for advancement to candidacy for the master's degree to be conferred in January, 1962.
Oct. 3, Tuesday	Last day to add courses to study lists.
Oct. 3, Tuesday	Last day to file registration packets without penalty of lapse in status as a student in the University.
Oct. 12, Thursday	Last day to file applications for foreign language screening tests to be given October 21.
Oct. 21, Saturday	Foreign language screening tests.
Oct. 21, Saturday	Last day to file <i>without fee</i> notice of candidacy for the bachelor's degree to be conferred in January, 1962.
Oct. 23, Monday 4:00 p.m.	} Last day for undergraduate students to drop courses from study lists without penalty of grade F (failure).
Nov. 11, Saturday	End of mid-term period.
Nov. 23, Thursday Nov. 24, Friday	} Thanksgiving holiday—academic and administrative holiday.
Nov. 28, Thursday, to Nov. 25, Saturday	} Fall recess.
Nov. 27, Monday 4:00 p.m.	} Last day for graduate students to drop courses from study list without penalty of grade F (failure).
Dec. 1, Friday	Last day to file in final form with the committee in charge theses for the doctor's degree to be conferred in January, 1962.
Dec. 9, Saturday	Last day to file notice of candidacy for the bachelor's degree to be conferred in January, 1962.
Dec. 18, Monday, to Jan. 1, Monday	} Christmas recess.
Dec. 22, Friday, to Dec. 25, Monday	} Christmas holiday—academic and administrative holiday.
Dec. 29, Friday, to Jan. 1, Monday	} New Year's holiday—academic and administrative holiday.

* Also the last dates for renewal of applications submitted for a previous session by graduates and undergraduates respectively who have not previously registered in a regular semester.

† For details, see REGISTRATION CIRCULAR and official bulletin boards.

1962

- Jan. 2, Tuesday Instruction resumes.
 Jan. 2, Tuesday Last day to file in final form with the committee in charge theses for the master's degree to be conferred in January, 1962.
- Jan. 13, Saturday Instruction ends.
 Jan. 15, Monday Last day to file with the Dean of the Graduate Division completed copies of theses for the master's and doctor's degree to be conferred in January, 1962.
- Jan. 15, Monday, to } Final examinations, fall semester.
 Jan. 24, Wednesday }
 Jan. 24, Wednesday Fall semester ends.

1961

- *Dec. 15, Tuesday Applications for admission to graduate standing in the spring semester, with complete credentials and the application fee, must be filed with the Dean of the Graduate Division on or before this date.

1962

SPRING SEMESTER

- Jan. 2, Tuesday Last day to file applications for readmission in graduate standing by students returning after an absence.
- Jan. 10, Wednesday Last day for resident students to file application for undergraduate scholarships for the academic year 1962-1963.
- *Jan. 15, Monday Applications for admission to undergraduate standing in the spring semester, with complete credentials, must be filed on or before this date.
- Jan. 15, Monday Last day to file applications for readmission in undergraduate standing by students returning after an absence.
- Jan. 22, Monday, to }
 Jan. 27, Saturday } Counseling of students.
- Jan. 24, Wednesday Examination in English for foreign students.
- Jan. 29, Monday Examination in Subject A.
- Jan. 29, Monday Spring semester begins.
- †Jan. 30, Tuesday }
 †Jan. 31, Wednesday } Registration of new (includes old undergraduates entering graduate status for the first time) and re-entering students only.
- †Feb. 1, Thursday Registration of continuing students who did not register by mail.
- Feb. 2, Friday Special examination in Subject A.
- Feb. 5, Monday Instruction begins.
- Feb. 7, Wednesday Last day to file applications for fellowship and graduate scholarships tenable at Los Angeles for 1962-1963.
- Feb. 12, Monday Lincoln's Birthday—academic and administrative holiday.
- Feb. 18, Tuesday Last day to file applications for advancement to candidacy for the master's degree to be conferred in June or in August, 1962.
- Feb. 16, Friday Last day to file registration packets or to change study lists without fee.
- Feb. 20, Tuesday Last day to add courses to study lists.
- Feb. 20, Tuesday Last day to file registration packets without penalty of lapse in status as a student in the University.
- Feb. 22, Thursday Last day to file applications for foreign language screening tests to be given March 3.
- Mar. 1, Thursday Last day for entering students to file application for undergraduate scholarships or for Alumni Association scholarships for the academic year 1962-1963.
- Mar. 3, Saturday Foreign language screening tests.
- Mar. 12, Monday }
 4:00 p.m. } Last day for undergraduate students to drop courses from study lists without penalty of grade F (failure).

* Also the last dates for renewal of applications submitted for a previous session by graduates and undergraduates respectively who have not previously registered in a regular semester.

† For details, see REGISTRATION CIRCULAR and official bulletin boards.

Calendar

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- Mar. 17, Saturday
Mar. 31, Saturday
Apr. 6, Friday
Apr. 16, Monday
4:00 p.m.
Apr. 16, Monday, to
Apr. 21, Saturday
Apr. 23, Monday
May 5, Saturday
May 26, Saturday
May 28, Monday
May 28, Monday, to
June 7, Thursday
May 30, Wednesday
June 7, Thursday
- Last day to file *without fee* notice of candidacy for the bachelor's degree to be conferred in June, 1962.
End of mid-term period. *Conclude Reports 2 Apr*
Last day to file in final form with the committee in charge theses for the doctor's degree to be conferred in June, 1962.
} Last day for graduate students to drop courses from study list without penalty of grade F (failure).
} Spring recess.
Last day to file with the committee in charge theses for the master's degree to be conferred in June, 1962.
Last day to file notice of candidacy for the bachelor's degree to be conferred in June, 1962.
Instruction ends.
Last day to file with the Dean of the Graduate Division completed copies of theses for the master's and doctor's degrees to be conferred in June, 1962.
} Final examinations, spring semester.
Memorial Day—academic and administrative holiday.
Spring semester ends.

June 8,

THE REGENTS OF THE UNIVERSITY

REGENTS EX OFFICIO

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State Capitol, Sacramento 14

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State Capitol, Sacramento 14

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The term of the appointed Regents is sixteen years, and terms expire March 1 of the years indicated in parentheses.

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UNIVERSITY OF CALIFORNIA

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Gladys M. Jewett, Ph.D., *Counseling Center Manager.*
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Max S. Dunn, Ph.D., *Associate Dean*.
Raymond H. Fisher, Ph.D., *Associate Dean*.

College of Agriculture

Sidney H. Cameron, Ph.D., *Dean*.
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College of Engineering

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C. Martin Duke, M.S., *Associate Dean*.
Russell R. O'Neill, Ph.D., *Assistant Dean of Graduate Studies*.
Wesley L. Orr, C.E., *Assistant Dean*.
Edward H. Taylor, M.S., *Assistant Dean of Undergraduate Studies*.

College of Fine Arts

William W. Melnitz, Ph.D., *Acting Dean*.
David F. Jackey, Ph.D., *Dean, Emeritus*.

College of Letters and Science

Paul A. Dodd, Ph.D., LL.D., *Dean (to June 30, 1961)*.
Franklin P. Rolfe, Ph.D., *Acting Dean and Divisional Dean of Humanities*.
Francis E. Blacet, Ph.D., *Divisional Dean of Physical Sciences*.
Roy M. Dorcus, Ph.D., *Divisional Dean of Life Sciences*.
Donald R. Cressey, Ph.D., *Acting Divisional Dean of Social Sciences*.
Eli Sobel, Ph.D., *Associate Dean*.

**School of Business Administration and
Graduate School of Business Administration**

Neil H. Jacoby, Ph.D., *Dean*.
George W. Robbins, M.B.A., *Associate Dean*.
Fred E. Case, D.C.S., *Assistant Dean*.
James M. Gillies, Ph.D., *Assistant Dean of Graduate Student Affairs*.
Thomas A. Petit, Ph.D., *Assistant Dean of Undergraduate Student Affairs*.

School of Dentistry

Reidar F. Sognaes, L.D.S., D.M.D., Ph.D., *Dean*.

School of Education

Howard E. Wilson, Ph.D., *Dean*.
Edwin A. Lee, Ph.D., *Dean, Emeritus*.
May V. Seagoe, Ph.D., *Assistant Dean*.
Samuel J. Wanous, Ph.D., *Assistant Dean*.

School of Law

Richard C. Maxwell, B.S.L., LL.B., *Dean*.
Murray L. Schwartz, B.S., LL.B., *Assistant Dean*.

School of Library Service

Lawrence C. Powell, Ph.D., Litt.D., *Dean*.
Andrew A. Horn, Ph.D., *Assistant Dean*.

School of Medicine

Stafford L. Warren, M.D., *Dean.*

John Field, II, Ph.D., *Associate Dean.*

Frank W. McKee, Ph.D., *Assistant Dean.*

Daniel G. Morton, M.D., *Assistant Dean.*

Joel J. Pressman, M.D., *Assistant Dean.*

Thomas H. Sternberg, M.D., *Assistant Dean for Postgraduate Medical Education.*

School of Nursing

Lulu Wolf Hassenplug, M.P.H., *Dean.*

School of Public Health

Lenor S. Goerke, M.D., M.S.P.H., *Dean.*

School of Social Welfare

Mary E. Duren, M.S., *Acting Dean.*

THE UNIVERSITY OF CALIFORNIA

FOUNDED 1868

The Beginning.—The Organic Act passed by the State Legislature and signed by the Governor in 1868, established the University of California. It opened its doors in 1869 on the Oakland campus of the College of California, which had grown out of a movement started by Congregational and Presbyterian ministers sent to the West by the Home Missionary Society of New York, as early as 1848. The University of California moved to Berkeley in 1873 as soon as the first buildings were completed. One of these buildings, South Hall, is still standing and still in use.

Today.—The University, currently serving the state of California with seven campuses—Berkeley, San Francisco, Davis, Riverside, La Jolla, Los Angeles, and Santa Barbara—is composed of academic and professional schools and colleges, divisions, departments of instruction, museums, libraries, research institutes, bureaus, and foundations.

In addition to the educational facilities centered on its campuses, the University operates the University Extension and Agricultural Extension Service everywhere in the state where a public demand is apparent. Special instruction and research are carried on throughout the State, in other states and in foreign countries.

Growth.—The University is continuing, as in the past, to keep pace with the growth of the State. Present campuses are being expanded; two new campuses, located in Orange and San Diego counties, are in the planning stage. Recent state-wide enrollment was 49,169. By 1970 it is estimated the enrollment will reach 103,000. That the University has steadily increased in quality as well as in size is attested to by the fact that it is generally recognized as one of the great universities in the country. The University of California provides a college education for all qualified students, without distinction as to sex, creed, or race. Its instruction covers all the broad and essential fields of human knowledge, including the arts, sciences, and literature. It also provides fundamental training for many of the professions.

Governing Board.—The University is governed by a Board of Regents, sixteen of whom are appointed for a term of sixteen years. The Governor of the State serves as President of the Board. The Regents appoint the President of the University, who is the executive head of the University, and with his advice appoint the chancellors, provosts, directors, and deans who administer the affairs of the individual campuses and divisions making up the University.

Academic Senate.—By authority vested in them by the State constitution, the Regents created an *academic* administrative body called the Academic Senate. Subject to approval of the Regents, the Senate determines conditions for admission, certificates, and degrees. It authorizes and supervises all courses of instruction in the academic and professional colleges and schools, except in professional schools offering courses at graduate level only. Deans or directors of schools, colleges, or other divisions of the University assist the President in the administration of the University, with special emphasis on the welfare of the division which they individually represent, and of the students therein.

UNIVERSITY OF CALIFORNIA, LOS ANGELES

HISTORY AND DEVELOPMENT

Early Years.—The Los Angeles State Normal School, destined to become the University of California, Los Angeles, was established by action of the State Legislature in March, 1881. Initially located on the present site of the Los Angeles City Library, the School was moved in 1914 to a new site on North Vermont Avenue. Through legislative action made effective by the Governor's signature on May 23, 1919, the property and records of the State Normal School were transferred to The Regents of the University of California.

Operating as the Southern Branch of the University, the new campus expanded its curriculum to include the freshman and sophomore years in Letters and Science. The third and fourth years were added in 1923 and 1924 respectively. In 1922 the teacher-training courses were organized as a Teachers College.

On February 1, 1927, the Southern Branch of the University was officially designated the University of California at Los Angeles. Shortly thereafter, in August, 1929, the University occupied its new Westwood campus, encompassing three hundred and eighty-four acres in the foothills of the Santa Monica Mountains. Within a decade the University of California, Los Angeles, expanded its educational facilities to include a College of Agriculture, a College of Business Administration (later School of Business Administration), a College of Applied Arts (later replaced by a College of Fine Arts), a School of Education, and a Graduate Division. Successively added were a College of Engineering, schools of Dentistry, Law, Library Service, Medicine, Nursing, Public Health, Social Welfare, and a Graduate School of Business Administration.

Today.—Dominated by the majestic towers of Royce Hall on the north and the impressive bulk of the Medical Center on the south, the Los Angeles campus of the University of California reflects the tremendous growth of the University. There are now 69 departments, 14 schools and colleges, the Graduate Division, Southern Section, and several other divisions of instruction and research.

Under way is a long-range development program designed to prepare the campus for an expected enrollment by 1970 of approximately 27,500 full-time students. Recent additions to the physical plant include Graduate Business Administration Building, Engineering Unit II, the Botany Building, the Physical Plant Building, Life Sciences Graduate Instruction and Research Unit I, the Neuropsychiatric Unit, the Laboratory of Nuclear Medicine and Radiation Biology, the Student Union Building, a multi-level Parking Structure "A," and Sproul Hall, the second of eight residence halls to be built at UCLA. Other buildings under construction or scheduled include the Theater Arts Unit I, a Social Science Unit, a Physics Building Unit II, an Art Building Unit, a Chemistry-Geology Building Addition, Step I, and north campus Library Unit I, a Rehabilitation Center on the West Medical Campus, and the Marion Davies Childrens' Clinic.

COMMUNITY AND TRANSPORTATION

Located in the corporate limits of the City of Los Angeles, the Los Angeles campus of the University of California, fringed on the north by the Santa Monica Mountains and within visible distance of the Pacific Ocean, enjoys a temperate climate. During the summer months the mean temperature is about 68 degrees; during the winter period, the mean temperature is about 49 degrees.

It is ideally located for varied recreation and entertainment. The beaches and mountain resorts are within easy driving distance. Hollywood is close by. And the community is served by a number of fine restaurants.

The cultural atmosphere of the community is active and challenging, supplementing the year-around programs offered on the campus.

The campus may be reached by bus as follows: from *Los Angeles* business district, Metropolitan Transit Authority bus 83W, southbound on Hill Street. From *Santa Monica*, Metropolitan Transit Authority bus via Wilshire Boulevard, and *Santa Monica Municipal Bus Lines*, via Wilshire Boulevard and *Santa Monica Boulevard*. From *Los Angeles International Airport*, Airport-transit, via *Beverly Hills*.

SURVEY OF CURRICULA

The scope of the undergraduate and graduate programs of instruction offered in the four colleges and eight schools of the University on the Los Angeles campus is briefly indicated below. For more details see pages 1 through 74 of this bulletin.

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: prebusiness, precriminology, pre dental, pre dental hygiene, premedical, prepharmacy, prepublic health, and presocial welfare.

The *College of Agriculture*, *College of Engineering*, *School of Business Administration*, *School of Nursing*, and *School of Public Health* offer curricula leading to the degree of Bachelor of Science.

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

The *School of Law* offers a curriculum leading to the degree of Bachelor of Laws.

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

The *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 Science, and Doctor of Philosophy; and the professional degrees of Master of Business Administration, Master of Education, Master of Engineering, Master of Library Science, Master of Public Administration, Master of Public Health, Master of Social Welfare, Doctor of Education, and Doctor of Public Health.

THE UNIVERSITY LIBRARY

The University Library on the Los Angeles campus consists of the Main Library and a number of branch and departmental libraries. Its collections contain about 1,550,000 volumes, and extensive holdings of pamphlets, manuscripts, maps, microtext editions, music scores, recordings, and slides. The Library regularly receives about 22,000 periodicals and newspapers.

The principal collection of the University Library is in the Main Library Building. The card catalogue here lists all catalogued books in the Main Library and other campus libraries and in the William Andrews Clark Memorial Library.

The Graduate Reading Room in the Main Library provides special study and research facilities for graduate students, including facilities for reading microtext materials and for the use of typewriters. Students enrolled in graduate courses 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 Main Library Building.

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

The Government Publications Room in the Main Library is a depository for the official publications of the United States Government, the State of California, the United Nations and some of its specialized agencies, and a number of other international organizations. It receives selected publications of the other states and possessions of the United States and publications of foreign governments.

The Oriental Library, housed in the Main Library Building, contains books, journals, newspapers, and other materials in Chinese, Japanese, and Korean languages.

Libraries in Art, Biomedical Sciences, Business Administration, Chemistry, Education, Engineering, English, Geology, Home Economics, Industrial Relations, Music, Physics, Theater Arts, and the University Elementary School are housed in the departments which they primarily serve.

The Biomedical Library, situated in the east wing of the Medical Center, serves the schools of Medicine, Nursing, and Public Health, and the departments of Bacteriology, Botany, and Zoology.

The resources of these libraries are available to all students and members of the faculty of the University.

The Law Library is situated in the School of Law and serves all students and members of the faculty of the University.

The Library handbook, *KNOW YOUR LIBRARY*, describing the organization and services of the University libraries and listing their schedules of hours, may be obtained in any of the campus libraries.

Supplementing the University Library is the William Andrews Clark Memorial Library of about 67,500 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, and admission is by card only, application for which should be made to the University Librarian. This library is not on the University campus, but is situated at 2205 West Adams Boulevard. From the Los Angeles campus, it may be reached by Metropolitan Transit Authority bus to Western Avenue, transferring to the "84" bus of the Metropolitan Transit Authority Lines; from downtown, by the "11" bus of the Metropolitan Transit Authority. The Library is open Monday through Saturday from 8 a.m. to 5 p.m. Leaflets describing the Clark Library are available upon application to the University Librarian.

PUBLIC LECTURES, CONCERTS, THEATER AND ART EXHIBITS

As opportunity offers, the University presents public lectures of general and of scholarly interest by qualified persons. These lectures are intended to supplement and stimulate the work of all departments of the University. In addition, the Speakers' Bureau of University Extension provides clubs and organizations with speakers from the University faculty.

The musical program of the University includes many special events. The Concert Series Section of the Committee on Fine Arts Productions offers a broad variety of concerts by soloists, chamber musicians, and other groups of nationally known artists. The Department of Music offers each semester evening concerts by its performance organizations—the A Cappella Choir, the Madrigal Singers, the Symphony Orchestra, the Opera Workshop, the Chamber Music Ensemble, the Collegium Musicum, the Chorus, the Band and the Glee Clubs. Individual student artists and members of the music faculty also present weekly Tuesday Noon Recitals and monthly Friday Noon Organ Recitals. All of these events are open to the public.

The Art Galleries, in the Dickson Art Center, contain a permanent collection of older masters, and present a series of significant temporary exhibitions many of which are circulated nationally. All aspects of art are covered in this program—painting, drawing, print making, sculpture, architecture, ceramics, and industrial, interior, costume and graphic design. The Galleries are open from 12.30 to 5 p.m. Mondays through Fridays and 1:30 to 4:30 p.m. Sundays.

Dance recitals are presented regularly under the auspices of the Department of Physical Education. In addition, well-known dance groups are brought to the campus by the Concert Series Section of the Committee on Fine Arts Productions.

In addition to its intramural, experimental production program, the Department of Theater Arts produces a varied selection of significant new and old plays from Aristophanes to Bernard Shaw, Shakespeare to Eugene O'Neill, as well as plays never produced before. These are presented in an annual season of six plays for the campus and community.

Also, the Theatre Group, a joint venture by University Extension and the theatrical professions, presents outstanding classical and contemporary plays. All these productions are professionally produced, directed and acted, under the artistic direction of John Houseman.

A number of art, documentary, educational, and foreign films, including film series, are presented each semester. These, too, are open to the public.

SUMMER SESSIONS

During the summer the University conducts at Los Angeles a six-week and an eight-week session. In 1961 the Summer Sessions will begin Monday, June 19. The Summer Sessions bulletin is obtainable after February 17 of each year from the Office of the Summer Sessions, Administration Building, University of California, Los Angeles 24, California.

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 pages 7C-18C of this bulletin.

UNIVERSITY EXTENSION

University Extension makes available the resources of the University, on a state-wide basis, to those who cannot take up residence at one of the campuses or who prefer a part-time special program. Its program includes classes, correspondence courses, conferences, and special activities in a wide variety of subjects. These include art, business administration, economics, engineering, geography, history, industrial relations, languages, literature, mathematics and physical sciences, music, philosophy, political science, psychology, real estate, sociology, speech, and many others.

During the past few years, an increasingly large and significant service has been made available to those in professions and others with advanced training. Study at the professional level is offered in engineering, and the sciences, law, medicine, dentistry, education, and other fields. However, many University Extension offerings are in the more general subjects and are open to all adults who can pursue the work with profit.

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

The educational services of University Extension are organized around three primary aims: to help men and women advance professionally; to aid them in meeting their responsibilities as citizens; and to assist them in the pursuit of intellectual and cultural interests.

Seven principal services are provided:

1. Classes may be organized in any community of the State where a sufficient number of persons wish to study a particular subject. Discussion groups in world politics and the liberal arts may also be arranged.

2. Correspondence instruction offers lessons, study materials, and University faculty guidance by mail.

3. Conferences, workshops, and institutes, for periods ranging from one day to several weeks, provide intensive instruction for groups interested in specialized knowledge.

4. The Department of Visual Communications produces educational motion pictures as needed by campus departments; makes certain educational films available for purchase; and maintains film libraries on a rental basis for the campus (the general public may rent films from the department located on the campus in Berkeley).

5. The Department of Educational Television administers the University's research, development and programming in the field of educational television, devoting its major efforts to exploring the unique possibilities of the television medium as a teaching tool and a highly flexible visual aid.

6. Lectures, singly or in series, may be arranged for clubs and organizations.

7. Vocational counseling is now available to the general public through university Extension's Counseling and Testing Services Center at 1063 Gayley Avenue in Westwood Village.

For detailed information, write or telephone to University Extension offices at the following locations: University of California, Los Angeles 24 (BRadshaw 2-6161 or GR 3-0971, extension 721); 813 South Hill Street, Los Angeles 14 (MAdison 3-6123); University of California, Riverside; University of California, Santa Barbara, Goleta; 1221 Fourth Avenue, San Diego 1; Room 15, Buena Park High School, Buena Park; University of California, Berkeley.

University of California Conference Center, Lake Arrowhead.—The University of California Conference Center is located on the north shore of Lake Arrowhead in the San Bernardino Mountains. It is operated the year round on a completely self-supporting basis and provides a secluded atmosphere for residential educational programs and meetings. Its facilities, which can accommodate up to 120 persons, afford conference participants an opportunity to study, live, and dine together for the duration of programs which range in length from two days to three weeks.

For further information about programs at the Center, write or phone the Arrowhead Center Coordinator, University Extension, University of California, Los Angeles 24 (BRadshaw 2-6161 or GRanite 3-0971, extension 721).

ADMISSION TO THE UNIVERSITY

IN UNDERGRADUATE STATUS

AN APPLICANT WHO WISHES to register on any campus of the University must fulfill the general requirements for admission as set forth below. The University of California bases its entrance requirements on two principles: first, that the best guarantee of success in the University is high quality of scholarship in previous work, and second, that the study of certain specified subjects will give to the student both good preparation for the work of the University and reasonable freedom of choice of a major field of study after his entrance. These principles apply to admission in either freshman or advanced standing.

ADMISSION PROCEDURE

Application for Admission.—Formal application of those who wish to register on the Los Angeles campus should be filed with the Admissions Officer, 1147 Administration Building, University of California, Los Angeles 24. Application blanks will be supplied by the Office of Admissions upon request. The application should be filed during the semester preceding that for which the applicant wishes to register and must be filed not later than *August 15* for the fall semester or *January 15* for the spring semester. Applicants for the College of Engineering have earlier dates for filing applications; see under "Special Requirements for Engineering," page 14C. Admission requirements are uniform on all campuses of the University. Admission to the University entitles the student to attend the campus of his choice if the facilities to meet his needs are available there. Since applications will be processed and acted upon in only one Office of Admissions, *applications for admission to more than one campus serve no purpose and should not be filed.*

Application Fee.—Every applicant for admission is required to pay a fee of \$5 when the first application is filed. Remittance by bank draft or money order should be sent to the Office of Admissions, but be made payable to The Regents of the University of California.

Transcripts and Records.—Official transcripts of records, endorsed by the proper authority, should be sent directly to the Office of Admissions from the graduating high school and from each college attended. Work in progress should be shown on a preliminary transcript. Final college transcripts should include a statement of good standing or honorable dismissal from the last college attended.

Examination Requirement.—All applicants for undergraduate status (except those seeking a second baccalaureate degree, applicants for special or limited status, NROTC applicants presenting the Navy College Aptitude Test, certain foreign applicants not in the United States, and Engineering applicants who have taken the junior level examination) must present a satisfactory score on the College Entrance Examination Board Scholastic Aptitude Test. Tests must be taken no earlier than the completion of the eleventh grade or within the year the applicant applies for transfer. Arrangements to take the test should be made with the Educational Testing Service, P. O. Box 27896, Los Angeles 27, California, or P. O. Box 592, Princeton, New Jersey. The fee for the Scholastic Aptitude Test is to be paid to the Educational Testing Service. Scores will be regarded as official only if they are received directly from the Educational Testing Service. See also sections on "Admissions of Out-of-State Applicants" and "Admission by Examination."

APTITUDE TEST DATES FOR 1961-1962

<i>Test Dates</i>	<i>Application Deadlines</i>
Saturday, May 20, 1961.....	April 22, 1961
Wednesday, August 9, 1961.....	July 12, 1961
Saturday, December 2, 1961.....	November 4, 1961
Saturday, January 13, 1962.....	December 16, 1961
Saturday, March 3, 1962.....	February 3, 1962
Saturday, May 19, 1962.....	April 21, 1962
Wednesday, August 8, 1962.....	July 11, 1962

Vaccination Certificate.—Every new student (and every student returning to the University after an absence) must present at the time of medical examination by the University Medical Examiners a certificate establishing the fact that he has been successfully vaccinated against smallpox within the last seven years. A form for this purpose will be furnished by the Admissions Office. Vaccination should be completed prior to registration. However, if a new student wishes, he may be vaccinated at the Student Health Service at the time he takes his entrance physical examination.

ADMISSION IN FRESHMAN STANDING

An applicant who does not meet at the time of high school graduation the requirements given below for admission to freshman standing must qualify for admission with *advanced standing* (see page 12C). The only exception to this regulation is in the case of a student whose deficiency was the result of not having studied one or more required high school subjects. It is sometimes possible for such a student to clear the deficiency during the summer; approval should be secured in advance from the Office of Admissions.

An applicant who has attended a junior college, four-year college, university, extension classes of college level, or any comparable institution since graduation from high school is subject to regulations governing admission in advanced standing (see page 12C). Such college attendance may not be disregarded, whether or not any courses were completed.

Requirements for California Residents

This includes applicants from out-of-State high schools who are bona fide residents of California.

1. COLLEGE ENTRANCE EXAMINATION BOARD SCHOLASTIC APTITUDE TEST.
2. GRADUATION FROM AN ACCREDITED HIGH SCHOOL.

An accredited high school in California is one that has been officially designated by the Board of Regents of the University as a school from which students will be admitted to the University primarily on the basis of the record of subjects completed and scholarship attained. The list of accredited schools is published by the University annually in the month of September. Accreditation by the University refers to the college preparatory function of the high school and implies no judgment regarding the other educational functions of the school. If the high school from which the applicant was graduated is not accredited, the Office of Admissions will, upon request, instruct the student regarding the procedure he should follow.

3. ADMISSION—METHOD I (see "Alternate Methods of Admission" under (4) below).

Subject Requirements.—Upon the high school authorities rests the responsibility for determining the scope and content of courses preparatory to admission to the University and for certifying such courses to the University.

Students naturally will be guided by their respective high school principals in making their preparation for entrance to the University.

- (a) History1 unit. This requirement must be satisfied by 1 unit of United States history or 1 unit of United States history and civics.
- (b) English3 units. These must consist of six semesters of English composition, literature, and oral expression, certified by the high school principal as University preparatory in nature.
- (c) Mathematics2 units. These must consist of two semesters of algebra and two semesters of plane geometry or an integrated two-year course covering the same material. Advanced algebra and trigonometry may be substituted for algebra, and trigonometry and solid geometry for plane geometry.
- (d) Laboratory Science..1 unit. This must consist of an advanced (eleventh or twelfth grade) year course in one laboratory science. Both semesters must be in the same subject field. Courses designated chemistry or physics are accepted without special certification. Courses in other subjects, such as biology, physiology, botany, physical science, and zoology, are acceptable on written certification from the high school principal.
- (e) Foreign Language..2 units. These must be in one language.
- (f) Advanced course chosen from one of the following1 (or 2) units.
1. Mathematics, a total of 1 unit (second year algebra, $\frac{1}{2}$ or 1 unit; solid geometry, $\frac{1}{2}$ unit; trigonometry, $\frac{1}{2}$ unit or other course for which trigonometry is a prerequisite).
 2. Foreign language, either 1 additional unit in the same foreign language offered under (e), or 2 units of a different foreign language.
 3. Science, 1 unit of either chemistry or physics in addition to the science offered under (d) above.

Additional elective units to complete the minimum of 15 standard entrance units.

Scholarship Requirements.—An average of grade B (3.0 based on a marking system of four passing grades) is required in the (a) to (f) subjects listed above which are taken in the tenth, eleventh, and twelfth years. Courses taken for subject credit in the ninth year need show passing grades only.

In determining the B average, a grade of A in one course may be used to balance a C in another; only courses used to meet the (a) to (f) subject requirements and completed in the tenth, eleventh, and twelfth years are used in computing the grade average. Grades are considered on a semester basis, except from schools that give only year grades.

Courses in the required list completed after the ninth year in which a grade of D is received may not be counted in satisfaction of a subject requirement; an A grade may not be used to compensate for D, E, or F grades. Courses taken in the tenth, eleventh, and twelfth years in which a grade of C or lower is received may be repeated to raise grades, when approved by the principal of an accredited high school, in an amount not to exceed 2 units of the (a) to (f) pattern. Only the first repetition of a subject will be used to satisfy scholarship requirements, although additional repetitions are allowed for the purpose of satisfying a subject requirement.

4. ALTERNATE METHODS OF ADMISSION.

METHOD II

Subject—complete in the entire high school program not less than 10 units in college preparatory courses chosen from the fields of English, mathematics, science, foreign language, and social science

and

Scholarship—achieve a scholarship rank in the highest ten per cent of the graduating class.

METHOD III

Subject—complete not less than twelve high school units of grade A or B in the work of the tenth, eleventh, and twelfth grades and have no more than 2 units of subject deficiencies in the (a) to (f) subjects. The 2 units of subject shortage must be the result of *omission* only. Courses such as physical education, study period, work experience, military science, and religion are not to be counted under this method

and

Scholarship—have an average grade of B and no grades lower than C in the subjects completed in the tenth, eleventh, and twelfth years and applied on the (a) to (f) requirements.

METHOD IV

Subject—complete in the eleventh and twelfth grades not less than 6 high school units of A or B grade selected from the following academic subjects:

Third- and fourth-year English

Third- and fourth-year mathematics

Third- and fourth-year laboratory science

Third- and fourth-year foreign language

Third- and fourth-year history or social science (not more than one unit of social science other than United States history or civics may be used)

and

Scholarship—earn no grade lower than C, and maintain a scholarship average of not more than $\frac{1}{2}$ unit below a B average in the subjects completed in the tenth, eleventh, and twelfth years and applied on the (a) to (f) pattern.

University authorities believe that high school students who follow the regular (a) to (f) pattern of subjects outlined above, together with the additional subjects recommended for particular majors, will be well prepared for work in the University. However, the University does not wish to exclude a student who has followed a program of university preparatory studies recommended to him by his high school and will therefore admit an applicant on a grade B average scholarship in a different program of University preparatory studies provided such a program has been previously filed with, and approved by, the Board of Admissions and Relations with Schools.

5. EXPERIMENTAL PLANS OF ADMISSION.

In addition to the foregoing methods, the Board of Admissions and Relations with Schools authorizes from time to time experimental programs to test the validity of suggested procedures. Information about these programs may be obtained from the University Dean of Educational Relations, University Hall, Berkeley.

Minor Deficiencies

The Officer of Admissions has authority and responsibility for waiving minor deficiencies when justification is evident in the form of unusual academic records or recommendations.

Requirements for Out-of-State Applicants

1. Graduation from an Accredited High School.

For schools outside California, regional or other accrediting agencies are consulted. The University makes the final decision regarding acceptability.

2. College Entrance Examination Board Scholastic Aptitude Test.

An average score of 500 or above in the Aptitude Test—see detailed statement on page 7C.

3. Subject Requirements.

The same subject pattern required of California residents—see Method I (page 8C).

4. Scholarship Requirements.

An applicant must present evidence that he has maintained a grade-point average of 3.4 or higher on the required high school subjects. One unit of A counts four points, one unit of B counts three points, one unit of C counts two points, one unit of D counts one point. E and F yield no points.

The alternate plans of admission given on page 10C are not applicable to out-of-State applicants.

The above regulations apply, also, to all foreign students who have studied for two or more years in American high schools.

ADMISSION BY EXAMINATION

Applicable only to high school graduates who are ineligible on their school records and who have no college work.

The University of California does not itself offer entrance examinations but accepts the results of examinations given by the Educational Testing Service for the College Entrance Examination Board (see page 7C for information as to dates and places of examinations for 1961-1962).

To qualify by examination, the tests must be taken no earlier than the applicant's senior year in high school and arrangements must be made with the Educational Testing Service at least four weeks prior to the test date. Test results must be forwarded directly from the Educational Testing Service to the Office of Admissions on the campus at which the student expects to register.

Assignment of Examinations

An applicant who has completed all of the (a) to (f) subjects with grades of at least C but is deficient in scholarship may qualify by attaining a score of 500 or above on:

- (a) The Scholastic Aptitude Test (Verbal and Mathematics scores may be averaged)

and

- (b) Each of any three achievement tests in subject fields. An applicant may not present examinations in both Intermediate and Advanced Mathematics.

The applicant who has not completed all the (a) to (f) subjects with C grades or better must consult the Office of Admissions to determine the examinations he is required to take.

The applicant who has been graduated from an unaccredited high school may qualify by examination but must consult with the Office of Admissions regarding the required tests.

PREPARATION FOR UNIVERSITY CURRICULA

In addition to those subjects required for admission to the University, outlined beginning on page 8C, certain preparatory subjects are recommended for each University curriculum which, if included in the high school program, will give the student a more adequate background for his chosen field of study. In some cases, lack of a recommended high school course will delay graduation from the University. Details of these recommendations will be found in the circular, **PREREQUISITES AND RECOMMENDED SUBJECTS**, which may be obtained from the University Dean of Educational Relations, University Hall, Berkeley.

It is recommended that students pursue a full program of academic subjects during their senior year.

The requirements of the various colleges and schools for the bachelor's degree are stated on pages 1-69 of this bulletin.

HONORS AT ENTRANCE

Honors recognition at the time of admission is given to entering freshman students with excellent high school scholastic records. Certificates are presented to the Honors recipients shortly after registration in the University.

ADMISSION IN ADVANCED STANDING

Requirements for California Residents

1. An applicant who was eligible for admission in freshman standing or whose only deficiency arose from not having studied one or more required high school subjects may be admitted at any time if he presents evidence that:

- (a) He has satisfied, either through high school or college courses, the subjects required for admission of high school graduates in freshman standing (see page 8C).
- (b) His advanced work, in institutions of college level, has met the minimum scholarship standard required of transferring students, in no case lower than a C average in the last college attended, and an over-all C average in all college work attempted. "Scholarship standard" is expressed by a system of grade points and grade-point averages in courses acceptable for transfer to the University of California. One unit of A counts four grade points; one unit of B counts three grade points; one unit of C counts two grade points; one unit of D counts one grade point; E and F yield no grade points.

The grade-point average is determined by dividing the total number of acceptable units attempted into the number of grade points earned on those units. Courses completed with a grade lower than C may be repeated but the units and grade points count each time the course is taken.

- (c) He is entitled to return as a student in good standing to the last college attended.
- (d) He has earned a satisfactory score in the College Entrance Examination Board Scholastic Aptitude Test.

2. If an applicant for admission to the University in advanced standing

was ineligible at the time of high school graduation because of low scholarship or a combination of low scholarship and incomplete subject preparation, he may remove his deficiencies by completing college courses of appropriate content and amount. These courses completed with satisfactory grades may be taken in any approved college.

- (a) The applicant must include in his program courses acceptable for removing high school subject shortages caused by omission or by grades of D or lower
and
present a minimum of 30 units of transfer courses with a grade-point average of at least 2.4 and a satisfactory score on the College Entrance Board Scholastic Aptitude Test.
or
- (b) As an alternative to making up high school subject deficiencies, an applicant may be admitted on the basis of a record showing completion of at least 60 units of transfer courses with a grade-point average of 2.4 or higher in which must be included all of the subjects required for junior standing in a school or college of the University. Applicants qualifying under this regulation will also be required to present a satisfactory score on the College Entrance Examination Board Scholastic Aptitude Test.

Ordinarily, it is recommended that graduates of California high schools who are not eligible for admission to the University attend one of the California junior colleges and complete the lower division requirements of the college in which they wish to register.

Requirements for Out-of-State Applicants

(See also page 11C)

In addition to the regular admission requirements set forth above, out-of-State applicants with advanced standing must meet the following regulations:

1. A grade-point average of 2.8 or higher must be maintained in college subjects acceptable for transfer credit, plus an average score of 500 or above on the College Entrance Examination Board Scholastic Aptitude Test.
2. An advanced standing applicant who presents less than 30 units of acceptable transfer courses must also meet both the subject and scholarship requirements for applicants from out-of-State high schools listed on page 11C.

Credit for Work Taken in Other Colleges

The University grants credit for courses appropriate to the student's curriculum in the University that have been completed in other accredited colleges and universities, subject to the restrictions of the senior residence requirement of the University.

As an integral part of the system of public education of California, the University of California accepts at full value approved transfer courses completed with satisfactory grades in the public junior colleges of the State.

An applicant may not disregard his college record and apply for admission in freshman standing; he is subject without exception to the regulations governing admission in advanced standing. He should ask the registrars of all high schools and colleges he has attended to forward complete official transcripts directly to the Office of Admissions where he has filed his application. Transcripts not sent directly by the issuing school to the Office of Admissions will be considered unofficial. A statement of good standing from the last college attended must also be sent.

No applicant may receive transfer credit in excess of an average of 18 units

per semester. After a student has earned 70 units acceptable toward a degree (except credit allowed on the basis of military service and training), no further unit credit will be granted for courses completed at a junior college.

Extension courses taken at an institution other than the University of California may not be acceptable. The decision as to their acceptability rests with the Office of Admissions. If such a program is planned with the intention of applying it toward a degree at the University of California, it is wise to have the approval of the Office of Admissions in advance.

Removal of Scholarship Deficiencies by Applicants From Other Colleges

Applicants otherwise eligible who seek to transfer from other institutions of collegiate rank but whose college records fail to show a satisfactory scholarship average may be admitted only when the deficiency has been removed by additional work completed with grades sufficiently high to offset the shortage of grade points. This may be accomplished by work in other approved higher institutions, in Summer Sessions, or by courses in University Extension.

SPECIAL REQUIREMENTS FOR ENGINEERING

An engineering qualifying examination must be taken by all applicants for admission to the College of Engineering at both the lower division and upper division levels. The examination is to be taken the semester previous to that in which the applicant desires to register. No other test results may be substituted for those of the appropriate engineering qualifying examination. The formal application for admission to the University as well as the application to take the test must be filed before the date scheduled for the examination. Students not taking the test on the date scheduled will not be considered for admission to the College of Engineering in the semester immediately following.*

Applicants for admission to the lower division of the College of Engineering must present satisfactory scores on both the Engineering Examination—Lower Division, and the Scholastic Aptitude Test of the College Entrance Examination Board. No fee will be charged for the Engineering test where applicants are required to take both it and the Scholastic Aptitude Test. Applicants for admission to the College of Engineering at or above the junior level must submit satisfactory scores on the Engineering Examination—Upper Division. The Scholastic Aptitude Test will be waived for these upper division Engineering applicants. Identical examination programs are required for admission to the College of Engineering, Berkeley, Davis, or Los Angeles, and the Pre-engineering Program at Santa Barbara.

The Engineering Examination—Lower Division is primarily an aptitude test, but presumes that the student has had the required subjects in high school, particularly those in mathematics through trigonometry, physics or chemistry, mechanical drawing, and English. The test is designed to demonstrate the applicant's general scholastic ability and his ability to comprehend scientific materials and principles, to use mathematical concepts, and to judge spatial relationships. No preparation beyond successful completion of the high school courses is required.

The Engineering Examination—Upper Division is required of applicants for admission at and above the junior level, and must be passed satisfactorily by all continuing students prior to beginning the work of the upper division

* Engineering Qualifying Examinations dates:

	<i>Test Dates</i>	<i>Test Application Deadlines</i>
For fall, 1961.....	April 8, 1961.....	March 29, 1961
For spring, 1962..... (Tentative)	Nov. 4, 1961.....	October 26, 1961
For fall, 1962..... (Tentative)	April 14, 1962.....	April 4, 1962

and by all new students prior to admission. This examination is an achievement test, including the subject areas of English usage, lower division engineering subjects, general college chemistry, mathematics through integral calculus, and general college physics.

LIMITATION OF ENROLLMENT OF OUT-OF-STATE APPLICANTS

It has been necessary to place some limitation on enrollment of applicants who are not residents of California and only those of exceptional promise will be eligible for admission. Children of alumni of the University of California are not subject to the special nonresident requirements for admission nor are applicants who at the time of application have become bona fide residents of California. The regulations below are designed to admit approximately the upper half of candidates eligible for admission under regular rules.

Admission in Freshman Standing

An applicant must present evidence that he has maintained a grade-point average of 3.4 or higher on the required high school subjects and an average score of 500 or above on the College Entrance Examination Board Scholastic Aptitude Test (see "Admission in Freshman Standing for Out-of-State Students," page 11C).

Admission in Advanced Standing

An applicant must present a grade-point average of at least 2.8 in college subjects acceptable for transfer credit plus an average score of 500 or above on the College Entrance Examination Board Scholastic Aptitude Test (see "Special Requirements for Out-of-State Applicants" under "Admission in Advanced Standing," page 13C).

INTERCAMPUS TRANSFER

An undergraduate student, who has attended a regular session of the University of California and has not since that time been registered in another institution, may apply for transfer to another campus of the University by obtaining the proper forms from the campus on which he was last registered. The Intercampus Transfer Application forms and Application for Transcript of Record forms may be obtained from the Office of the Registrar and must be filed with that office by January 15 for the spring semester and August 15 for the fall semester.

ADMISSION OF SPECIAL STUDENTS

Special students are students of mature years who have not had the opportunity to complete a satisfactory high school program or who have not completed a substantial amount of college work, and who, by reason of special attainments, may be prepared to undertake certain courses in the University toward a definite and limited objective. Only cases of very unusual merit will be considered.

The conditions for the admission of each applicant under this classification are assigned by the Admissions Officer, and are subject to the approval of the dean of the college or school. Ordinarily, a personal interview is required before final action can be taken, and, in general, special students are required to confine their attention to some special study and its related branches. Admission as a special student is for a limited time only, and a prescribed scholarship average must be maintained.

No person under 21 years of age will be admitted as a special student. An applicant will not be admitted directly from high school to the status of special student. Graduates of high schools are expected to qualify for admis-

sion in accordance with the usual rules; students admitted to regular status, if not candidates for degrees, may, with the approval of the dean of the students' college, pursue elective or limited programs.

Transcripts of record from all schools attended beyond the eighth grade must ordinarily be submitted by an applicant for special status. He may also be required to take the examination in Subject A.

The University has no "special courses." All courses are organized for regular students. A special student may be admitted to those regular courses for which, in the judgment of the instructor, he has satisfactory preparation. A special student will seldom be able to undertake the work of the engineering and professional colleges or schools.

A special student may at any time attain the status of regular student by satisfying all the matriculation requirements for admission to the University, but *an applicant will not be admitted to special status for the purpose of making up requirements.*

ADMISSION IN LIMITED STATUS

Students in limited status are those with a bachelor's degree, or those without a bachelor's degree, who have completed a substantial amount of college work and by reason of special attainments may be prepared to undertake certain courses in the University toward a definite and limited objective.

The conditions for the undergraduate admission of each applicant under this classification are assigned by the Admissions Officer and are subject to the approval of the dean of the college or school.

Transcripts of record from all schools attended beyond the eighth grade must ordinarily be submitted by an applicant for limited status. He may also be required to take the examination in Subject A.

The applicant will not be admitted to limited status for the sole purpose of raising a low scholarship average. Limited students for whom no grades have been specified are subject to the minimum scholarship requirements of the college or school in which they are enrolled. Any deviation from the program as planned, or any scholarship deficiency incurred while pursuing it, will result in the cancellation of a student's limited status and will render him subject to dismissal from the University.

ADMISSION OF APPLICANTS WITH BACHELORS' DEGREES

Ordinarily, an applicant with a bachelor's degree substantially equivalent to the bachelor's degree granted by the University of California should apply for admission to graduate status. Occasionally, such an applicant with a superior record may qualify as a student in limited status or, after a complete change of objective, as an undergraduate seeking a second baccalaureate. In either case, the previous scholarship record must be such as to indicate very strong probability of academic success. Admission is also subject to the approval of the dean of the school or college in which the applicant plans to enroll.

ADMISSION FROM SCHOOLS AND COLLEGES IN FOREIGN COUNTRIES

The credentials of an applicant for admission from a foreign country, either in undergraduate or graduate standing, are evaluated in accordance with the general regulations governing admission. An application, official certificates and detailed transcripts of record should be submitted to the Admissions Officer several months in advance of the opening of the semester in which the applicant hopes to gain admittance. This will allow time for exchange of necessary correspondence relative to entrance and, if the applicant is admitted, will assist him in obtaining the necessary passport visa.

All bona fide foreign students must meet the scholarship and test requirements of California residents.

An applicant from a foreign country whose education has been conducted in a language other than English may be admitted only after demonstrating that his command of English is sufficient to permit him to profit by instruction in this University. An applicant's knowledge of English is tested by an oral and written examination given by the University of California. This regulation applies to both graduate and undergraduate foreign students. Admission of an applicant who fails to pass this examination will be deferred until he has achieved the required proficiency in the use of English.

Language Credit for a Foreign Student.—College credit for the mother tongue of a foreigner and for its literature is given only for courses taken in native institutions of college level, or for upper division or graduate courses actually taken in the University of California or in another English-speaking institution of approved standing.

College of Engineering.—An applicant for admission to the lower division of the College of Engineering who is outside the United States must pass with satisfactory scores the Scholastic Aptitude Test (verbal and mathematics sections) and achievement examinations in English composition, physics, and advanced mathematics of the College Entrance Examination Board before a letter of admission to the College of Engineering may be issued. Arrangements to take the tests in another country may be made directly with the Educational Testing Service, P.O. Box 592, Princeton, New Jersey. A fee of \$10 is charged for these examinations and should be forwarded to the Educational Testing Service, not to the University of California. An applicant should request that his scores in the tests be forwarded to the Office of Admissions.

Foreign Student Adviser.—Advisers are appointed by the President of the University to assist foreign students in all matters pertaining to their attendance at the University. Every student from another country is urged, upon his arrival at the University, to consult the Foreign Student Adviser, 2248 Administration Building.

ADMISSION IN GRADUATE STANDING

Applications for admission to graduate status will be received from graduates of recognized colleges and universities who propose to work for the degree of Master of Arts, Master of Science, Master of Education, Master of Engineering, Master of Business Administration, Master of Library Science, Master of Public Administration, Master of Public Health, or Master of Social Welfare, for the degree of Doctor of Education, Doctor of Public Health, or for the degree of Doctor of Philosophy, or for the certificates of completion leading to the general secondary or junior college teaching credentials, and the supervision and administration credentials. Completed applications with supporting documents *in duplicate* must be in the hands of the Dean of the Graduate Division not later than August 1, 1961, for the fall semester, and not later than December 15, 1961, for the spring semester. Corresponding days will be set for subsequent semesters. Because of the time required to process an original application or a renewal of application, and to prepare the registration forms, applications and/or transcripts received after the deadline date will ordinarily be deferred for consideration for the following semester.

Holders of the bachelor's degree from institutions of acceptable standing are accorded admission to the Graduate Division, subject to the following qualifications: (1) that the standards of the degree in question are equivalent in both the distribution of academic subject matter and in scholarship achievement requirements to those maintained at the University of California; (2) that the required B grade average in all post-baccalaureate work is main-

tained; and (3) that the student can be accommodated in the field in which he wishes to study. The Dean of the Graduate Division may deny admission, however, if the record of scholarship is not sufficiently distinguished, or if he judges the undergraduate program not to have been such as to furnish an adequate foundation for advanced academic or professional study. These provisions affect all applicants whether from colleges or schools in the University of California or elsewhere. Notification of acceptance or rejection is sent to each applicant as soon as possible after the receipt of his application. *Applicants are warned not to make definite arrangements for attending the University, on the assumption that they will be accepted for admission, until they have received notification of acceptance.*

Application is to be made upon the form provided by the Dean of the Graduate Division, and must be accompanied by the application fee (see below); transcripts of previous work must be submitted in accordance with the instructions on the application form.

An application fee of \$5 is required of every student applying for admission to graduate status, even though he may have been in previous attendance at the University in other than graduate status.

Admission with Subject Deficiencies

In special instances an applicant whose undergraduate program is not the equivalent to that required for the bachelor's degree of the University of California—in the pattern of subjects and/or requirements of the major in which the applicant wishes to obtain an advanced degree—may be admitted to the Graduate Division* but only upon recommendation of the department in which he wishes to take an advanced degree and with the understanding that the applicant will have to take courses to make up his deficiencies prior to or in addition to the work required for the advanced degree. Such applicants must expect to have to spend more than the usual time in residence required for the advanced degree.

Admission without an Advanced Degree Objective

Students who do not desire to become candidates for higher degrees must meet the same admission requirements as those who are prospective candidates for degrees. They must be admitted to a specified field of study, and they must satisfy the Dean that their program of study has a definite scholarly or professional purpose. Such students are not eligible to apply for exemption from the nonresident tuition fee.

Graduate Students in Summer Sessions

Students are warned that admission to graduate courses in the Summer Sessions does not of itself constitute admission to the Graduate Division. Students who wish to take upper division and graduate courses in the Summer Sessions with the intention of applying them toward an advanced degree, or who wish to work for an advanced degree or University recommended credential in Summer Sessions only, must establish their eligibility for graduate work at the University by applying for and being admitted to graduate standing for a regular session (fall or spring), even though they do not plan to register that semester. This should be done before the student begins an advanced degree program.

Students who do not register in the semester for which they were admitted and who later wish to attend a regular session must file a *renewal of application* for admission to graduate status, even if they have attended one or more Summer Sessions in the interval. If they have attended other institutions or University Extension in the interval, they *must* file supplementary transcripts.

* This does not apply to applicants with scholarship deficiencies.

GENERAL REGULATIONS

CERTAIN GENERAL REGULATIONS govern residence and study in the academic departments. These regulations, unless otherwise stated, concern both graduate and undergraduate students.

APPLICATION FOR ADMISSION

Prospective students are warned of the necessity of making early application for admission in order that their credentials may be processed in time to permit registration within the scheduled period. New undergraduate students must file applications for admission, with complete credentials, not later than August 15 for the fall semester and not later than January 15 for the spring semester. For new graduate students (including old undergraduate students entering graduate status for the first time), these dates are August 1 and December 15, respectively. Attention is called to the fact that new students expecting to enter the *School of Law*, *School of Medicine*, and *School of Social Welfare* must file applications at earlier dates. For these dates see the sections explanatory of the curricula of the college or school in later pages of this bulletin.

Undergraduate students planning to return after an absence must file applications for readmission not later than August 28 for the fall semester and not later than January 15 for the spring semester. For graduate students, these dates are August 15 and January 2, respectively. Students planning to re-enter the college or one of the schools listed in the preceding paragraph should follow the instructions given at the end of the paragraph.

REGISTRATION

Each student registers in the University of California, Los Angeles, at times appointed for this purpose, at the beginning of each semester. Registration covers the following steps: (1) filling out address card, paying fees, and receiving in exchange a card showing that the applicant has been registered in the University; (2) enrolling in courses according to instructions which will be posted on the University bulletin boards; and (3) filing registration packet at the office of the dean of his college or school. All old students, except re-entrants, will have an opportunity to perform one or both of steps (1) and (2) by mail.

The student or prospective student should consult the University calendar and acquaint himself with the dates upon which students should register and begin their work at the opening of the sessions.

REGISTRATION REQUIRED OF CANDIDATES FOR HIGHER DEGREES

Every candidate for a higher degree is required to register at the University at the beginning of each semester so long as *any part* of the *degree* requirement (including the thesis or dissertation and final examination) is not yet fulfilled; and until either the degree shall have been awarded, or the candidate shall have been granted a formal leave of absence or an honorable dismissal by the graduate dean. Failure to register or to take a leave of absence will constitute presumptive evidence that the student has withdrawn from the Graduate Division. If the student plans to be in residence on the campus he must register as a regular student.* If he plans to be away from campus

* Graduate students in residence who have been advanced to candidacy for a doctor's degree, upon petition to the Office of the Graduate Division, have the option of foregoing the services of student health facilities and paying only one-half the established incidental fee, plus the nonresident tuition fee is applicable.

during the semester, but in correspondence with his department and in an instructional relationship with his advisers, he must register *in absentia*. Such registration does not entitle a student to health or other services covered by the incidental fee. Petitions to register in absentia must be filed with the Office of the Graduate Division *before registration*.

PHYSICAL EXAMINATION

All new students (graduate and undergraduate, including transfer students from other campuses of the University) must appear at the Student Health Service and take a physical examination to the end that the health of the University community, as well as that of the individual student, may be safeguarded. This examination must be taken prior to registration.

All re-entrant students and all old undergraduates entering graduate status for the first time are required to report to the Student Health Service for clearance of health record and recheck of certain items in the physical examination.

Before coming to the University, every student is urged to have his own physician examine him 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. This will prevent possible loss of time from studies. Prior to registration in the University, prospective students who have had a diagnosis of active tuberculosis will be required to submit evidence that their disease has become inactive.

STUDENT HEALTH SERVICE

The purpose of the Student Health Service is to conserve the time of the students for their classwork and studies, by preventing and treating acute illnesses and injuries. The services are limited by the staff and facilities available.

Each student registering in the fall and continuing through the spring semester, and each student registering in the spring semester may, at need, have such medical care as the campus health service is staffed and equipped to provide, from the first day of the semester in which the student first registers during the academic year to the last day of the spring semester of the same academic year, or to the date of official withdrawal from the University. Additional service may be provided for seven days after the last day of the semester, at the discretion of the Director of the Student Health Service. Any prospective registrant who receives health service and who does not register for the next following semester shall be required to pay toward the cost of the service rendered him up to the amount of the incidental fee.

Hospital care for a period up to thirty days may be given in the event of serious illness, on the recommendation of the Director of the Student Health Service. A student patient who is still in the hospital at the end of the semester will be released to the care of his family or community as soon as this can be done with safety. Also, in the case of illnesses or injuries requiring long-continued care (tuberculosis, mental illness, spinal injury, etc.) where the condition will obviously prevent the student from returning to classes during the current semester, he will likewise be released to the care of his family or community as soon as this can be done safely.

The Student Health Service does not take responsibility for the care of chronic physical defects or illnesses present at the time of entrance to the University as, for example, hernias, chronic bone and joint diseases or deformities, chronic gastrointestinal disorders, uterine fibroids, chronically infected tonsils, tuberculosis, syphilis, malignant diseases, allergic and endocrine disorders, etc. Furthermore, it does not take responsibility for any injury or illness wherein treatment (other than first aid or emergency care) has been initiated elsewhere; nor for providing elective medical or surgical

care, where the best interests of the student would be served by treatment during vacation. There is no provision for the fitting of glasses. Industrial injuries covered by workmen's compensation insurance are given no care other than first aid.

Dental service is provided for diagnosis, and for emergencies such as fractures. A limited amount of general dentistry is also available in certain cases where there is some special need as, for example, when a student's family dentist is unavailable because of distance. Charges are made for such general dentistry in accordance with a schedule of fees approved by the President of the University. The Dental Department is not prepared to provide bridges or other extensive prostheses.

The Student Health Service does not provide complete protection against large medical expenses. Students may utilize its services only if they are able to come to the campus. They ordinarily are not eligible for any services during the summer vacation. There is no provision for replacing teeth lost in accidents. A supplemental medical expense insurance policy, especially designed to protect the students in times, places, and situations where they cannot utilize the Student Health Service, may be purchased at low cost through the Associated Students, at the beginning of each semester.

PHYSICAL EDUCATION

The facilities of the Department of Physical Education are available to all students as follows:

Recreational Use.—Swimming pools, fields, conditioning rooms, gymnastic areas, handball courts, etc., are available Monday through Friday except during times when classes are regularly scheduled. Some facilities are also available on Saturday from 9 a.m.—12 noon. (Any inquiries can be directed to the main stockrooms or main offices in either building during the period Monday through Friday.)

Instruction.—Regularly scheduled classes are available on the beginning, intermediate and advanced levels in a great variety of individual and dual sports, team, game and conditioning activities. In addition, instruction is offered in all areas of dance. (See Schedule of Classes.)

Intramurals.—Competition and participation in some thirty team and individual sports activities are available. These activities are usually conducted during late afternoon or early evening hours. Please make inquiries in Men's Gymnasium 122-A or Women's Gymnasium 124 for additional information.

RESERVE OFFICERS' TRAINING CORPS

Upon admission, every able-bodied male undergraduate in the lower division, who is under twenty-three years of age at the time of admission and who is a citizen of the United States, unless officially notified of exemption, must report immediately for enrollment in Military Science, Naval Science, or Air Science. The student must list the R.O.T.C. courses in which he has enrolled on his study card with other University courses.

Information concerning the requirements in R.O.T.C., including a statement of the grounds upon which a student may be excused from this work, may be obtained from the Registrar.

The student is referred to the announcements of the Departments of Military Science, Naval Science, or Air Science in this bulletin.

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 object of the Naval Reserve Officers' Training Corps is to provide at civil institutions systematic instruction and training 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 or aircraft of the Navy or with field troops of the Marine Corps.

Initial enrollment is restricted to able-bodied male students who are citizens of the United States, between the ages of seventeen and twenty-one years, never have been married and agree to remain unmarried until commissioned or disenrolled. Students must pass the same physical examination as is required of all candidates for admission to the Naval Academy.

The N.R.O.T.C. program normally covers eight consecutive semesters.

Courses in naval orientation and organization, naval history, seamanship, communications, advanced naval weapons, psychology, navigation, advanced seamanship, naval engineering damage control, military justice, and leadership are given to those students seeking naval commissions. Courses in military history and principles, small-unit tactics and amphibious landings are given during the last four semesters to those students seeking Marine Corps commissions.

Students are enrolled in the Naval Reserve Officers' Training Corps under one of two categories. These categories are listed below together with the method of selection:

Regular N.R.O.T.C.—Students selected by nation-wide competitive examination and personal interviews. Applications to take the examination must be submitted in early November of the year prior to entering Regular N.R.O.T.C. Successful candidates receive tuition, fees, books, uniforms, and \$50 per month retainer pay from the Navy.

Contract N.R.O.T.C.—Students selected by the Professor of Naval Science after a personal interview and under the quota and policies set by the Navy Department.

Army Reserve Officers' Training Corps

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 was established on the Los Angeles campus of the University in July, 1920.

The purpose of the Army R.O.T.C. is to qualify male students as leaders in their chosen fields, as far as the requirements of the service permit: engineering, communications, administration, logistics, personnel management, intelligence, and many others. The R.O.T.C. program qualifies graduates for commissions as officers in the United States Army Reserve, and selected graduates for commissions in the Regular Army.

The courses in general military science are prescribed by the Department of the Army and are designed to offer the opportunity for commissions in all of the arms and services of the United States Army.

Air Force Reserve Officers' Training Corps

The Air Force R.O.T.C. program is a four-year course of study designed to prepare selected college students to serve as officers in the Regular and Reserve component of the United States Air Force. The purpose of the program is to develop character, personality, leadership potential, and to provide the student with a professional education requisite for appointment as a commissioned officer in the Air Force Reserve. With continued increase in importance of air power in over-all United States strategic planning, the selection of Air Force R.O.T.C. trained college graduates is receiving increased emphasis.

The course of study is divided into two parts. The Basic Course, or first two years of the program, is concerned with Air Power indoctrination. The Advanced Course, or last two years of the program, is concerned with preparing selected students for active duty in fields compatible with their major field of effort on the college campus.

Acceptance into the Advanced Course is based on academic standing at the University, aptitudes and interests of the individual, and the result of a thorough physical examination. Those students desiring to train for Air Force officer positions and who pass the stringent entrance requirements will be earmarked for assignment in a specific Air Force Career Area on acceptance for the advanced program.

More detailed information is available elsewhere in this bulletin or in the ANNOUNCEMENT OF COURSES AND CURRICULA.

R.O.T.C. DRAFT DEFERMENT

Students who qualify and are accepted for the Advanced Course R.O.T.C. (junior and senior years) may be deferred from induction into the service under the authority contained in the Universal Military Training and Service Act (65 Stat. 75; 50 U.S.C. app. 451-467) as amended, and as further amended by the Reserve Forces Act of 1955 (P.L. 305, 84th Congress; D.A. Bull. 12, 1955).

For military deferment, see the department concerned. Students securing R.O.T.C. draft deferments need not request deferment through the Office of Special Services described on page 39C of this bulletin.

SUBJECT A: ENGLISH COMPOSITION

With the exception noted below, every undergraduate entrant must, at the time of his first registration in the University, take an examination, known as the *Examination in Subject A*, designed to test his ability to write English without gross errors in spelling, grammar, sentence structure, or punctuation.

The examination in Subject A is given at the opening of each semester. (See the REGISTRATION CIRCULAR, to be obtained from the Registrar.) A second examination for persons who do not appear at the announced time is given a few days after the first examination in each semester; for this examination a fee of \$1 is charged.

The results of the first examination will be made known not later than the day preceding the date set for the filing of the study lists for the current semester. Papers submitted in the examination are rated as either "passed" or "not passed." A student who is not present at the examination in Subject A which he is required to take will be treated as one who has failed.

Every student who does not pass in the examination in Subject A must, immediately after his failure, enroll in a course of instruction, three hours weekly for one semester, known as the *Course in Subject A*, without unit credit toward graduation. Should any student fail in the course in Subject A he will be required to repeat the course in the next succeeding semester of his residence in the University.

A student who maintains in the course in Subject A a grade of A is permitted, on recommendation of the Committee on subject A, to withdraw from the course at a date determined by that committee, and is given credit for Subject A.

Every student who is required to take the course in Subject A is charged a fee and the charge will be repeated each time he takes the course. This fee must be paid before the study list is filed.

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.

A student who has received a satisfactory rating in the College Entrance Examination Board examination in English composition will receive credit for Subject A. A student who has passed an examination in Subject A given by the University at Berkeley or given under the jurisdiction of the University at various centers in the State annually in May or June will receive credit for Subject A.

A student who, at any time, has failed in the University examination in Subject A does not have the privilege of taking a second examination until he has completed the course in Subject A.

A student who enters the University of California, Los Angeles, with credentials showing the completion elsewhere with a grade not lower than C, of one or more college courses in English composition is exempt from the requirements in Subject A.

Students from other countries whose native language is not English should take the special examination in English for foreign students rather than the Subject A examination. Those who pass this special examination will be credited as having met the Subject A requirement, as will students who subsequently complete English 33B with a grade of C or better, the advanced course in English for foreign students.

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 satisfied in any one of four ways.

1. By passing two optional examinations (one in American History and one in American Institutions) which the Committee on American History and Institutions offers for the purpose of satisfying the requirement. (Normally the examinations are offered one each semester. No unit credit is given for the examinations.)

2. By satisfactorily completing in the University a minimum total credit of four units, from the following list:

Economics 13; History 6A, 6B, 7A, 7B, 8A, 8B, 101, 171A, 171B, 172, 173A, 173H, 174A, 174B, 175, 176, 177, 178A, 178B, 179, 180, 181; Political Science 1, 101, 113, 125, 141, 142, 145, 146, 166, 167A, 167B, 171, 182, 186; History XL 17AB (Department of Correspondence Instruction, Berkeley 4, California).

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

3. By a combination of 1 and 2, above.

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

Candidates for a teaching credential, but not for a degree, need take only the optional examination (in American Institutions) or a two-unit course on the principles and provisions of the Constitution of the United States.

Further information regarding the requirement and the optional examinations may be obtained from the Committee on American History and Institutions. Office hours are from 2:30 to 4:30 p.m., Wednesday or Thursday, in Room 174 Haines Hall.

DEGREES AND TEACHING CREDENTIALS

Detailed statements of requirements for degrees issued by the University will be found in this bulletin, under headings of the several colleges and departments, and in the bulletins of the various professional schools. The requirements for certificates of completion leading to teaching credentials are to be found in the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION.

Degree Residence†

Every candidate for the bachelor's degree must during his final two semesters of residence, be enrolled in the college or school in which he is taking the degree; and the last 24 units must be completed while enrolled in this college or school. The student may offer two six-week Summer Sessions or one eight-week Summer Session as equivalent to one semester; but he must complete in resident instruction at least one regular semester of his senior year. The regulation applies both to students entering this University from another institution and to students transferring from one college to another within the University.

CHANGE OF COLLEGE OR MAJOR

A student may be transferred from one college or major department of the University to another upon the approval of the dean or other responsible officers or committee of the college (or department) to which admission is sought. A form of petition for transfer is supplied by the Registrar.

No student is permitted to transfer from one major department to another after the opening of the last semester of his senior year.

HONORS

Honor students are those who attain the standard of scholarship required by their respective college or school. Honors are granted also with the bachelor's degrees. For regulations concerning honors see the sections explanatory of the curricula of the various colleges in this bulletin.

CREDIT AND SCHOLARSHIP

In both the University and the high school the student is credited, in respect to the amount of work accomplished, in terms of units; and in respect to quality of scholarship, in terms of grades. In a further, more exact determination of the student's scholarship, the University assigns a numerical value in points to each scholarship grade. These points are called grade points and are more fully described below.

High school credit, when it is offered in application for admission to the University, is reckoned in matriculation units; one matriculation unit represents one year's work in a given subject in the high school.

High school credit, when it is offered in satisfaction of high school graduation requirements, is measured in standard secondary units; that is, the credit granted for the study of a subject throughout the school year of from thirty-six to forty weeks is stated in terms of the standard secondary unit. Each unit represents approximately one-quarter of a full year's work in high school; in other words, four standard secondary units represent one full year's work in high school.

Relation between High School Matriculation Units and University Units.—One year's work in the high school is considered to be equivalent to one Uni-

† Special provisions governing residence of degree candidates in the College of Engineering are described in the requirements of that college. See under College of Engineering in this bulletin.

versity semester's work of college level; that is, a student who desires to make up any high school subject deficiency by offering work of college level can in one University semester earn credit equivalent to the credit of one year's work in high school.

In the University, a unit of credit represents one hour weekly of the student's time for the duration of one semester in lecture or recitation, with the time necessary for preparation, or a longer time in laboratory or other exercises for which outside preparation is not required. It is expected that most students will spend two hours preparation for one hour a week of lecture or recitation. Each University unit credit is thus understood to represent at least three hours of the student's time, and the credit value of a course is reckoned in units on that basis.

STUDY-LIST LIMITS*

Concurrent enrollment in resident courses and in extension courses 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.

A student on scholastic probation, except in the College or Engineering, is limited to a program of 12 units each semester, to which may be added a $\frac{1}{2}$ -unit course in physical education.

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

College of Agriculture: 12 to 18 units per semester, plus $\frac{1}{2}$ unit of physical education.

School of Business Administration: 12 to 18 units per semester, plus $\frac{1}{2}$ unit of physical education if required.

College of Engineering: within the limits prescribed in each individual case by the Dean or his representative.

College of Fine Arts: 12 to 18 units per semester except for students in their first semester of residence and students who failed to make a C average the previous semester, in which cases the maximum is 16. Upon attaining at least a B average in a total program of 12 or more units, a student may petition to enroll in as many as 20 units. In all cases $\frac{1}{2}$ unit of physical education may be added to the stated maximum.

College of Letters and Science: 12 to 16 units for students in the first semester of the freshman year. All other students who have a C average or better and are not on probation may carry from 12 to a maximum of 18 units without petition. After one's first semester, he may petition to enroll in as many as 20 units if in the preceding semester he attained at least a B average in a total program of 12 or more units. All first-semester 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 semesters on the Los Angeles campus. All entering freshmen who are enrolled in Naval R.O.T.C. may carry not more than 17 $\frac{1}{2}$ units without petition.

School of Nursing: programs must be approved by a member of the Study-Lists Committee of the School.

School of Public Health: 12 to 18 units.

With the exception of the $\frac{1}{2}$ unit of physical education allowed in certain cases, as indicated above, all courses in Military Science and Physical Education and all repeated courses are to be counted in study-list limits.

A special student ordinarily will have his study list specified at the time of his admission; it is limited to 16 units.

Regulations concerning study-list limits for graduate students will be found in the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION.

* The course in Subject A, which does not give units of credit toward the degree, nevertheless displaces 2 units from a student's allowable program.

GRADES OF SCHOLARSHIP; GRADE POINTS

In the University, the result of the student's work in each course (graduate and undergraduate) is reported to the Registrar in one of six scholarship grades, four of which are passing, as follows: A, excellent; B, good; C, fair; D, barely passed; E and F, not passed. The designations "passed" and "not passed" may be used in reporting upon the results of certain courses taken by honor students in the College of Letters and Science and in reporting upon the results of lower division courses outside the major taken by students in graduate status.

Grade E indicates a record below passing, but one which may be raised to a passing grade without repetition of the course by passing a further examination or by performing other tasks required by the instructor. Grade F denotes a record so poor that it may be raised to a passing grade only by repeating the course. A student who raises a grade of E to a passing grade receives unit credit but no grade points unless granted by petition in special circumstances.

The term "incomplete" is not used in reporting the work of students. The instructor is required, for every student, to assign a definite grade based upon the work actually accomplished, irrespective of the circumstances which may have contributed to the results achieved.

Course reports filed by instructors at the end of each semester are final, not provisional.

Grade points are assigned to the respective scholarship grades as follows: for each unit of credit, the scholarship grade A is assigned 4 points; B, 3 points; C, 2 points; D, 1 point; E, and F, no points.

In order to qualify for any bachelor's degree at Los Angeles,* the student must have obtained at least twice as many grade points as there are units in the total credit value of all courses undertaken by him in the University of California.† A similar regulation is in effect on all campuses of the University.

MINIMUM SCHOLARSHIP REQUIREMENTS

The following provisions apply to all undergraduate students at Los Angeles except students in the College of Engineering:

A. Probation: a student shall be placed on probation

(1) If at the close of his first semester his record shows a total deficiency of six or more grade points below a C average; or

(2) If at the close of any subsequent semester, his grade-point average is less than 2.0 (a C average), computed on the total of all courses undertaken in this University for which he has received a final report.

B. Dismissal: a student shall be subject to dismissal from the University

(1) If in any semester he fails to pass with a grade of C or higher courses totaling at least 4 units; or

(2) If while on probation his grade-point average for the work undertaken during any semester falls below 2.0 (a C average); or

(3) If after two semesters of probationary status he has not obtained a grade-point average of 2.0 (a C average), computed on the total of all courses undertaken in this University for which he has received a final report.

Students at Los Angeles coming under the above regulations are subject to the supervision of the deans of their respective colleges, who have adopted a policy of limiting study lists of students under their charge to 12 units or less.

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

† Courses taken by honor students of the College of Letters and Science or by graduate students without letter grades are not counted in determining the grade-point status.

The following provisions apply to all students in the College of Engineering:

A student will be subject to dismissal from the University

(1) If during any semester or summer session he fails to attain a C average in all courses for which he is enrolled; or

(2) If at the end of any semester or summer session he has failed to attain at least a C average in all courses undertaken in the University.

A student who becomes subject to these provisions shall be under the supervision of the faculty of the College. The faculty, or persons designated by it, shall have the power to dismiss from the University students under its supervision, or to suspend the provisions of this regulation and permit the retention in the University of the students thus subject to dismissal, and the return to the University of students who have been dismissed under this regulation.

Any student who receives a notice of dismissal from the University may petition the dean of his college for a hearing. Ordinarily, however, a student dismissed for unsatisfactory scholarship will be excluded from the University for an indefinite period, with the presumption that his connection with the University will be ended by such exclusion.

The action to be taken in respect to students in graduate status who acquire scholarship deficiencies is left to the discretion of the Dean of the Graduate Division, Southern Section.

CREDIT BY EXAMINATION

Provision is made whereby an undergraduate student in residence and in good standing may under certain conditions take examinations for degree credit either (a) in courses offered in the University, without formal enrollment in them, or (b) in subjects appropriate to the student's curriculum, but not offered as courses by the University. The results of all such examinations, with grades and grade points, are entered upon the student's record in the same manner as for regular courses of instruction (see Grades of Scholarship, above). No fees are required. Applications may be obtained from the Dean of the College.

Application for examination for advanced standing on the basis of work done before entrance to the University should be made to the Office of Admissions at the time of entrance to the University. If a student who has already matriculated proposes to enter upon study outside the University of California with a view to asking the University to examine him upon that work and to allow him credit toward the degree, he must make all arrangements *in advance* with the department concerned and with the Director of Admissions. Fees are required for such validation examinations.

The application form for examinations may be obtained from the Office of Admissions.

FINAL EXAMINATIONS

Final examinations are obligatory in all undergraduate courses except laboratory courses and other courses which, in the opinion of the Committee on Courses, because of resemblance to laboratory courses, require special treatment. In laboratory courses final examinations are held at the option of the department in charge. All examinations will, so far as practicable, be conducted in writing, and a maximum time will be assigned beforehand for each examination, which no student will be allowed to exceed. The time for examination sessions may not be more than three hours. Leave to be absent from a final examination must be sought by written petition to the proper faculty.

If a final examination is one of the regular requirements in a course, there can be no individual exemption from examination, except as provided in the preceding paragraph.

WITHDRAWAL FROM THE UNIVERSITY

During the course of any semester a student may file with the Registrar a Notice of Withdrawal and Request for Statement of Conditions for Readmission. Provided the student is in good standing at time of withdrawal and secures the necessary clearances, he may be issued an "honorable dismissal."

A student is in good standing if he is entitled to enjoy the normal privileges of a student in the status in which he is officially registered. Students dismissed by reason of scholarship deficiencies, and students under supervision or on probation, may receive letters of honorable dismissal which bear a notation concerning their scholarship; students under censure or suspension may not receive an honorable dismissal but may receive transcripts of record which bear a notation concerning such censure or suspension.

Discontinuance without Notice.—Students who discontinue their work without petition for honorable dismissal may render themselves ineligible not only for readmission to the University of California but also for admission by transfer to another institution. All grades in courses undertaken in the semester from which a student withdraws without notice become "not passing" (E or F) and remain so upon the student's permanent record.

TRANSCRIPTS OF RECORD

Each student, upon formal application to the Registrar, may receive or may have issued on his behalf, without cost, one transcript showing all work taken by him on this campus of the University. Subsequent transcripts will be issued upon application at a cost of one dollar per copy. ✓

DISCIPLINE

When a student enters the University it is taken for granted by the University authorities that he has an earnest purpose and that his conduct will bear out this presumption. If, however, he should be guilty of unbecoming behavior or should neglect his academic duties, the University authorities will take such action as, in their opinion, the particular offense requires. Students who fail to make proper use of the opportunities freely given to them by the University must expect to have their privileges curtailed or withdrawn.

STUDENT RESPONSIBILITY

Each student is responsible for compliance with the regulations printed in this bulletin and in the handbook of **RULES AND REGULATIONS FOR STUDENTS** issued by the Registrar's Office; also with official notices published in the *Daily Bruin* or posted on official bulletin boards.

MISCELLANEOUS INFORMATION

EXPENSES—LIVING ACCOMMODATIONS—EMPLOYMENT— SCHOLARSHIPS—LOANS

GENERAL EXPENSES AND FEES*

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 fifteen 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.

A table of estimated minimum, moderate, and liberal budgets for one semester is given on page 36C.

Fees and deposits are payable preferably in cash. If a check is presented the face amount must not exceed all the fees to be paid.

Incidental Fee.—The incidental fee for all undergraduate and graduate students is \$60. This fee, which must be paid each semester at the time of registration, covers certain expenses of students for counseling service, for library books, for athletic and gymnasium facilities and equipment, for lockers and washrooms, § 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. A Student Union fee of \$6 each semester is required of all undergraduate and graduate students. Membership in the Associated Students (fee \$8 for all rights and privileges) is required of all undergraduate students; see page 40C. Membership in the Graduate Students Association (fee, \$2 for all rights and privileges) is required of all graduate students; see page 41C. 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 from the date of his registration, a part of these fees will be refunded.

Nonresident Tuition Fee.—Tuition in the academic colleges is free to every student who has been a legal resident of the State of California for a period of one year immediately preceding the opening of the semester during which he proposes to attend the University. Every student who has not been a legal resident of the State of California for a period of one year immediately preceding the opening day of the semester during which he proposes to enroll is classified as a nonresident. Such students are required to pay, in addition to the incidental fee, a tuition fee of \$250 each semester.

* During registration, fees will be paid as part of the registration procedure. Thereafter, they will be paid at the office of the Cashier, Administration Building. This office is open from 8:30 a.m. to 4 p.m. daily, and from 9 a.m. to 12 m. on Saturdays.

‡ Graduate students pay the full amount of \$250 regardless of the number of units undertaken unless for reasons of health or full-time employment they are unable to devote more than one-half time to academic study, in which event they may petition the Dean of the Graduate Division or reduction to one-half the amount. If an undergraduate student registers for less than 12 units the tuition fee is \$21 a unit or fraction of a unit, with a minimum of \$42.

§ 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.

A student entering the University for the first time should read carefully the rules governing the determination of residence (see page 32C), so that he may be prepared, in the event of his classification as a nonresident of California, to pay the required tuition fee. This fee must be paid at the time of registration.

If a student is in doubt about his residence status, he should communicate with the Attorney in Residence Matters, Room 590 University Hall, University of California, Berkeley 4, California. During registration the Attorney may be consulted upon the campus at a place that may be ascertained by inquiry at the Information Window, Administration Building. *Students are cautioned that the eligibility of a student to register as a resident of California for tuition fee purposes may be determined only by the Attorney in Residence Matters.*

Every entering student and every student returning to the University after an absence is required to make a "Statement as to Residence" on the day of registration upon a form which will be provided for that purpose, and his status with respect to residence will be determined by the Attorney in Residence Matters soon after registration. Continuing students are advised that application for reclassification to status as a resident student should be filed as a part of the preregistration procedure, but in no event later than three weeks before regular registration. Application for a change of classification with respect to a preceding semester will not be received under any circumstances.

On approval of the Dean of the Graduate Division, the nonresident tuition fee may be exempted in whole or in part in the case of students in graduate status (except in the case of foreign students whose tuition is paid by their governments), who have proved that they are distinguished scholars and who are carrying full programs of work toward the fulfillment of requirements for higher degrees. No graduate student, no matter how distinguished his scholarship may have been, will be exempted from the payment of the tuition fee if he is merely carrying some lower division courses for his cultural advancement or is making up subject deficiencies in his undergraduate preparation. For further information, consult the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION.

The term *distinguished scholarship* in connection with the question of exemption from the payment of the tuition fee is interpreted as follows: the scholarship standing must have been excellent throughout a period of no less than two years just preceding the time of application for this privilege. Moreover, only students from institutions of high standing in scholarly work will be considered. It should be clear from these statements, therefore, that only the decidedly exceptional student will be eligible for the privilege of exemption from the payment of tuition fee if he is a nonresident. Students exempted from the tuition fee pay only the incidental and other required fees. Petition for exemption from the nonresident tuition fee must be filed with the Dean of the Graduate Division *before registration.*

The privilege of exemption from the nonresident tuition fee may be revoked at any time at the discretion of the Dean of the Graduate Division if in his judgment a student fails to maintain distinguished scholarship, or if he proves himself unworthy in other respects.

Special Commutation of the Nonresident Tuition Fee.—Exemption from payment of the nonresident fee may be granted to an unmarried minor whose parent is in the active military service of the United States and is stationed in California on the opening day of the semester during which the unmarried minor proposes to attend the University. A student who believes he qualifies under this measure should request further information from the Attorney in Residence Matters at the address given above.

Other Fees

Application fee, \$5. This fee is charged every applicant for admission to the University, and is payable at the time the first application is filed. Applicants for graduate status must pay this fee, even though it may have been paid once in undergraduate status; see page 17C.

Medical examination: original appointment, or deferment arranged in advance, no fee; fee for a second appointment, \$4.

Late registration, \$10.

Late filing of registration packet, \$10.

Late examination in Subject A, \$1.

For courses added or dropped after date set for filing registration packet, \$2 for each petition.

For removal of grade E, \$4 for each petition.

For reinstatement of lapsed status, \$10.

For late application for teaching assignment, \$1.

For late notice of candidacy for the bachelor's degree, \$3.

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

For failure to empty locker within a specified time, \$5.

Returned check collection, \$5.

For duplicate registration card or student name card, \$2.

For duplicate cards in the registration packet, \$1 for one and \$.25 for each additional card up to a maximum of \$3.

Tuition fee for Government students, \$250.

REFUNDS

Refunds of a part of the incidental fee (and of the nonresident tuition fee, if paid) is made to a student who withdraws from the University within five weeks from the first day of classes.

No claim for refund of fees will be considered unless such claim is presented during the fiscal year to which the claim is applicable. No student will be entitled to a refund except upon surrender to the Registrar of his registration card and receipt. Students should preserve their receipts.

RULES GOVERNING RESIDENCE

The term "nonresident student" is construed to mean a person who has not been a bona fide resident of the State of California for more than one year immediately preceding the opening day of a semester during which he proposes to attend the University.

The residence of each student is determined in accordance with the rules for determining residence prescribed by the provisions of Section 244 of the Government Code of California and Sections 23055 and 23057 of the Education Code of California.

The attention of the prospective student who has not attained the age of twenty-two years and whose parents do not live in the State of California is directed to the fact that presence in the State of California for a period of more than one year immediately preceding the opening day of the semester in which he proposes to attend the University does not of itself entitle him to classification as a resident student for tuition purposes.

Every alien student who has not been lawfully admitted to the United States for permanent residence in accordance with all applicable provisions of the laws of the United States is classified as a nonresident student for tuition purposes.

* 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.

A veteran who was not a legal resident of the State of California at the time of his entrance into the Armed Forces is cautioned that presence in California under military orders does not of itself entitle him to classification as a resident student for tuition purposes.

Every person who has been, or who shall hereafter be classified as a non-resident student shall be considered to retain that status until such time as he shall have made application in the form prescribed by the Registrar of the University for reclassification, and shall have been reclassified as a resident student. Every person who is classified as a resident student, but who becomes a nonresident at any time by virtue of a change of domicile by his own action or by the person controlling his domicile, is obliged to notify the Attorney in Residence Matters at once.

Every person who has been classified as a resident student shall, nevertheless, be subject to reclassification as a nonresident student and shall be reclassified as a nonresident student whenever there shall be found to exist circumstances which, if they had existed at the time of his classification as a resident student, would have caused him to be classified as a nonresident student. If any student who has been classified as a resident student should be determined to have been erroneously so classified, he shall be reclassified as a nonresident student, and if the cause of his incorrect classification shall be found to be due to any concealment of facts or untruthful statement made by him at or before the time of his original classification, he shall be required to pay all tuition fees which would have been charged to him except for such erroneous classification, and shall be subject also to such discipline as the President of the University may approve.

LIVING ACCOMMODATIONS

Living accommodations for students who do not live with friends or relatives are provided in a number of ways—in Mira Hershey Hall, the University residence for women; in Clarence Dykstra Hall and Sproul Hall, the University's new residence halls for men and women; in private homes which accept paying guests; in one of the privately owned residence halls or cooperatives; in neighboring rented apartments; in sororities or fraternities; or in the Married Students' Housing Project. Information concerning any of these accommodations may be obtained from the Office of Housing Services, Room 1228, Administration Building, University of California, Los Angeles 24. Office hours are: Monday through Friday, 9 a.m. to 5 p.m.

Accommodations with Private Landlords

Up-to-date room and apartment rental listings are freely available to any student who desires to call *in person* at the Office of Housing Services. Since the listings change from day to day, arrangements for such accommodations cannot be made by mail. It should be understood that these accommodations are not inspected by the University. Students planning to obtain rental listings from the Office of Housing Services are advised to arrive on campus at least a week or ten days prior to the opening of the semester.

Since the University is not prepared to go into the community and inspect accommodations and make rental or other arrangements on behalf of students, such transactions must be made individually and directly with landlords. Students and landlords are both advised to have a clear understanding, preferably in writing, as to prices, intended length of tenancy and charges to be made during vacation periods.

Prices range from \$85 to \$125 per month for room and board, from \$40 to \$55 per month per person for room only, and \$80 to \$125 per month for furnished single and bachelor apartments. Those students who are not boarding by the month can obtain moderately priced meals at the cafeteria in the Student Union, or at one of the many restaurants in Westwood Village adjoining the campus.

UNIVERSITY RESIDENCE HALLS

Mira Hershey Hall (for Women)

Mira Hershey Hall has been enlarged and redecorated to provide accommodations for 328 women students. Contemporary student rooms have been added as have a new recreation room and dining room while the charm of the Mediterranean architecture of the original structure with its graceful courtyards and gardens has been maintained. The hall is located on Hilgard Avenue, within easy walking distance of Westwood Village.

Clarence Dykstra Hall (for Men and Women)

Clarence Dykstra Hall provides accommodations for 802 men and women. This ten-story co-ed residence hall served by high-speed elevators is set in the west campus hills. Men and women students share the dining room, first floor lounges, and recreation rooms. The sun deck on the roof of the tenth story is used by student residents for parties and sun bathing. The hall represents the best in contemporary design, and many of the rooms have views of Santa Monica Bay, the beach cities, and Catalina Island.

Sproul Hall (for Men and Women)

Sproul Hall, a companion co-ed residence hall located just north of Dykstra Hall, was completed and opened in September, 1960. This new seven-story hall accommodates 800 men and women students. Contemporary in design, this hall provides dining and lounge areas to be shared by the men and women occupants who live in separate wings. It is located in the west campus hills and provides sweeping views of the campus and surrounding areas.

If a student is reasonably sure of being accepted by the Office of Admissions for enrollment, an application for residence may be obtained by writing to the Office of Housing Services on or after October 15 for the spring semester, and April 1 for the fall semester.

Completed applications should be submitted to the Office of Housing Services as soon as possible since all assignments are based on the chronological order in which the completed application is received with final selections being made on the basis of class percentages and the geographical location of the Applicant's home.

Contracts for residence are on a semester basis with assignments being made after July 1 for the fall semester and December 1 for the spring semester.

The present rate for room and board is \$420 per person per semester during the time the University is in session, and there is a social fee of \$5 per semester included in the contract which every student is required to sign upon accepting placement in a University residence hall. Two students are assigned to each room. Three meals are served daily, with the exception of Sundays and University holidays when two meals only are served.

PRIVATELY OWNED AND OPERATED UNIVERSITY APPROVED RESIDENCES

(APARTMENTS AND COOPERATIVES)

Two residences have apartments for 91 women students at rates ranging from \$30 to \$35 per month per person depending on the number of women sharing the apartment.

Four residence halls for women are on the cooperative plan with rates for board and room varying from \$50 to \$60 per month per person. Under this plan the students share in the work of operating the hall and work an average of four to five hours per week for part payment of their room and board.

The Cooperative Housing Association is a privately owned, nonprofit organization operating three houses accommodating about 206 men, each member being required to work four hours per week. The cost for board and lodging with two, three, or four in one room is \$56-\$60 per month. Information con-

cerning membership application may be secured from the manager at Landfair House, 500 Landfair Avenue, Los Angeles 24.

All business dealings should be clearly understood by both the student and the owner since the University cannot assume any responsibility for arrangements to which it is not a party.

Fraternities and Sororities

Most of the 35 fraternities and 22 sororities own or lease homes near the campus and provide lodging and meals for their members and pledges. Monthly bills for residents range from \$90 to \$105 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 Interfraternity Office (for fraternities) at 900 Hilgard Avenue, Los Angeles 24, California.

Students who wish to pledge fraternities or sororities but who do not wish to live in the fraternity or sorority house are welcome to contract for space in University residence halls or with private householders. However, students will not be allowed to break their contract to move in fraternities or sororities during the course of the semester.

Accommodations for Married Students

Apartment and house rentals are plentiful. It should be understood that these rentals are not inspected by the University. Married students planning to obtain rental listings from the Office of Housing Services are advised to arrive on campus at least a week or ten days prior to the opening day of the semester. Prevailing prices on furnished and unfurnished rentals are as follows: bachelor and single apartments, \$80 to \$125 per month; 1-bedroom apartments, \$85 to \$150 per month; 2-bedroom apartments \$90 to \$160 per month. Monthly rental prices for houses are appreciably higher. Although the facilities of the Office of Housing Services are available to all students, apartment and house rental listings cannot be sent by mail to interested students. Up-to-date rental listings are available to any student who desires to call in person at the Office of Housing Services.

MARRIED STUDENTS' HOUSING PROJECT

The University of California, Los Angeles, operates a Married Students' Housing Project located on campus. The Project has 251 two-room apartments (combination living room-dinette, kitchen, one bedroom and bathroom with shower) renting at \$38 per month furnished and \$34 per month unfurnished.

Eligibility

Any full time, regularly enrolled Veteran or nonveteran student who is married or is considered to be "head of family" may apply for Married Students' Housing Project. Extension students are not eligible to apply.

Applications

Applications may be obtained from the Office of Housing Services during the semester preceding that in which the married student plans to enroll and after the student is reasonably sure of being accepted for enrollment by the Admissions Office.

Assignments

Assignments of applicants to apartments in the Married Students' Housing Project are made on a "need" basis which considers number of children in family, lack of suitable income, and need for housing. If "need" factors are equal between applicants, assignment priority is given to the veteran applicant. Assignment of married students having children are given priority over married students without children.

Only a student and his immediate family may live in the Project.

MOTELS AND TRAILER COURTS

Good motels are located one to five miles from the campus with varying rates and accommodations. It is sometimes advisable for family groups to accept these accommodations temporarily until more permanent quarters can be located. Listings may be secured from the Office of Housing Services.

No trailer parking areas are provided on or near the campus. Information relative to such facilities is available at the Office of Housing Services.

PRINCIPAL ITEMS OF EXPENSE ESTIMATED FOR ONE SEMESTER

Expense items	Minimum	Moderate	Liberal
Incidental Fee	\$ 60	\$ 60	\$ 60
Student Union Fee	6	6	6
A.S.U.C.L.A. Membership Fee ¹	8	8	8
Books and Supplies	30	45	65
Board and Room.....	390	430	500
Miscellaneous (recreation, club dues, laundry, drugs, etc.).....	50	100	200
Total	\$544	\$649	\$839

NOTE.—It is impossible to include in the above figures such variable items as clothes or transportation to and from home, or fees other than the incidental and the A.S.U.C.L.A. membership fees. Students classified as nonresidents of the State must also add to their estimated budgets the tuition fee of \$250 per semester.

¹ Membership required of undergraduates; optional for graduate students, however, \$2 Graduate Students Association membership fee is required.

TRANSPORTATION TO CAMPUS AND PARKING

Student parking facilities on campus are limited and are subject to a parking fee.

Parking permits may be obtained by students living in residence halls or by students enrolled in the School of Law, School of Medicine or School of Nursing, on a priority basis through application to the Dean of Students. Students with physical disabilities which preclude walking long distances may also obtain permits through application to the Student Health Service. These permits are available in specified areas at a semesterly rate of \$22.

All other students may obtain permits on a "first come, first served basis" in area 12 at \$11 per semester. In addition, parking facilities are available on a daily basis at 25 cents per entry in area 11 or at 50 cents per entry in other areas as space allows.

For additional information relating to parking facilities, inquire at Campus Parking Service, Room A-207, Administration Building.

The use of public transportation, bicycles, and motor scooters is encouraged whenever possible. Bicycle racks and scooter parking are provided at convenient locations throughout the campus. Please contact the Metropolitan Transit Authority or the Santa Monica Municipal Bus Line for information regarding bus schedules in this area.

SELF-SUPPORT AND STUDENT EMPLOYMENT

Many students earn part, and a few earn all, of their expenses while attending the University. The University authorities are eager to offer as much encouragement as possible to students who must maintain themselves, but long experience has brought out the fact that the self-supporting student, early in his college life, may have to face unforeseen problems which affect his welfare.

University work demands the best that a student can give it. The following statements are made, therefore, not to discourage the able student who must do outside work, but to forewarn him with facts and information so that he may plan carefully and intelligently, and by so doing overcome many of the difficulties that might otherwise lead to disappointment and failure.

1. Whenever possible, it is wise for a student to use his savings to make the first semester of residence in the University one of freedom to give full time to academic work. He may then have an opportunity to adjust himself to new surroundings, to establish sound habits of study, and to maintain a good scholastic standing, and thereby build a foundation for the rest of his University course. By the end of the first semester the student should know the demands of university life and his own capabilities well enough to make it possible to plan, for subsequent semesters, a combined program of studies and work for self-support.

2. The regular undergraduate four-year course based on an average of 15 units of academic work a semester is organized on the supposition that students will give the major part of their time and attention to their studies while attending the University. Therefore, a student who must give considerable time and energy to outside work should consider at the outset the possibility that more than the usual eight semesters (four years) may be required to complete the program for the degree, if he is to maintain his scholastic standing and his health, and to enjoy the advantages of university life.

With reasonable diligence, a student in good health carrying an average program of study in the undergraduate departments can give as much as twelve hours a week to outside employment without seriously interfering with his college work; employment in excess of this amount should be accompanied by a reduction of the academic program carried.

3. Students who are not physically strong or in good general health should not, under ordinary circumstances, attempt to be wholly self-supporting because of the danger of jeopardizing health and academic progress.

STUDENT AND ALUMNI PLACEMENT CENTER

Part-Time Student Employment

Currently enrolled students desiring employment during the regular semesters and summer vacation periods may register with the Student and Alumni Placement Center in Temporary Building 1G. Professional staff interviewers assist the student in finding suitable employment emphasizing, whenever possible, the career job which affords work experience related to the student's major field.

The new student who plans to be self-supporting is advised not to begin his University course without sufficient funds to cover the major expenses of at least the first semester, since it is not always possible to secure employment immediately.

Jobs are usually available on an hourly basis in the fields of typing, stenography, bookkeeping, sales and clerical work, care of children, housework, manual labor, tutoring, and other specialized types of work for the properly qualified. Listings of room and board in exchange for work in private homes are also maintained. These are available to men and women and married couples.

Full-Time Career Placement

Through the full-time placement service of the Student and Alumni Placement Center, a staff of professional interviewers is available for consultation and guidance on career planning and placement.

Candidates for the degree, graduate and undergraduate, are urged to register as soon as possible in their last year in order that they may be referred well in advance of their graduation to employers from business, industry and government. Such referrals may involve off-campus interviews at plant headquarters or on-campus interviews by employer representatives who visit the Placement Center annually from October through May. Opportunity is afforded both the specialist and generalist to learn of a wide range of career opportunities.

This service is available to all regularly enrolled students of the University, their wives, and alumni of the University who are unemployed or who desire career relocation.

OFFICE OF EDUCATIONAL PLACEMENT

The Office of Educational Placement recommends graduates, students, and former students for positions in universities, colleges, junior colleges, high schools, and elementary schools, and for educational research, thereby assisting qualified candidates to obtain permanent employment or promotion in the work for which they have prepared themselves. No fee is charged matriculated students or former students of regular sessions or graduates of the University of California; there is no expense to school officials seeking teachers through this office. Communications should be addressed to the Office of Educational Placement, 220 Moore Hall.

The University reserves the right to refuse its services to candidates who seek positions for which they are not fully qualified. In every recommendation the aim is to keep in mind the best available persons, remembering candidates already employed as well as those who may be out of employment.

Candidates for positions are urged to inform the office of the result of their candidacy, and of their desires for future promotion or change of occupation.

STUDENT COUNSELING CENTER

Individual counseling of regularly enrolled University students is provided by a staff of counseling psychologists who assist students in dealing with choice of and preparation for educational and vocational objectives and with personal-social problems related to their academic performance.

Focus in counseling is on the individual's strengths and on helping him to gain maximum benefit from his University experience and from living in our society. Study discussion groups are conducted by the Student Counseling Center staff for students indicating a need for help with study skills, and a vocational library is maintained for reference.

Students may arrange an appointment for counseling or sign up for one of the study groups in Room 2255, Administration Building.

Testing is done when it seems advisable as a basis for counseling, and special testing projects for departments and colleges within the University are also administered through this center.

Information regarding the Graduate Record Examination and the Medical College Admission Test are available in the center.

CALIFORNIA REHABILITATION SERVICE

Men and women who have a physical or mental disability which handicaps them vocationally may be eligible for the services of the California Rehabilitation Service of the State Department of Education. These services include

vocational counseling and guidance, training (with payment of costs such as books, fees, tuition, etc.), and placement.

A Rehabilitation Counselor is available on the Los Angeles campus for interviewing applicants. Appointments may be made in the Office of Dean of Students—Special Services, A-253 Administration Building, or by contacting the California Rehabilitation Service Office at 107 So. Broadway, Los Angeles 12; telephone MADison 0-4626. One year's residence in California is required for eligibility.

SELECTIVE SERVICE (DRAFT)

Selective service information and counseling on draft status are available Mondays through Fridays at the Office of Dean of Students—Special Services, Administration Building. Certifications of enrollment, ranking, and training status for students, and occupational status for employees will be submitted to selective service boards on request. Students desiring deferments on the basis of enrollment in University R.O.T.C. programs should consult the proper R.O.T.C. departments of the campus as described on page 23C.

VETERANS INFORMATION

Dean of Students—Special Services maintains liaison between certain veterans and veterans' dependents, the Veterans Administration, the State Department of Veterans Affairs, and other agencies offering veterans educational benefits to assist veterans in becoming assimilated into the life and spirit of the University. This office is located in the Administration Building. Offices of the United States Veterans Administration are located as follows: Los Angeles Regional Office, 1380 Sepulveda Boulevard, Los Angeles 25, California; San Francisco Regional Office, 49 Fourth Street, San Francisco 3, California.

Information regarding educational benefits available from the State of California (CVEI) may be obtained from the State Department of Veterans Affairs, P. O. Box 1559, Sacramento 7, California; or by writing either to 1736 Westwood Blvd., Los Angeles 24, California, or 515 Van Ness Avenue, San Francisco 2, California.

Veterans wishing to enroll under the provisions of Public Law 550 (Korean G.I. Bill) and students wishing to enroll under the provisions of Public Law 634 (War Orphans Education Act) must obtain from the United States Veterans Administration a Certificate for Education and Training which should be filed with the Office of Special Services, Room A-253 Administration Building as soon as possible. These veterans must be prepared to pay all fees and educational costs at the time of registration as education and training allowances are paid to the veteran by the Veterans Administration and the first monthly payments will normally be received 60 to 75 days after compliance with the above instructions.

UNDERGRADUATE SCHOLARSHIPS

A number of scholarships are available for both entering and continuing students on the Los Angeles campus from funds provided by the Regents and friends of the University. A limited number of scholarships are available for out-of-State students.

Application blanks and descriptive circulars may be obtained from the Committee on Undergraduate Scholarships and Prizes, A-251 Administration Building, University of California, Los Angeles 24, California. Applications must be filed with the committee during the period October 1 to January 10 for resident students, and during the period October 1 to March 1 for entering students. These dates pertain to the year prior to the academic year for which the awards are to be made. Applications received later than the stated deadlines cannot usually be considered.

To be eligible for a scholarship the applicant must meet certain requirements as to scholarship, financial need, character and promise. A few scholarships are restricted to students with special additional qualifications; these special qualifications are listed on the application blank.

Alumni Scholarships

The U.C.L.A. Alumni Association, in conjunction with the University, makes available each year a number of scholarships for entering freshmen from accredited California high schools, and a limited number for students entering for the first time from California junior colleges, or other acceptable collegiate institutions in California. The same application blanks are used for these as for other scholarships open to entering students (see above) and the completed forms must be referred to the committee by March 1. In the selection of individuals for recommendation for these awards, the Committee on Undergraduate Scholarships and Prizes, with the advice of the Alumni Committee, will choose applicants with not only substantial scholastic ability but also high character and outstanding qualities of leadership, who give promise of reflecting credit on themselves and the University.

The California (Berkeley) Alumni Association also makes available a number of scholarships for entering students, which are tenable on any of the campuses of the University. Blanks which give all necessary information for application for these scholarships may be obtained from the Committee on Undergraduate Scholarships, University of California, Berkeley 4.

GRADUATE SCHOLARSHIPS AND FELLOWSHIPS

For information concerning graduate scholarships, consult the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION.

LOANS

Various organizations and individuals have contributed toward the building up of several student loan funds. The gifts for this purpose are administered by the University in accordance with the conditions laid down by the donors.

All loans are repayable as soon as possible without defeating the purpose of the loan or seriously inconveniencing students.

National Defense Education Act loans are also administered by the Student Loan Office.

Applications should be filed at least twelve days in advance of need. For further information, apply to the Office of the Dean of Students, Administration Building.

PRIZES

The generosity of alumni and friends of the University provides each year for competitive prizes and awards in several fields. These prizes and awards are described in a bulletin issued monthly. The recipients are ordinarily announced at Commencement in June of each year. Further information may be obtained from the Office of the Dean of Students.

THE ASSOCIATED STUDENTS

The undergraduate student self-government is organized and administered by the Associated Students. All undergraduates hold membership by virtue of paying the required A.S.U.C.L.A. membership fee at registration. The organization has a legislative council composed of a President, Vice-President, fifteen elected student representatives, and four adult members. The council administers the general business of the association and coordinates the various cocurricular activities such as publications, athletics, and recreation.

Members are entitled to participate in the affairs of the Associated Students, to subscriptions to the U.C.L.A. *Daily Bruin*, and certain other publications, to free admissions to many athletic contests and reduced rates to others, as well as to dramatic, social, and similar events which are part of the program of the Associated Students. In addition to the *Daily Bruin* the Associated Students publish the *Southern Campus*, the yearbook of the University.

All graduate students belong to a parallel organization, the Graduate Students Association. The Graduate Students Association is part of the A.S.U.C.L.A. but maintains its own separate program geared to the interests and needs of graduate students.

Both the undergraduate and graduate associations have offices in Kerckhoff Hall, given to the University by Mrs. William G. Kerckhoff of Los Angeles. Also in Kerckhoff Hall are the cafeteria and student store which are owned and operated by the A.S.U.C.L.A.

These facilities have recently been supplemented by one of the finest student union buildings in the United States. Recreational and educational programs are provided, as well as a variety of student services.

UNIVERSITY OFFICE OF STUDENT ACTIVITIES

The Student Activities Office, located on the second floor of Kerckhoff Hall, provides student groups a place to work, facilities to help in program planning, and a qualified staff to give advice and information on campus organizations and activities.

In cooperation with student groups, this office is also responsible for the supervision of the University social program and the enforcement of regulations. The Dean of Men, the Student Activities Advisers, the University Recreation Coordinator, and the Men's Living Group Adviser have offices here.

Necessary clearances and approvals for student activities and events should be obtained through this office in the early stages of planning.

RELIGIOUS FACILITIES

In the immediate vicinity of the campus, at the southeast corner of Hilgard and LeConte Avenues, is the University Religious Conference, where official representatives of the Baptist, Catholic, Congregational, Disciple, Episcopal, Jewish, Latter-day Saints, Lutheran, Methodist and Presbyterian denominations have student headquarters. Additional facilities are available for Catholic students at the Newman Club, 840 Hilgard Avenue. The Y.W.C.A. occupies its own building, at 574 Hilgard Avenue, near the entrance to the campus; the Y.M.C.A. has its office in the same building, at 572 Hilgard Avenue. The Christian Science Organization reading room and headquarters are located at 560 Hilgard Avenue, near the entrance to the campus.

At these centers are held religious discussion groups, lectures, Bible classes, social gatherings, luncheons, dinners, and other student meetings.

REQUIREMENTS IN THE SEVERAL COLLEGES, SCHOOLS, AND CURRICULA

COLLEGE OF LETTERS AND SCIENCE

The curricula of the College of Letters and Science are designed to provide the student with opportunities to broaden his culture and to prepare him 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 eighth semester.

A liberal education presupposes a reasonably wide distribution of courses that contribute to a desirable balance of intellectual interests. To this end the student is 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 the student is relatively free to concentrate his attention upon courses in a field of interest best suited to his aptitudes and purposes.

Each student therefore chooses a field of concentration in the upper division which may be a program of related courses within a single department (departmental major), or a group of coordinated courses involving a number of departments (interdepartmental curriculum), or, under certain circumstances, an organized group of courses chosen to meet a student's special need (individual field of concentration). 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 College of Letters and Science also maintains a staff of counselors to advise and guide students in all academic matters.

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 minimum number of units for the bachelor's degree shall be 120, of which at least 108 shall be in courses taken from the Letters and Science List of Courses (see page 2), and at least 42 shall be in upper division courses from the Letters and Science List. At least 12 of these upper division units shall be outside a single department, and not more than 42 units of upper division courses taken in one department may be counted toward the bachelor's degree. Not more than 4 units in lower division courses in physical education may be counted toward the bachelor's degree. Not more than 8 units of music courses in the series 40A-41W and 190A-192W will be counted toward the bachelor's degree. No credit will be allowed for work completed at a junior college after the student has completed 70 units toward the degree.

The candidate shall have attained at least a 2.00 grade-point average in all courses undertaken in this University.

2. The candidate shall have completed the general University and College requirements (A) to (G), inclusive (pages 4-6), except for exemptions authorized for his field of concentration (see page 6).

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

4. The candidate shall have satisfied the requirements of a field of concentration in the College of Letters and Science. Before the degree is granted, the department or committee in charge of the student's field of concentration

must certify that the student has completed the requirements for the field of concentration.

5. The candidate shall have been registered in the College of Letters and Science while completing the final 24 units of work, and shall have completed while registered in the College at least 18 units of upper division courses, including at least 12 units in his field of concentration. This regulation applies to all students including those entering this University from other institutions or from University of California Extension, and to students transferring from other colleges of this University.

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 fields of concentration as the Executive Committee of the College may designate as leading to that degree.

LETTERS AND SCIENCE LIST OF COURSES

At least 108 units offered for the degree of Bachelor of Arts or Bachelor of Science must be in courses chosen from the Letters and Science List of Courses, and the 42 units required in upper division courses (numbered 100-199) must be selected from the same list.

Any course not included in the Letters and Science List of Courses but required or accepted as part of a field of concentration or as a prerequisite therefor, will, for students in that field of concentration, but for no others, be treated as if it were on the Letters and Science List of Courses. Students in the General Elementary and Early Childhood Education Curricula are specifically referred to the special regulation under those curricula concerning the Letters and Science List of Courses.

The following list refers to the courses as given in the department offerings for the fall and spring semesters, 1961-1962.

Agriculture:

Botany. All undergraduate courses.

Floriculture and Ornamental Horticulture. 146A-146B.

Horticultural Science. 111.

Irrigation and Soil Science. 101, 108, 110A.

Plant Pathology. 120.

Air Science. All undergraduate courses up to a total of 12 units.

Anthropology and Sociology:

Anthropology. All undergraduate courses except 400.

Sociology. All undergraduate courses.

Art. 1A, 1B, 5, 7, 100A, 100B, 101, 103, 104, 105, 106, 107, 108, 109, 110A, 110B, 110C, 111A, 111B, 111C, 112A, 112B, 113A, 113B, 113C, 113D, 114, 115A, 115B, 115C, 115D, 116A, 116B, 116C, 117A, 117B, 118A, 118B, 119A, 119B, 148, 149A, 149B, 149C, 149D, 199.

Astronomy. All undergraduate courses.

Bacteriology. All undergraduate courses.

Business Administration. 100, 118, 133, 135, 140, 152, 160, 170, 180, 190.

Chemistry. All undergraduate courses.

Classics:

Classics. All undergraduate courses.

Latin. All undergraduate courses.

Greek. All undergraduate courses.

Sanskrit. All undergraduate courses.

Economics. All undergraduate courses.

Education. 100A-100B, 108, 110A-110B.

Engineering. 2, 111A, 115A, 117A, 120A, 122A, 130A, 145, 150B, 151A, 160A, 163A, 181A, 182D, 182E, 183A, 185B, 186A, 187A.

English:

English. All undergraduate courses except 370.

Speech. All undergraduate courses except 142A, 142B, and 370.

Folklore. All undergraduate courses.

French. All undergraduate courses except 370.

Geography. All undergraduate courses.

Geology:

Geology. All undergraduate courses.

Mineralogy. All undergraduate courses.

Paleontology. All undergraduate courses.

Germanic Languages:

German. All undergraduate courses except 370.

Scandinavian Languages. All undergraduate courses.

History. All undergraduate courses.

Home Economics. 170.

Humanities. 1A-1B.

Integrated Arts. 1A-1B.

Italian. All undergraduate courses.

Journalism. All undergraduate courses.

Linguistics and Philology. All undergraduate courses.

Mathematics:

Mathematics. All undergraduate courses except 38, 41, and 370.

Statistics. All undergraduate courses.

Meteorology. All undergraduate courses.

Military Science. All undergraduate courses up to a total of 12 units.

Music. All courses included in the following series: 1A to 30B, 100A to 115D,

118, 121A to 177, 197, 199.

Naval Science. All undergraduate courses up to a total of 12 units.

Near Eastern and African Languages:

African Languages. All undergraduate courses.

Arabic. All undergraduate courses.

Armenian. All undergraduate courses.

Berber Languages. All undergraduate courses.

Hebrew. All undergraduate courses.

Persian. All undergraduate courses.

Semitics. All undergraduate courses.

Turkish. All undergraduate courses.

Nutritional Sciences. 113, 114.

Oriental Languages. All undergraduate courses.

Philosophy. All undergraduate courses.

Physical Education. 1, 44, 130, 139, 146, 147, 150A-150B, 151, 155.

Physics. All undergraduate courses except 370.

Political Science. All undergraduate courses except 104.

Psychology. All undergraduate courses.

Public Health. 5, 100, 110, 147, 160A.

Slavic Languages. All undergraduate courses.

Spanish and Portuguese:

Spanish. All undergraduate courses except 370.

Portuguese. All undergraduate courses.

Theater Arts. 5A, 5B, 101, 102, 104, 105A, 105B, 105C.

Zoology:

Zoology. All undergraduate courses except 111H, 136, and 370.

Life Sciences. 1A-1B.

Biology. 12.

GENERAL UNIVERSITY AND COLLEGE REQUIREMENTS

It is advisable that each of the requirements (A) to (G) be completed as early as possible in the student's progress toward the degree, normally all of them within the first 60 units of college work. In fields of concentration requiring unusually heavy preparation, some postponements are possible; and in certain fields, exemptions have been authorized (see page 6).

(A) *General University Requirements.**

- (1) *Subject A.* An examination in Subject A (English Composition) is required of all entrants at the time of their first registration in the University. For further regulations concerning Subject A, see page 23C of this bulletin.
- (2) *Military Science* (6 units), or *Air Science* (6 units), or *Naval Science* (12 units), 4 semesters (men).

(B) *Foreign Language.* At least 16 units in not more than two languages.

- (1) The first two years of high school work in a foreign language will be counted in satisfaction of 4 units of this requirement; the third and fourth years in the same language will be counted in satisfaction of 4 units each. Only work of grade C or higher may be counted.†
- (2) If a new language is begun on the college level it may not apply on this requirement unless course 2, or the equivalent, with its prerequisites is completed.
- (3) This requirement may also be satisfied in one of the following ways: (a) by passing a proficiency examination in one foreign language; or (b) on petition, by presentation of credentials from a secondary school in which the language of instruction is a foreign language.
- (4) Courses given in English by a foreign language department will not be accepted in fulfillment of this requirement.
- (5) 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.

(C) *Mathematics.* Elementary algebra and plane geometry. If these subjects were not completed in the high school, they may be taken in University of California Extension, but will not be counted as part of the 120 units.

(D) *English Composition.* At least 3 units in English composition (English 1A) with a grade of C or better. This requirement may also be satisfied by passing a proficiency examination in English composition set and administered by the Department of English with the approval of the Executive Committee of the College. A bona fide student from abroad, who has learned English as a foreign language and in whose secondary education English was not the medium of instruction, may satisfy this requirement by completing English 33B with a grade of C or better.

* For information concerning exemption from these requirements apply to the Registrar.

† Any student who because of lapse of time or other circumstances feels unable to continue successfully a language begun in high school may consult the department of the language concerned regarding the possibility of repeating all or a part of the work for credit. Such credit would count on the 120 units required for the bachelor's degree; but credit is not allowed toward the required 16 units in foreign language for both the high school and college work thus duplicated.

(E) Natural Sciences.

- (1) At least 5 units in physical science chosen from the following:

Astronomy 1, 100, 101

Chemistry 1A, 2A, 2, 3A

Geography 1

Geology 2, 2L, 3, 101

One course (not more than 3 units) from: Mathematics C, D, 1, 3A, 5A, 5B, 32A, 37; Statistics 1; Philosophy 31

Meteorology 3

Physics 1A, 1B, 1C, 1D, 2A, 2B, 10

- (2) At least 5 units in biological science, chosen from the following:

Anthropology 1

Bacteriology 1, 6

Biology 12

Botany 1, 2, 3

Life Sciences 1A-1B (both 1A and 1B must be completed to count on science requirement)

Paleontology 101, 110, 111, 136, 137

Psychology 1B

Zoology 1A, 1B, 15, 138

(F) Social Sciences.

- (1) A lower division year course in history, chosen from the following:

History 1A-1B or 5A-5B or 6A-6B or 7A-7B or 8A-8B

- (2) At least 6 units in social sciences exclusive of history and including courses in at least two subjects, chosen from the following list:

Anthropology 2

Economics 1A, 13, 101

Geography 2

Political Science 1, 2, 101, 103

Psychology 1A, 101

Public Health 5

Sociology 1, 101

(G) Humanities. Two of the following three groups:

- (1)
- Literature.*
- At least 4 units in English, American, or any foreign literature, in the original language* or in translation, selected from the following list:

Arabic 150A, 150B

Classics 113

English 30A, 30B, 46A, 46B, 115, 117J, 125C, 125D, 130, 133, 135, 136, 151M, 153, 190A, 190B

French 109A, 109B, 109M, 109N

German 104A, 104B, 118A, 118B, 121A, 121B

Greek 102, 103, 180A, 180B

Hebrew 150A, 150B

Humanities 1A, 1B

Italian 103A, 103B, 109A, 109B

Latin 4, 106, 180

Oriental Languages 112, 132

Persian 150A, 150B

Scandinavian 141A, 141B

Slavic Languages 130, 132, 143A, 143B, 150

Spanish 102A, 102B, 104A, 104B

Turkish 150A, 150B

* The same courses in foreign language may not be counted both on requirement (G-1) and on the foreign language requirement (B).

- (2) *Philosophy*. A 6-unit lower division year course in philosophy, selected from the following:
Philosophy 6A-6B, 20A-20B
- (3) *The Arts*. At least 4 units selected from the following:
Art 1A, 1B, 5, 100A, 100B, 108, 109
Integrated Arts 1A-1B
Music 20A, 20B, 30A, 30B, 130, 131, 136A, 136B, 170
Theater Arts 5A, 102

Authorized Exemptions

The following exemptions have been authorized in the fields of concentration listed below.

Curricula in Astronomy-Mathematics and Astronomy-Physics

Exemptions:

1. Requirement (F-1); and
2. One of the two groups required under (G).

Major in Bacteriology

Exemption:

1. Requirement (F-2).

Curriculum in Biological Illustration

Exemptions:

1. Either (F-1), or (F-2); and
2. One of the two groups under (G).

Major in Botany

Exemptions:

1. Requirement (F-2); and
2. One of the two groups required under (G).

Major in Chemistry

Exemptions:

1. Either (F-1), or (F-2); and
2. Either (E-2), or one of the two groups required under (G).

Curriculum in Earth Physics and Exploration Geophysics

Exemptions:

1. Requirement (F-2); and
2. One of the two groups required under (G).

Major in Geology

Exemptions:

1. Requirement (F-2); and
2. One of the two groups required under (G).

Major in Mathematics

Exemption:

1. Requirement (F-1).*

Curriculum in Physical Sciences-Mathematics

Exemption:

1. One of the two groups required under (G).

Major in Zoology

Exemptions:

1. Either (F-1), or (F-2); and
2. One of the two groups required under (G).

* Mathematics majors who are candidates for the general secondary teaching credential may be exempted from one of the two groups required under (G) upon petition recommended by the department and approved by the Dean of the College.

REGULATIONS GOVERNING THE FIELD OF CONCENTRATION

(A) A field of concentration shall consist of not less than 24, nor more than 42 units of upper division courses. Not more than 42 units of upper division courses taken in one department will be counted toward the bachelor's degree. In economics this limitation is inclusive of courses in business administration. Only the following courses may be counted in satisfaction of the field of concentration: (1) courses in resident instruction* at the University of California, Los Angeles campus, or at another college or university; (2) courses in University Extension with numbers having the prefix X, XB, XL, XR, or XSB. Courses numbered in the 300 series (teachers' courses) or in the 400 series (professional courses) are not accepted as part of the field of concentration (with the exception of the General Elementary and Early Childhood Education curricula).

(B) The fields of concentration shall be designated as *departmental*, *inter-departmental*, or *individual*.

- (1) A departmental field of concentration (or major) shall consist of a group of coordinated upper division courses, of which at least two-thirds of the units are in one department, set up and supervised by a department.
- (2) An interdepartmental field of concentration (or curriculum) shall consist of at least 36 units of coordinated upper division courses, of which less than two-thirds are in one department, set up and supervised by a committee appointed by the Executive Committee of the College.
- (3) A student who has some unusual but definite academic interest, for which no suitable major or curriculum is offered in the University of California, and who has completed at least two semesters of work (a minimum of 24 units) in the University with a grade-point average of 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 field of concentration. This field will consist of at least 36 units of coordinated upper division courses, of which less than two-thirds are in one department.

(C) Each upper division student must designate his field of concentration on his study-list card, he must register with the department or committee in charge of his field of concentration, and his study list must be approved by a representative of the department or committee before it will be accepted by the Registrar. A department or committee may designate the Dean of the College as its representative.

(D) An upper division student may change his field of concentration only by permission of the Dean of the College and of the department or committee in charge of the field of concentration to which the student petitions to transfer. No change of field of concentration will be permitted after the opening of the student's last semester.

(E) Students who fail to attain a grade-point average of at least 2.00 in work taken in the prerequisites for the field of concentration, or in courses in the field of concentration, may, at the option of the department or committee in charge, be denied the privilege of continuing in that field of concentration. The student must attain an average grade of C (2 grade points for each unit undertaken) in all courses offered as part of the field of concentration.

(F) All students must take at least one course in their field of concentration each semester during their last, or senior year.

* Resident instruction is defined as that which is offered to students in regular attendance during the fall and spring semesters and the Summer Session.

**ORGANIZED FIELDS OF CONCENTRATION IN THE COLLEGE OF
LETTERS AND SCIENCE**

Majors Leading to the Bachelor's Degree

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

Anthropology	Geography	Oriental Languages
Applied Physics†	Geology	Philosophy
Arabic	German	Physical Education†
Astronomy	Greek	Physics
Bacteriology	Hebrew	Political Science
Botany	History	Psychology
Chemistry†	Italian	Slavic Languages
Classics	Latin	Sociology
Economics	Mathematics	Spanish
English	Meteorology	Speech
French	Music	Zoology

Curricula Leading to the Bachelor's Degree

The College offers curricula (interdepartmental fields of concentration) leading to the degree of Bachelor of Arts in the following fields:

Astronomy-Mathematics
 Astronomy-Physics
 Biological Illustration
 Early Childhood Education
 Earth Physics and Exploration Geophysics
 General Elementary Teaching
 Home Economics
 International Relations
 Latin-American Studies
 Near Eastern Studies
 Physical Sciences-Mathematics
 Presocial Welfare
 Public Service

Requirements of these curricula are listed in detail in the following pages.

SPECIAL PROGRAM IN AFRICAN STUDIES

Committee in Charge: J. S. Coleman (chairman), R. E. Baldwin, J. S. Galbraith, W. R. Goldschmidt, W. P. Jones, W. Leslau, C. R. Nixon, C. H. Prator, C. Taylor, B. E. Thomas, W. E. Welmser.

The underlying philosophy of the program in African studies at UCLA 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. Every student, undergraduate as well as graduate must have a departmental base and must fulfill the degree requirements of the department concerned.

At the undergraduate level 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 joint course will receive a degree with a major in his chosen discipline and specialization in African studies.

The program is designed primarily for (1) students who plan to live and work in Africa or who are interested in governmental and public service careers involving African affairs, and (2) students who plan to pursue gradu-

† Leading to degree of Bachelor of Science.

ate work in one of the social sciences or Near Eastern and African languages with primary concentration on the African field.

Preparation.—Introductory courses in any four of the following: Anthropology 2 (3), Economics 1A-1B (3-3) or 101 (3), Geography 1 (3), 2 (3), or 100 (3), History 1A-1B (3-3) or 5A-5B (3-3), Political Science 2 (3) or 103 (2), Sociology 1 (3) or 101 (3). Training in Arabic, French, Portuguese, or an African language is highly recommended.

Upper Division.—The student is required to take a major in a social science or in Near Eastern and African languages. The required courses for the curriculum in African studies may also be used to fulfill the requirement for the major when relevant.

Required Courses.—Anthropology 139 (3), Geography 126 (3), History 130 (3), Political Science 156 (3), and two courses outside the major field from the following: Anthropology 123 (3), Anthropology 165 (3), History 158A (3), History 158B (3), Political Science 153 (2).

CURRICULA LEADING TO DEGREES

CURRICULUM IN ASTRONOMY-MATHEMATICS

Committee in Charge of the Curriculum: S. Herrick (chairman), G. O. Abell, D. M. Popper, A. E. Taylor.

Lower Division

Required: Astronomy 2 (2), 4 (3), Physics 1A-1B-1C-1D (12) or, with the consent of the adviser, Physics 2A-2B; Mathematics 5A-5B, 6A-6B or 1, 3A, 3B, 4A, 4B (14).

Upper Division

The curriculum comprises 36 upper division units in astronomy, mathematics, and physics of which at least 15 units must be taken in astronomy and at least 12 in mathematics.

I. Required: Astronomy 101, 112, 115 (9 units), Mathematics 119A and three of the courses 108, 124, 125, 128 (12 units), Physics 105.

II. Electives in astronomy, mathematics, and physics. The following courses are recommended: Astronomy 104, 107, 117A, 117B, Mathematics 119B, 122A-122B, 135, 136, Statistics 120A, Physics 108B, 121.

CURRICULUM IN ASTRONOMY-PHYSICS

Committee in Charge of the Curriculum: G. O. Abell (chairman), M. R. Hestenes, J. Kaplan, D. S. Saxon.

Lower Division

Required: Astronomy 2 (2), 4 (3), Physics 1A-1B-1C-1D (12), Mathematics 5A-5B, 6A-6B or 1-3A, 3B, 4A-4B (14).

Upper Division

The curriculum comprises 36 upper division units, distributed as follows:

I. Required: Astronomy 101 (3), 117A (3), 117B (3), Physics 105 or Mathematics 125 (3), Physics 108B (3), 112 (3), 121 (3), Mathematics 110AB (4) or 119A (3), and 122A (3).

II. Electives in astronomy, mathematics, and physics, of which at least 5 units must be in astronomy, and all of which must be in courses approved for the individual. It is recommended that the elective courses be chosen from: Astronomy 104, 105, 112, Mathematics 112B, Physics 107, 110, 114A, and 124A.

CURRICULUM IN BIOLOGICAL ILLUSTRATION

Committee in Charge of the Curriculum: R. A. Boolootian (chairman), B. C. Abbott, C. F. Bridgman.

The curriculum in biological illustration offers a minimum four-year program balanced between illustrative drawing and the biological sciences. Although as here outlined it prepares a student to illustrate primarily in the biological sciences, special consideration may be made for those students whose interest is illustrating in the physical sciences. Some degree of flexibility and program modification is provided through conferences with the Committee.

The curriculum is designed to prepare a student for illustrating in a specific field, e.g., botany, zoology, or general biology, or for further study in the highly specialized field of medical illustration.

Lower Division

Required: Art 10A, 10B, 20B, 30A, 30C, Zoology 1A-1B, Chemistry 2A.

Upper Division

Required: 36 units of upper division courses, including Art 145, 148, 149A-B-C-D, 150, 167A-167B, and at least 20 units from zoology, botany, and allied fields. Recommended: Art 155, 190; Botany 126, 199; English 106S; Theater Arts 145, 180; Zoology 140. The student must have his selection of courses approved by his curricular adviser each semester.

CURRICULUM IN EARTH PHYSICS AND EXPLORATION GEOPHYSICS

Committee in Charge of the Curriculum: J. Kaplan (chairman), G. C. Kennedy, G. Tunell.

This curriculum is designed to provide training in physics, chemistry, mathematics, and geology, which are basic to geophysics. The requirements of the petroleum and mining industries for exploration experts, and the demands of educational and research institutions, indicate the desirability of a broad training in the physical sciences for those intending to enter either the field of applied geophysics or the general field of the physics of the earth. Summer employment with geophysical prospecting parties is strongly recommended. The curriculum below will be modified to allow students to prepare for graduate study in geophysics either in the Department of Geology or in the Department of Physics.

Lower Division

Required: Chemistry 1A-1B (10), Geology 2 and 2I. (4), 3 (4), Mineralogy 6A-6B (5), Mathematics 5A-5B (8), 6A-6B (6), or Mathematics 1, 3A, 3B, 4A, 4B (14), Physics 1A-1B-1C-1D (12).

Upper Division

The curriculum comprises 36 upper division units, distributed as follows: Required: Geology 102A (3), 103 (4), Geophysics 122 (3), Mathematics 110AB (4), Physics 107 (2), 107C (2). Recommended: Chemistry 110A-110B (6), 111 (4), Geology 110 (3), 111 (3), 116 (3), Mathematics 124 (3), 128 (3), Physics 105 (3), 110 (3), 112 (3), 116A (3), 116C (2), Engineering 115A (3), 181A (3), 198 (3). A summer's field experience with a geophysical crew.

Each student is required to obtain approval of his upper division curriculum, including electives, from the course adviser in the Institute of Geophysics.

GENERAL ELEMENTARY AND EARLY CHILDHOOD EDUCATION CURRICULA

Committee in Charge of the Curricula: A. E. Longueil (chairman), J. A. Crow, W. H. Dutton, I. A. Hinderaker, H. L. Kostanick, Miss A. B. Nisbet.

These curricula have been designed by the College of Letters and Science and the School of Education to lead to both the degree of Bachelor of Arts from the College of Letters and Science, and the *Certificate of Completion* in

general elementary or kindergarten-primary teaching from the School of Education. It is possible to complete the requirements for these two objectives in approximately four years and one summer session by completing the requirements for the bachelor's degree concurrently with one of the curricula set forth below.*

At the beginning of their junior year, if not before, students in these curricula must formally register in the School of Education as credential candidates; this is in addition to registration in the College of Letters and Science as candidates for the bachelor's degree.

Curriculum I. General Elementary

Lower Division

Required: English 1A and either English 1B or Speech 1; Psychology 1A and either 1B or 33 (transfer students may meet this requirement by taking Psychology 101); Art 5 or 7; Music 31; Physical Education 27A, 27B, and 44; Mathematics 38. Recommended: Life Science 1A-1B or Biology 12, Botany 1, or Zoology 1A; History 7A-7B or 8A-8B.

Upper Division

The following courses in education are required for the credential and should be taken approximately in the order listed: Education 100A (open to high sophomores), 100B, 110A-110B, 124A, 139, 324A-324B (Supervised Teaching). (At least a C average is required for all courses in education, including at least a grade of C in Supervised Teaching.)

The field of concentration in this curriculum comprises at least 36 upper division units of professional and academic courses. At least a C average must be maintained in the field of concentration.

1. The professional courses in the field of concentration: Education 124B, Art 330, Music 330, Physical Education 330.

2. The academic courses in the field of concentration: At least 27 units of work in no more than four departments, according to one of the following patterns. (The units in any department may vary by one unit above or below that specified, provided the total is 27 or more units.)

(a) English	9	(c) English	6
Geography	9	Geography	6
History	9	Anthropology or Sociology...	6
	—	Phys. Ed. or Poli. Sci. or	
	27	Psych.	6
		Additional units in one of	
(b) English	6	above departments (other	
Geography	6	than Phys. Ed.) already	
History	6	chosen by the student	3
Additional units in one of			—
above	3		27
6 units from one of the follow-		(d) Same as (c) except that His-	
ing: Anthro., Phys. Ed.,		tory may be substituted for	
Poli. Sci. or Soc.	6	Geography	
	—		
	27		

The courses in the field of concentration must be chosen from the approved list which is available in the College office and the Office of Student Services,

* It is also possible to secure the recommendation of the School of Education for the general elementary or kindergarten-primary teaching credential by pursuing a departmental field of concentration and by completing, in addition to the requirements for the bachelor's degree, the credential requirements set forth in the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES. This program will require approximately one semester longer than the special program outlined above.

School of Education, Room 201, Moore Hall. No student may offer for credit toward the minimum required 120 units any courses not on the Letters and Science List of Courses in addition to those required in this curriculum.

Curriculum II. Early Childhood Education

Lower Division

Required: Same as in Curriculum I with the exception of Mathematics 38, which is not required for kindergarten-primary teaching.

Upper Division

The following courses in education are required for the credential and should be taken approximately in the order listed: Education 100A (open to high sophomores), 100B, 110A-110B, 122A, 139A, 322A-322B (Supervised Teaching). (At least a C average is required for all courses in education, including at least a grade of C in Supervised Teaching.)

The field of concentration in this curriculum comprises at least 36 upper division units of professional and academic courses. At least a C average must be maintained in the field of concentration.

1. The professional courses in the field of concentration: Education 122B and the sections for Early Childhood Education majors in Art 330, Music 330, Physical Education 330.

2. The academic courses in the field of concentration: Same as for Curriculum I. No student may offer for credit toward the minimum required 120 units any courses not on the Letters and Science List of Courses in addition to those required in this curriculum.

CURRICULUM IN HOME ECONOMICS

Committee in Charge of the Curriculum: E. L. Rada (chairman), F. M. Obst, G. A. Emerson.

This curriculum is designed primarily for students preparing to teach home economics in the secondary schools. Degrees in this curriculum will not be awarded after June 30, 1965. The requirements for registration in this curriculum are listed under Home Economics on page 266 of this bulletin. Continuing, re-entering, and transfer students majoring in clothing, textiles, and related arts, food technology, foods and nutrition, and general home economics should consult page 266 of this bulletin for further instructions.

Lower Division

Required: All students with less than 15 units of completed lower division courses as of June 30, 1961, will be required to take the following lower division courses as part of or in addition to the general University and College of Letters and Science requirements: Art 30A, Chemistry 1A-1B, and 8, English 1A, and 1B or Speech 1, Economics 1A-1B, Home Economics 15, 16, Nutritional Sciences 11, Physical Education 44, Psychology 1A-1B, Sociology 1, Zoology 15.

Students with more than 15 units of completed lower division courses as of June 30, 1961, should consult their advisers for lower division requirements.

Upper Division

The curriculum consists of 36 upper division units distributed as follows: Home Economics 135, 145, 146, 155, 172, 181, 370, Nutritional Sciences 102, 113, Public Health 107, Psychology 112, 113, Sociology 162, and additional upper division home economics courses, if necessary, to complete the total of 36 units.

CURRICULUM IN INTERNATIONAL RELATIONS

Committee in Charge of the Curriculum: R. G. Neumann (chairman), W. R. Goldschmidt, K. E. Harper, J. E. Spencer, G. E. von Grunbaum.

This curriculum is designed primarily for students in the College of Letters and Science whose interests, while not specialized, fall in the field of international relations and modern diplomacy.

Lower Division

Required: Political Science 1 (3), 2 (3); History 1A-1B, or 5A-5B, or 8A-8B (3-3); and 12 units from the following: Economics 1A-1B (3-3), Geography 1 (3), 2 (3), Anthropology 1 (3), 2 (3), Sociology 1 (3), 2 (3), Philosophy 25 (3).

Upper Division

The curriculum comprises 36 upper division units distributed as follows:

I. General requirements (24 units): (a) Political Science 125 (3), 127 (3), or Political Science 130 (3) and 131 (3); (b) Political Science 133A-133B (3-3); (c) Geography 181 (3); (d) 9 units from the following: History 140B (3), 141H (3), 142A-142B (3-3), 178A-178B (3-3), Economics 107 (3), 109 (3), 110 (3), 111 (3) (or Sociology 186 (3)), 195 (3), Sociology 122 (3), 186 (3) (or Economics 111 (3)), 187 (3), Anthropology 125 (3), 126 (3).

II. Field requirements: At least 12 units in one of the five following fields of specialization (to be distributed in not less than two departments).

(a) *Far Eastern and South Asian Affairs*: Political Science 132 (2), 136 (3), 138 (3), 158 (3), 159 (3), 160A (3), 160B (3), History 191A-191B (3-3), 192A-192B (2-2), 193 (3), 194A-194B (3-3), 195A-195B (2-2), 196B (3), Geography 124A-124B (3-3), Anthropology 124 (3), 146 (3), 148 (3).

(b) *Latin American Affairs*: Political Science 126 (3), 150A-150B (3-3), History 160 (3), 162A-162B (3-3), 166 (3), Geography 122A-122B (3-3), Sociology 150 (3).

(c) *European Affairs*: Political Science 154 (3), 155A (3), 157 (3), History 141D (3), 151F (3), 141G (3), 141H (3), 142A (3), 142B (3) (if not offered under I above), 142D (3), 142E (3), 142F (3), 143D (3), 144B (3), 146A-146B (3-3), 146C (3), Geography 123A-123B (3-3), 173 (3), Anthropology 145 (3), Economics 112 (3).

(d) *British Empire Affairs*: Political Science 152 (3), 153 (2), History 130 (3), 151A-151B (3-3), 152 (3), 156 (3), 157 (3), 158A-158B (3-3), 159 (3), 196B (3), Geography 125 (3).

(e) *African and Near Eastern Affairs*: Political Science 132 (2), 134 (3), 151 (3), 156 (3), History 130 (3), 136 (2), 137 (3), Geography 126 (3), 127 (3), Anthropology 139 (3), Sociology 166 (3), 167 (3).

Recommended: Political Science 102 (3), 112 (3).

Candidates for the degree in this curriculum will be required to give evidence, normally by examination, of their ability to read current literature on international relations in one modern foreign language, particularly French, German, Spanish, Russian, or Italian. Candidates may also offer other major modern languages not native to them.

CURRICULA IN LATIN-AMERICAN STUDIES

Committee in Charge of the Curricula: H. J. Bruman (chairman), R. L. Beals, B. H. Fitzgibbon, M. A. Zeitlin.

The curricula in Latin-American studies are designed to serve the needs of the following classes of students: (1) students desiring a general education focused on this particular area; (2) students planning careers which will necessitate residence in or knowledge of Latin America, such as teaching, business, scientific research, engineering, journalism, or government service; (3) students preparing for advanced study in the social sciences, primarily in the Latin-American field; (4) students preparing to teach social sciences or

Spanish in the secondary schools. Selection of courses should be governed in part by the objective of the student.

It is recommended that students who wish to receive credit in one of these curricula for work taken in Latin American schools obtain the prior written approval of the Committee.

Lower Division

Required: Spanish 4 and 44; Portuguese 1 and 2; Geography 1; Anthropology 1; History 8A-8B. It is recommended that at least two courses be elected from the following list: Anthropology 2; Economics 1A, 1B; Geography 2; Political Science 1, 2; Sociology 1.

Upper Division

Curriculum for Students Desiring a General Education or Careers in Business, Research, or Government Service

Spanish 104A-104B; 6 units chosen from Portuguese 199, Spanish 101A, 101B, 146; 24 units of additional courses chosen from the list below. Courses must be chosen from at least three departments, with at least 9 units from each of two departments other than Spanish, and at least 20 units of courses of Latin-American content (indicated below by asterisks).

Curricula for Students Preparing to Be Teachers

A. Candidates for the general secondary credential with a teaching major in social sciences and a teaching minor in Spanish must take: Spanish 104A-104B and 6 units chosen from Spanish 100, 101A-101B, 146, 147, 148, 149 (either 100 or 147 must be included); and 24 units of additional courses chosen from the list below. Courses must be chosen from at least three departments with at least 9 units from each of two departments other than Spanish, and at least 20 units of courses of Latin-American content (indicated below by asterisks). In addition to the lower division courses required in the curriculum, the following must also be taken: History 1A-1B or 5A-5B, Geography 2, Political Science 1 and 2 (or 1 and 103), and Economics 1A-1B (or 1A and 108) or Sociology 1 and 2. Completion of a teaching major requires 6 units in graduate courses in anthropology, economics, geography, history, or political science, after attainment of the A.B. degree.

B. Candidates for the general secondary credential with a teaching major in Spanish and a teaching minor in social sciences must take: Spanish 100, 102A-102B (prerequisite: Spanish 42), 104A-104B, 146, 147, 148; and at least 18 units of additional courses chosen from the list below. Courses must be chosen from at least three departments, with at least 6 units from each of two departments other than Spanish, and at least 15 units of courses of Latin-American content (indicated below by asterisks). A teaching minor in social sciences may be completed by meeting the requirements of this curriculum. Completion of the teaching major in Spanish also requires Spanish 108, 149 (or 256), 370, and 6 units of graduate courses in Spanish after attainment of the A.B. degree.

Note: Candidates for the general secondary credential must take Psychology 1A, 1B (or 33) and 22 units of prescribed courses in education. For further information consult the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES, and the appropriate adviser.

Additional Courses

Anthropology 102, 105, 107*, 110, 124, 125, 127, 140*, 141*, 142*, 165; Art 110B*; Economics 195, 196, 197; Folklore 101; Geography 113, 122A-122B*, 131, 165, 175, 199*; History 160*, 162A-162B*, 166*, 169*, 178A-178B, 188, 199* (Section 9); Linguistics and Philology 170; Music 136A-136B; Political Science 125, 126*, 127, 150A-150B*, 199*, Portuguese 123*; Sociology 143, 144, 150*, 186, 189; Spanish 108*, 120*, 130*, 132*, 134*, 136*, 149.

MEDICAL TECHNOLOGY

Adviser: Mrs. Meridian G. Ball.

For requirements, see program given under the Department of Bacteriology in later pages of this bulletin.

CURRICULUM IN NEAR EASTERN STUDIES

Committee in Charge of the Curriculum: G. E. von Grunebaum (chairman), A. Band, J. C. Greenfield, W. Hoenerbach, W. Leslau, E. Shevky, B. E. Thomas A. Tietze.

This curriculum in Near Eastern studies is designed primarily for the following classes of students: (1) students seeking a general education and desiring a special emphasis in this particular area; (2) students who plan to live and work in this area, whose careers will be aided by a knowledge of the peoples, languages, and institutions (such careers might be centered on teaching, research, business, engineering, journalism, or government service); (3) students preparing for advanced study in the language, peoples, or institutions of the area. Selection of courses should be decided partly by the student's own special objectives.

Lower Division

Required: Hebrew 1A-1B or Arabic 1A-1B; candidates must also obtain a reading proficiency in either French, German or Italian, and give evidence, normally by examination, of their ability to read current literature on Near Eastern studies (this requirement may be satisfied at any time before graduation); 6 units of History (1A-1B recommended); 12 units from the following social sciences: Anthropology 2, 3; Economics 1A-1B; Political Science 2; Sociology 1.

Upper Division

Required: 14 units of upper division courses in Arabic and/or 12 units of upper division courses in Hebrew language; 10 units of Near Eastern history, 6 of which are to be taken in course 134A-134B; 3 units of Sociology 166 or 167 or Anthropology 123; 8 units of literature (in English) of which 4 are in Hebrew literature, 150A-150B, and 4 in Arabic literature, Arabic 150A-150B; 6 units from the following courses: Hebrew 199 (Special Studies in Semitic Languages); Arabic 130A-130B, 199; History 199 (Special Studies in Near Eastern History). Recommended courses: Anthropology 103, 124, 125; Classics 151A-B-C-D; Folklore 101; Geography 126; History 111A, 117A-117B; Linguistics 170; Philosophy 112, 152, 153; Political Science 134, 151.

CURRICULUM IN PHYSICAL SCIENCES-MATHEMATICS

Committee in Charge of the Curriculum: R. L. Pecsok (chairman), C. Bell, J. A. Bond, N. A. Watson.

This curriculum is designed to provide training in sciences and mathematics for those students who are planning to work for the general secondary credential with physical sciences and general science as a major and mathematics as a minor. The curriculum has been set up to provide adequate training for secondary teachers of physics, chemistry, general science, and mathematics.

Lower Division

Required: Chemistry 1A-1B (10); Mathematics 1, 3A, 3B, 4A (12); Physics 1A-1B, 1C (9). Physics 1C may be deferred to upper division.

Note: To satisfy the College requirement in biological science, students seeking the credential should choose 5 units from Biology 12; Life Science 1A-1B; Zoology 1A, 1B, 15.

Upper Division

Required: Chemistry 5A (3) and either 8 and 9 (6) or 112A-112B (10);

Mathematics 4B (3) and 101A or 101B (3) and any other 100-level mathematics course (3); Physics 1D (3), and 105 (3) or 107 (2); Astronomy 101 (3); Geology 101 (3); English 106S (3); Education 100A, 100B, 130 (7); Mathematics 370 or Physical Science 370 (3).

For those students who are not certain that they will continue their work toward the general secondary, the last 10 units may be replaced by upper division work selected from Astronomy 102, 112, 115, 117A, 117B, 118; Chemistry 108A, 108B, 109; Physics 121.

CURRICULUM IN PRESOCIAL WELFARE

Committee in Charge of the Curriculum: R. J. Murphy (chairman), D. R. Cressey, M. E. Duren, V. Ostrom, W. C. Scoville.

The field of concentration in social welfare is designed to give the student what is currently regarded as the most suitable background for professional training at the graduate level in the School of Social Welfare. A course of studies like this also serve all purposes in which a broad foundation in the various social sciences in desirable. Completion of this curriculum does not guarantee admission to a school of social welfare, and the student is expected to consult his adviser regarding the specific requirements of the school of social welfare he expects to enter.

Following an outline of the preparation required, the curriculum is set forth in two parts: I. Specialization, and II. Social Science Electives.

Preparation (preferably to be taken during the first two years of college or at the beginning of the third year):

Anthropology 1-2 (6); Life Sciences 1A-1B (6); Sociology 1 or 101 (3); Psychology 1A-1B (6) or 101 (3); Economics 1A-1B (6) or 101 (3); Political Science 1-2 (6) or 103 (2); Statistics 1 (2) or Sociology 18 (3).

I. Specialization: Thirty (or 32) units in upper division Letters and Science courses to be distributed in the fields as indicated below:

Sociology: At least 12 units including Sociology 185 and 9 units of upper division sociology.

Psychology: At least 8 units of upper division psychology.

Economics: At least 5 to 6 units (2 courses) in upper division economics.

Political Science: At least 6 units including Political Science 181.

II. Social Science Electives: Ten (or 11) units, preferably to be chosen from the following list of courses, or similar courses, with approval of and in consultation with, an adviser. Courses in this list are also those recommended for the requirements under I above.

Anthropology 103, 125, 151, 165; Economics 100A, 103, 107, 131, 133, 156; History 174A-174B, 175, 176, 188; Philosophy 104, 105, 114, 147; Political Science 113, 166, 186; Psychology 148, 168; Sociology 120, 126, 142, 143, 144, 145, 161, 181, 182, 186, 189; Public Health 110, 170.

CURRICULUM IN PUBLIC SERVICE

Committee in Charge of the Curriculum: P. Woll (chairman), J. M. Gillies, H. J. Nelson.

The curriculum in public service is designed to be of assistance to students who wish to qualify themselves for positions in government work. It should be noted that a large percentage of government positions are open only through competitive examinations. The curriculum, therefore, is designed to allow the student to coordinate a program drawn from several departments in preparation for a general class of positions. Although the curriculum is primarily related to political science, it is designed to allow a broader training in administrative work than is permitted in a departmental major.

Lower Division

Required: Business Administration 1A-1B (3-3); Economics 1A-1B (3-3); Political Science 1-2 (3-3); Statistics 1 (2); Speech 1 (3). In certain

fields, other courses are prerequisite to upper division courses included in the curriculum:

Public Personnel—Psychology 1A-1B.

Planning—Geography 1-2; Geography 4.

Upper Division

The curriculum itself consists of 36 units of upper division courses selected from one of five possible fields of concentration: Public Personnel Administration, Public Management, Public Relations, Financial Administration, and Planning. Less than two-thirds of the total units in the field are to be taken in one department. Political Science 141, 166 or 187, 172 or 184, 181, and 185 are required courses for each field of concentration. The remaining units must be chosen from the approved list of courses offered under the student's chosen field:

I. *Public Personnel Administration*

Political Science 166 (3), 171 (3), 172 (3), 183 (3), 184 (3), 186 (3), 187 (3); Psychology 105A-105B (3-2), 185 (2), 186 (2); Business Administration 150 (3), 152 (3); Economics 150 (3), 152 (3), 155 (3), 158 (3); Sociology 118 (3), 131 (3), 161 (3).

II. *Public Management*

Political Science 113 (3), 143 (3), 146 (2), 166 (3), 168 (3), 171 (3), 172 (3), 183 (3), 184 (3), 186 (3), 187 (3); Business Administration 150 (3), 152 (3), 190 (3); Economics 131 (3), 150 (3), 170 (3); Psychology 185 (2); Sociology 118 (3), 128 (3), 131 (3), 143 (3).

III. *Public Relations*

Political Science 125 (3), 127 (3), 142 (2), 143 (3), 146 (2), 148 (2), 166 (3), 167A-167B (3-3), 171 (3), 172 (3), 183 (3), 184 (3), 186 (3), 187 (3); Business Administration 150 (3), 163 (3); Economics 150 (3); Journalism 101 (3); Psychology 142 (2), 143 (2), 180 (2); Sociology 118 (3); 128 (3), 131 (3), 143 (3); not more than 6 units from History 171A (3), 171B (3), 172 (3), 173A (3), 173H (3), 174A-174B (3-3), 175 (3).

IV. *Financial Administration*

Political Science 143 (3), 166 (3), 167A-167B (3-3), 171 (3), 172 (3), 183 (3), 184 (3), 186 (3), 187 (3); Business Administration 120 (4); Economics 131 (3), 133 (3), 135 (3); Sociology 118 (3).

V. *Planning*

Art 100A (2); Business Administration 180 (3), 181 (3), 182 (3); Economics 107 (3), 131 (3), 170 (3), 171 (3), 173 (3); Engineering 137A (3); Geography 101 (3), 105 (3), 141 (3), 142 (3), 155 (3), 161 (3), 165 (3); Political Science 143 (3), 146 (2), 147 (3), 166 (3), 167A-167B (3-3), 168 (3), 171 (3), 172 (3), 183 (3), 184 (3), 186 (3), 187 (3); Sociology 122 (3), 128 (3), 131 (3), 143 (3), 144 (3), 145 (3).

Variations in the programs may be made with the approval of the adviser.

The curriculum in public service, which combines work of the departments of Political Science, Economics, Psychology, and Business Administration, prepares students for positions in governmental work other than foreign service. The curriculum is of value also for students interested in careers as public relations counselors, personnel managers, etc.

During the past few years, governmental employment, both in the federal and local governments, has offered an attractive field to young men and women who have the proper training and interest. Governmental positions increasingly require specialized training in fields such as budgeting, personnel, engineering, and in government management. In addition to regular po-

sitions with the government, there are openings for part-time or full-time internship training in various governmental agencies in the Los Angeles area.

PREPARATION FOR VARIOUS PROFESSIONAL CURRICULA

In addition to the curricula described in the preceding pages, all of which lead to the bachelor's degree, certain courses given at the University of California, Los Angeles, may be used as preparation for admission to the professional colleges and schools of the University in Los Angeles, in Berkeley, and in San Francisco.

PREBUSINESS CURRICULUM: TWO YEARS

Committee in Charge of the Curriculum: W. F. Brown (chairman), R. P. Barthol, D. F. Pegrum.

The prebusiness curriculum offered in the lower division of the College of Letters and Science, Los Angeles, is designed to prepare students to meet the entrance requirements specified by the faculty of the School of Business Administration, Los Angeles (see page 47).

The prebusiness curriculum differs from the requirements for upper division standing in the College of Letters and Science in the following respects:

1. The specific courses which are required for acceptance by the School of Business Administration, Los Angeles;
2. Completion of course 2 in a foreign language is required, rather than completion of 16 units in not more than two languages.

The Prebusiness Curriculum

The curriculum as set forth below includes the specific requirements for acceptance by the School of Business Administration. Students should apply for admission to the School of Business Administration upon completion of 60 units of the prebusiness program with a C average or better.

(A) General University requirements	<i>Units</i>
(1) Subject A	0
(2) Military, air, or naval science (minimum).....	6
(B) Foreign language (Completion of course 2)*.....	4
(C) Elementary algebra and plane geometry.....	0
(D) English composition (English 1A).....	3
(E) Natural science	
(1) Physical science	5
(2) Life science	5
(F) Social sciences	
(1) Lower division year course in history (History 7A-7B recommended).....	6
(2) Social science exclusive of history, including courses in at least two subjects: Economics 1A (required for prebusiness curriculum)	3
Elective (to be selected from list on page 5).....	3
(G) Humanities. Two of the following three groups:	
(1) Literature	}
(2) Philosophy	
(3) The arts	
(H) Additional courses required for acceptance by School of Business Administration:	
Economics 1B	3
Business Administration 1A-1B	6
Mathematics 3B or 32B.....	3

* Completion of course 2 in a foreign language or 3 years of one language in high school is required for the prebusiness curriculum.

PRECRIMINOLOGY CURRICULA: TWO YEARS

The University offers a four-year program in criminology leading to the bachelor's degree. Three distinct fields of study are provided. Two of them deal with the application of the social sciences to: (a) law enforcement, and (b) correctional work; these lead to the degree of Bachelor of Arts. The third is concerned primarily with the application of the natural sciences to law enforcement and crime investigation and leads to the degree of Bachelor of Science. The first two years of work in each field may be taken at Los Angeles; the last two years must be taken in the School of Criminology at Berkeley.

All applicants for admission to the School of Criminology must have completed at least 60 units of college work with a C average or better. In addition to fulfilling the lower division requirements of the College of Letters and Science (see pages 4-6), students are expected to complete certain prerequisite courses. While not all of the prerequisite courses are available on the Los Angeles campus, students should complete so far as possible these courses which are listed below. The remaining courses may be completed after admission to the School of Criminology.

Prerequisite Courses**For Law Enforcement and Correctional Work**

Required: Political Science 1-2, Sociology 1-2, Psychology 1A, 33; Statistics 120 units
 Recommended: Anthropology 1, Business Administration 1A-1B, Chemistry 1A-1B, Physics 2A-2B, Public Health 5, Speech 1 and 2. Students interested in law enforcement are urged to take a year of wrestling and a year of boxing.

For Criminalistics

Required: Chemistry 1A-1B, 5A, 8, 9, Psychology 1A, Zoology 15, Physics 2A-2B35 units
 Recommended: Botany 1, Geology 2, Mineralogy 6A, Zoology 1A-1B, 4.

PREDENTAL CURRICULUM: TWO YEARS*

The University offers a six-year program in dentistry leading to the degrees of Bachelor of Science and Doctor of Dental Surgery. The first two years may be taken at Los Angeles; the last four years must be taken in the School of Dentistry in San Francisco.

The student will find himself more adequately prepared for the predental curriculum if he has taken in high school the following subjects: English, 3 units; history, 1 unit; mathematics, 3 units (algebra, plane geometry, and trigonometry); chemistry, 1 unit; physics, 1 unit; foreign language, 2-4 units.

The 60 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):

(1) General University requirements**Subject A**

Military science or air science (four semesters)

* The School of Dentistry reserves the right to limit enrollment on the basis of scholarship, results of the performance and aptitude tests, recommendations, and interviews. At the present time, because of limited facilities and the large number of applications, it is not possible for the School of Dentistry to act favorably upon applications from persons who have not had the major portion of their high school and preprofessional education and residence in California or in one of the far western states which does not have a dental school. For further information see the ANNOUNCEMENT OF THE SCHOOL OF DENTISTRY.

American History and Institutions is prerequisite to the bachelor's degree. Although this requirement may be satisfied in the School of Dentistry, it is preferable that it be completed in the preidental program.)

- | | |
|--|----------|
| (2) English 1A-1B or Speech 1, 2..... | 6 units |
| (3) Science | 32 units |
| (a) Chemistry 1A, 1B, 8, 9..... | 16 |
| (b) Physics 2A, 2B | 8 |
| (c) Zoology 1A, 1B | 8 |
| (4) Trigonometry (Mathematics C)
(if not completed in high school) | |
| (5) Foreign language (in not more than one language)..... | 12 units |
| This may be counted from high school at the rate of 4 units
for the first two years and 4 units for each year thereafter. | |
| (6) Social science and humanities..... | 12 units |
| The following subjects are recommended for the student's consideration; anthropology, economics, history, political science, psychology, history and appreciation of art or music, English or speech (in addition to the basic requirement), and philosophy. | |
| If a student wishes to substitute mathematics in partial satisfaction of this requirement, he may include in his program a maximum of 3 units of mathematics (in addition to the required trigonometry). | |

PREDENTAL HYGIENE CURRICULUM: TWO YEARS†

(Open to Women)

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 student will find herself more adequately prepared if she has taken in high school the following subjects: English, 3 units; history, 1 unit; mathematics, 3 units (algebra and plane geometry); chemistry, 1 unit; physics, 1 unit; foreign language, 3 (or, preferably, 4 units).

The 60 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):

- (1) *General University requirements*
 Subject A
 American History and Institutions (required for the bachelor's degree.
 The examination in American History and Institutions may be taken in the School of Dentistry, but it is preferable to satisfy the requirement in the preidental program).
 - (2) English 1A-1B or Speech 1, 2..... 6 units
 - ‡(3) Chemistry 1A-1B, 8..... 13 units
 - (4) Zoology 1A-1B
 - (5) Psychology
 - (6) Social science
- Courses in the fields of anthropology, economics, history, political science, and sociology may be used to satisfy this requirement.
- (7) Humanities

† The School of Dentistry reserves the right to limit enrollment if applications exceed the 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.

‡ At Los Angeles, Chemistry 1B is prerequisite to Chemistry 8.

Courses in the field of history and appreciation of art or music, English or speech (in addition to the basic requirement), foreign language (in addition to requirement (8) below), and philosophy may be used to satisfy this requirement.

- (8) Foreign language (in not more than one language) 12 units
This may be counted from high school at the rate of 4 units for the first two years and 4 units for each year thereafter.

PREMEDICAL STUDIES: FOUR YEARS

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 field of concentration within the College. In addition to fulfilling the requirements of the chosen field of concentration, the student is advised to ascertain and satisfy the specific requirements for medical schools to which he expects to apply.

PREMEDICAL CURRICULUM: THREE YEARS*

It is assumed that as preparation for this curriculum the student will have completed in the high school the following subjects: English, 3 units; United States history, 1 unit; mathematics, 2 units (elementary algebra and plane geometry); chemistry, 1 unit; physics, 1 unit; foreign language (preferably French or German), 2 units. It is desirable that a course in freehand drawing be taken in high school. If possible, the student should also complete in high school intermediate algebra, $\frac{1}{2}$ unit, trigonometry, $\frac{1}{2}$ unit, although these courses may be taken in the University.

It is important for students to bear in mind that the class entering the School of Medicine is limited; in the past there have been a great many more applicants than could be admitted. Premedical students who, upon the conclusion of their sixth semester, find themselves thus excluded from the School of Medicine, will be unable to obtain the bachelor's degree in the College of Letters and Science at the end of the eighth semester, unless they plan their program with this contingency in mind. They should, therefore, either enter a departmental major at the beginning of the fifth semester, at the same time meeting all premedical requirements, or include in their premedical program a sufficient number of appropriate courses in some major department. Provision for the completion of such a major does not prejudice the student's eligibility for admission to the School of Medicine.

PRENUTRITIONAL SCIENCES CURRICULUM: TWO YEARS

Committee in Charge of the Curriculum: G. A. Emerson (chairman), L. S. Goerke, M. E. Swendseid.

The University offers a four-year program leading to the degree of Bachelor of Science in nutritional sciences. The prenutritional sciences curriculum in the lower division of the College of Letters and Science is designed to prepare students for the upper division program in the School of Public Health.

The specific requirements for acceptance by the School of Public Health are included in the curriculum as set forth below. Students should apply for admission to the School of Public Health upon completion of 60 units of this program with a grade C average or better.

	<i>Units</i>
(A) General University requirements	
(1) Subject A	0
(2) Military, air, or naval science (men)	6
(B) Foreign language (completion of course 3) †	8-12
(C) Elementary algebra and plane geometry	0

* This section applies both to the School of Medicine at San Francisco and to the School of Medicine at Los Angeles.

† Preferably German.

	<i>Units</i>
(D) English 1A-1B	6
(E) Natural science	
(1) Physical science	
Chemistry 1A-1B	10
Mathematics 1	2
(2) Life science	
Zoology 1A	4
(F) Social sciences	
(1) Lower division year course in history.....	6
(2) Economics 1A	3
A 3-unit course in another social science.....	3
(G) Humanities. Two of the following three groups:	
(1) Literature	}
(2) Philosophy	
(3) The arts	
	8-12
<i>Total units 56-64</i>	

PREPHARMACY CURRICULUM: TWO YEARS

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 or better in the University of California or in another institution of approved standing, at least 60 units of the program set forth below under the heading of "Prepharmacy Curriculum." 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 of time, students should complete elementary chemistry, trigonometry, and a full year of intermediate algebra in the high school.†

Prepharmacy Curriculum

Adviser: Mr. J. H. Beckerman.

First Year

(1) General University requirements	<i>Units</i>
Subject A	0
Military, air or naval science (minimum).....	3
(2) English 1A-1B or Speech 1, 2.....	6
(3) Science	
Chemistry 1A-1B	10
Botany 1	5
(4) Mathematics (if not completed in high school)	
Trigonometry (Mathematics C)	
Intermediate Algebra (Mathematics D)	
(5) Electives	5
Electives should be selected from courses in foreign language,	

† Students who have completed the two-year prepharmacy curriculum at Los Angeles cannot be assured of admission to the School of Pharmacy on 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 and by examination. A personal interview may be required. Applications for admission to the School of Pharmacy, San Francisco campus, must be filed between October 1 and March 1 preceding the September of proposed admission. Blanks may be obtained from the Office of the Director of Admissions, University of California Medical Center, San Francisco 22. For further information see the ANNOUNCEMENT OF THE SCHOOL OF PHARMACY which may be obtained from the Dean, School of Pharmacy, University of California Medical Center, San Francisco 22.

social science, and humanities offered in satisfaction of the lower division requirements of the College of Letters and Science.

Second Year

	<i>Units</i>
(1) General University requirements	
Military, air or naval science (minimum).....	3
(2) Science	
Zoology 1A-1B	8
Physics 2A-2B	8
(3) Mathematics 3A-3B	6
(4) History 7A-7B or History 7A, Political Science 1.....	6
If the University requirement in American History and Institutions has been met, electives may be taken.	

PREPUBLIC HEALTH CURRICULUM: TWO YEARS

Committee in Charge of the Curriculum: L. S. Goerke (chairman), M. R. Ball, G. A. Bartholomew.

The University offers a four-year program leading to the degree of Bachelor of Science in public health. The prepublic health curriculum in the lower division of the College of Letters and Science is designed to prepare students for the upper division program in the School of Public Health.

The specific requirements for acceptance by the School of Public Health are included in the curriculum as set forth below. Students should apply for admission to the School of Public Health upon completion of 60 units of this program with a grade C average or better.

(A) General University requirements	<i>Units</i>
(1) Subject A	0
(2) Military, air, or naval science (minimum).....	6
(B) Foreign language (completion of course 2)*.....	4-8
(C) Elementary algebra and plane geometry.....	0
(D) English 1A	3
(E) Natural science	
(1) Physical science	
Chemistry 1A	5
Mathematics 1 or 3A	3
(2) Life science	
Bacteriology 1	4
Zoology 1A-1B	8
(F) Social sciences	
(1) History 7A-7B	6
(2) At least 6 units in social sciences exclusive of history and including courses in at least two subjects, chosen from the following list:	
Anthropology 2	}
Economics 1A, 13, 101	
Geography 2	
Political Science 1, 2, 101, 103	
Psychology 1A, 101	
Sociology 1, 101	6
(G) Humanities	
(1) Literature	
Humanities 1A-1B	6
(2) Philosophy	
Philosophy 6A-6B	6

Total Units 59-63

* Completion of course 2 in a foreign language or 3 years of one language in high school is required.

OTHER PROFESSIONAL CURRICULA IN THE UNIVERSITY

Architecture.—Students in good standing having a minimum of 60 units of University credit will be admitted to the College of Architecture upon formal application filed with the Secretary of the College. In order to complete the prescribed curriculum in the indicated time, such students should also have completed the prerequisites to the work of the junior year. Only the academic courses in this program may be taken in the College of Letters and Science at Los Angeles; consequently, the student desiring a major in architecture is advised to enroll at Berkeley for the professional courses leading to the M.A. degree which carries a recommendation to State License Boards.

Journalism.—The University offers no undergraduate major in journalism at Los Angeles. There is, however, an undergraduate program in journalism which is designed primarily to prepare the student for graduate training leading to a career in journalism—on the newspaper or magazine, in broadcasting, or in the communicative aspects of public information.

Undergraduate preparation for journalism embraces three areas: (1) general requirements of the College of Letters and Science, (2) a major in one of the social science or humanities disciplines, and (3) a series of undergraduate courses in journalism totaling eleven semester hours, to be taken as a group of related electives in the junior and senior years.

Undergraduate students interested in journalism should select a major from the list of Majors and Curricula. The department recommends the following majors: economics, English, history, political science and sociology. Other majors and curricula also are suitable, and the student may wish to consult the department before selecting a major. On the Application for Admission, the student should indicate the college, the major, and the word "journalism" in parentheses, e.g., *Letters and Science, political science (journalism)*. This will permit the college to assign the student to the proper adviser who will help the student plan a program in his major with electives recommended by the Department of Journalism. If the student is undecided on his major at the time of his application, he should indicate on his application: *Letters and Science, undecided (journalism)*.

LIBRARY SERVICE

Except to students enrolled in the undergraduate curriculum in prelibrarianship prior to September, 1961, the University will not award the bachelor's degree with a prelibrarianship major. The School of Library Service on the Los Angeles campus and the School of Librarianship on the Berkeley campus have the following basic admission requirements: a bachelor's degree with a subject major, a broad background in the liberal arts, and a reading knowledge of at least two modern foreign languages. Further information on admission requirements and on recommended undergraduate courses may be obtained from the Office of the School of Library Service, Library, Room 322.

Undergraduate students entering the University in September, 1961, or thereafter and who are primarily interested in entering a graduate library school should select a major from the lists of Majors and Curricula. This major and the appropriate college should be indicated on the Application for Admission, undergraduate, with Library Service in parentheses: e.g., *Letters and Science, English (Library Service)*. This will make it possible for the college to assign the student to the proper adviser who will help the student plan a program in his selected major with electives recommended by the School of Library Service. This procedure will also assure that the admission requirements of the School of Library Service are known to the student. Neither library service nor librarianship should be listed as a major. If the student is undecided regarding his undergraduate major but does know that he wishes to enter a library school as a graduate student, he should indicate on the application, *Letters and Science, undecided (Library Service)*.

RELIGION

Advisory Committee: A. B. Nisbet (chairman), W. Leslau, R. H. Turner. The University does not offer courses in religion nor does it have a graduate school of theology; it therefore does not offer a curriculum in religion or in pretheological studies. However, a student preparing for admission to a theological seminary, or for religious work in general, will be assigned an adviser prepared to help him plan a program in his selected major with electives recommended by the American Association of Theological Schools and specific Protestant, Catholic, and Jewish seminaries.

Such undergraduate students should select a major from the list of fields of concentration on page 8 (recommended majors are English, history, philosophy) and indicate this major on the Application for Admission, Undergraduate, Letters and Science, with Religion in parentheses: for example, Letters and Science, History (Religion). If the student is undecided regarding a choice of major and desires ultimately to prepare himself for religious work, he should indicate on the application: *Letters and Science, undecided (religion)*.

It is advisable to choose a major that will follow one's field of interest and meet as nearly as possible the following undergraduate requirements as set forth by the interdenominational American Association of Theological Schools: English literature, composition, and speech (18 units); history (9-12 units); philosophy (9 units); natural sciences (6 units); psychology (3 units); other social sciences (15 units); foreign languages (16 units in one or two of the following: Greek, Latin, Hebrew, German, French).

The attention of students interested in religion is directed to the following specific courses: Anthropology 124 (Comparative Religion); Arabic 150A, 150B (Survey of Arabic Literature); Art 104 (Medieval Art); Art 100A (History of Architecture and Sculpture); Classics 178 (Greek and Roman Mythology); English 116A, 116B (The English Bible as Literature); English 151M (Milton); Hebrew 150A, 150B (Survey of Hebrew Literature); Hebrew 120A, 120B, 120C, 120D (Selected Texts of the Bible); Semitics 130 (Biblical Aramaic); History 121A, 121B (The Early and Later Middle Ages); History 135 (Introduction to Islamic Culture); History 138A, 138B (Jewish History); History 141B (The Reformation); History 177 (Intellectual History of the United States); History 196A (Early History of India); Italian 109A, 109B (Dante's Divina Commedia); Music 123 (Music in the Middle Ages); Music 171 (History and Literature of Church Music); Oriental Languages 172A, 172B (The Influence of Buddhism on Far Eastern Cultures); Persian 150A, 150B (Survey of Persian Literature); Philosophy 5 (Problems of Ethics and Religion); Philosophy 104 (Ethics); Philosophy 105 (Ethics and Society); Philosophy 112 (Philosophy of Religion); Philosophy 157A, 157B (Medieval and Early Renaissance Thought); Philosophy 188 (Ethical Theory); Turkish 150A, 150B (Survey of Turkish Literature).

HONORS PROGRAM

The College of Letters and Science has instituted an Honors Program which accords special privileges to superior students whose grade-point average for all work undertaken in the University is not less than 3.5:

Honors Program in the Lower Division

1. Admission to Program

A lower division student in the College who has completed 15 or more units in one semester, and whose grade-point average for all work undertaken in the University is not less than 3.5, may apply for admission to this program on forms to be supplied by the office of the Dean. The application form must be approved by the department or committee in charge of the student's proposed field of concentration and by the Dean of the College.

2. Purpose of Program

The Honors Program in the lower division is designed to give the outstanding student more freedom in meeting the lower division requirements by demonstrating proficiency and achievement by examination. The total credit which may be earned under the special provisions of the Honors Program in the lower division is 18 units, which may be earned in either or both of the following ways:

(a) Credit by examination for courses studied independently which may be undertaken in addition to the maximum study-list limits of the College.

(b) Credit for more advanced courses taken on a "passed" or "not passed" basis in the fields specified as fulfilling College requirements (E), (F), and (G). Work taken under this section must be included in the study-list limits of the College. The quality of the work required of a student in the Honors Program to be marked "passed" is higher than that required for a barely passing letter grade. In calculating grade-point standing, units gained in this way shall not be counted. Petitions for such credit will not be accepted later than the first week in the semester.

Honors Program in the Upper Division

1. Admission to the Program

A student who has attained upper division standing with a grade-point average for all work undertaken in the University of not less than 3.5, or any other upper division student recommended by his department or committee in charge of his field of concentration, may apply for admission to this program on forms to be supplied by the office of the Dean of the College. The application form must be approved by the department or committee in charge of the student's field of concentration and by the Dean. A student being recommended for this program without the necessary grade-point average must be specially approved as an honor student by the Committee on Honors of the College.

2. Purpose of the Program

A student approved for admission to this program may be admitted to such advanced honors programs as may be provided by the department or committee or faculty adviser in charge of the student's field of concentration. Such honors programs may include:

(a) Enrollment in small seminar-type classes;

(b) Independent research or reading during the two semesters of the student's senior year. The maximum amount of credit allowed under provision (b) is 6 units.

Also, an upper division student in the Honors Program may take each semester one course not offered by him to satisfy the requirements for the field of concentration, in which his work shall be marked "passed" or "not passed." The quality of work required to be marked "passed" will be higher than that required for a barely passing letter grade. In calculating grade-point standing, units gained in this way shall not be counted. The maximum number of units which may be earned under this provision is 12. Petitions for such credit will not be accepted later than the first week in the semester.

Honors with the Bachelor's Degree

Honors may be awarded at graduation as provided under 1, 2, and 3, below, to a student who is recommended for such an award by the department or committee or faculty adviser in charge of his field of concentration and the Committee on Honors.

1. Honors may be awarded to a student who has both (a) completed his field of concentration with participation in such honors program as may have been provided for that field, and (b) qualified for honors by some other method (such as a comprehensive examination) to be prescribed by the department or committee or faculty adviser in charge of his field of

- concentration and approved by the Executive Committee of the College.
2. Honors also may be awarded to a student who has completed the field of concentration with distinction, and who has a general record satisfactory to the Committee on Honors, but who has not participated in an Honors Program.
 3. Students who, in the judgment of the department, committee, or faculty advisers concerned, display marked superiority in their fields of concentration may be recommended for the special distinction of Highest Honors.
 4. The Committee on Honors shall consider all recommendations, shall confer with the several departments, committees, faculty advisers, and Dean of the College about doubtful cases, and shall transmit to the Dean of the College its recommendation concerning the award of Honors or Highest Honors.
 5. The lists of students to whom Honors and Highest Honors in the various fields of concentration shall have been awarded at time of graduation shall be published in the COMMENCEMENT PROGRAM each year, and students whose names appear upon these lists shall be issued certificates of honors in addition to University diplomas reflecting the highest order of honors awarded.

COLLEGE OF AGRICULTURE

The College of Agriculture of the University of California offers at Los Angeles the following curriculum:

Plant Science—majors in botany, floriculture and ornamental horticulture, general horticulture, and subtropical horticulture. These majors are not available in the other sections (Berkeley and Davis) of the state-wide College of Agriculture.

This curriculum leads to the degree of Bachelor of Science. Graduate work is also offered at Los Angeles leading to the degrees of Master of Science and Doctor of Philosophy in plant science.

Students electing other majors in the plant science curriculum—agronomy, genetics, landscape management, plant pathology, pomology, vegetable crops, and viticulture—may spend the freshman and sophomore years at Los Angeles and then transfer to the campus, Berkeley and Davis, where their major work is offered. The same is true of students electing certain other curricula in the College of Agriculture—agricultural economics, agricultural education, entomology and parasitology, food science, irrigation science, landscape architecture, preforestry, soil science, range management, and preveterinary medicine. Students electing the animal science curriculum are advised to transfer after one year at Los Angeles. The first three years of the agricultural engineering curriculum are available in the College of Engineering at Los Angeles. Students who register with the intention of later transferring to Berkeley or Davis to pursue other curricula or to obtain majors in the plant science curriculum other than those offered at Los Angeles are requested to consult the BULLETIN OF THE COLLEGE OF AGRICULTURE (obtainable from the Office of the Dean) and the appropriate advisers in agriculture at Los Angeles.

Every student *must* consult his adviser each semester for guidance in meeting the requirements of the curriculum of his choice, and his study list *must* be approved by the Dean's office.

The Department of Botany of the College of Agriculture, Los Angeles, also offers a major in botany in the College of Letters and Science. Graduate work is also offered which leads to the degrees of Master of Arts and Doctor of Philosophy in botanical science. Students who elect this major are directed

to register in the College of Letters and Science. Each student will be required to consult an educational counselor during his freshman and sophomore years, and thereafter an official adviser in the Department of Botany.

REQUIREMENTS FOR THE DEGREE OF BACHELOR OF SCIENCE IN AGRICULTURE

The candidate for the degree of Bachelor of Science in the College of Agriculture must complete the following requirements:

(1) The equivalent of four years of university residence. The senior year must be spent in the College of Agriculture, University of California.

The student should note that in order to complete the work in agriculture within the normal four-year period, prerequisites must be systematically met and the proper sequences of courses followed. Unnecessary delay will thereby be avoided.

(2) One hundred and twenty-four units of university work, with at least twice as many grade points, in addition to matriculation units and Subject A. (The Subject A examination in English Composition is required of every undergraduate student on or before his first registration in the University.) Not more than 4 units may be in lower division physical education courses.

(3) Thirty-six of the 124 units must be in upper division courses (courses numbered 100-199).

(4) Nine units of mathematics. Matriculation work may be offered toward this requirement, with each year of high school work valued at 3 units. The student normally satisfies this requirement before the end of his sophomore year in the University.

(5) American History and Institutions. The student may meet this requirement by passing an examination for which no credit is given, or by completing certain prescribed courses or course sequences.

(6) In addition, every student must complete the requirements as listed under one of the following curricula:

PLANT SCIENCE CURRICULUM

Students must complete the following:

(a) General	<i>Units</i>
Chemistry	13
Botany and plant physiology	9
Physics	3
Economics	3
English and/or speech	6
Genetics	4
Plant pathology	4
Soils, irrigation, or plant nutrition	3
Entomology (see zoology)	4

Additional units from:

Natural Sciences	9-15
Bacteriology, biochemistry, botany or plant physiology, chemistry, entomology, geology, irrigation, mathematics,* physics, plant pathology, plant nutrition, soils, zoology, or animal physiology.	
Social Sciences and Foreign Languages	3-9
Economics, English or speech, foreign language, history or political science,† philosophy, psychology, sociology.	

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(b) Students must also complete a major, the minimum requirements of which consist of 12 units of approved upper division courses in the field of the major.

* Not including Mathematics C or D.

† In addition to the general University requirement.

Certain courses, or other equivalent, are required by the following majors:
Floriculture and Ornamental Horticulture.—Botany 1, 107; Chemistry 1A, 1B, 8; Floriculture and Ornamental Horticulture 131A or 131B, and 136A or 136B; Irrigation and Soil Science 101. Recommended: Botany 151; Horticultural Science 110; Irrigation and Soil Science 110A; Plant Pathology 140; Zoology 150.

Subtropical Horticulture.—Chemistry 1A, 1B, 8; Botany 1, 107. Recommended: Horticultural Science 101, 102; Irrigation and Soil Science 101; Zoology 150. A student who intends to undertake graduate study is advised to elect additional courses in botany, chemistry, physics, mathematics, and statistics.

General Horticulture.—Chemistry 1A, 1B, 8; Botany 1, 107. Recommended; Agricultural Economics 130; Floriculture and Ornamental Horticulture 136A or 136B; Horticultural Science 101, 102, and 110; Irrigation and Soil Science 101.

Botany.—Chemistry 1A, 1B, 8; Botany 1, 2, 3, 6, 107. Recommended: Bacteriology 1; Floriculture and Ornamental Horticulture 136A, 136B; Geology 101; Horticultural Science 110; Irrigation and Soil Science 108; Physics 2B; Zoology 1A, 1B.

Freshman and Sophomore Years

During the freshman and sophomore years the following schedule will normally be followed:

Example of Minimum Program—Plant Science Curriculum

	Units First Semester	Units Second Semester
<i>Freshman Year</i>		
*Military or air science (for men)	1½	1½
Physical education	½	½
English 1A-1B or Speech 1, 2	3	3
Botany 1, 6	5	..
Chemistry 1A-1B	5	5
History 7A or Political Science 1 .....	..	3
Economics 1A .....	..	3
	—	—
	15	16
<i>Sophomore Year</i>		
*Military or air science (for men)	1½	1½
Physical education	½	½
Physics 2A-2B	4	4
Chemistry 8 or 5A	3	..
Bacteriology 1 .....	..	4
Horticultural Science 110 .....	..	2
Botany 6	4	..
Elective	3	2 or 3
	—	—
	16	14 or 15

Students who are unable to meet the above-outlined program of study during the first two years may take some of the requirements in their junior or senior years. It should be noted, however, that any great departure from the above program will delay graduation beyond the normal four-year period.

Junior and Senior Years

The additional required courses—Zoology 150; Botany 107 (Plant Physi-

* Or Naval science (3 units per semester).

ology) and 140 (Plant Genetics); 3 units from Irrigation and Soil Science 101, 110A; Plant Pathology 120—together with such electives in any department as may be approved by the major adviser, will be taken during the junior and senior years. For elective courses in other departments, see elsewhere in this bulletin.

Where the option exists, the student should consult the major adviser concerning the 12 units required for his major.

OTHER CURRICULA

The requirements in the other curricula offered by the College of Agriculture will be found in the BULLETIN OF THE COLLEGE OF AGRICULTURE (obtainable from the Office of the Dean). Programs suitable for the conditions at Los Angeles are given in this bulletin or may be had from the appropriate advisers in agriculture, who should be consulted.

REQUIREMENTS FOR THE DEGREE OF BACHELOR OF ARTS

MAJOR IN BOTANY

Since the major in botany is also available in the College of Letters and Science, the requirements for the degree of Bachelor of Arts with the major in botany will be found under College of Letters and Science (see page 1).

HONORS

Students who become candidates for the bachelor's degree in the College of Agriculture may be recommended for honors on the basis of the quality of the work done in the regular curriculum.

I. Honorable Mention with Junior Standing (that is, to students who have completed 64 units in their freshman and sophomore years).

- (1) Honorable mention is granted with junior standing to students who attain at least an average of three grade points for each unit of credit undertaken. Such students will remain in honors status unless their average for all work at the end of any semester falls below three grade points for each unit undertaken.
- (2) The list of students who receive Honorable Mention is sent to the chairman or study-list officer of the College before the beginning of the next semester.

II. Honors with the Bachelor's Degree.

- (1) Honors are granted at graduation only to students in honor status who have completed the major with distinction, and who have a general record satisfactory to the Study-Lists and Courses Committee.
- (2) Students who, in the judgment of the Study-Lists and Courses Committee, show marked superiority in their major subject may be recommended for the special distinction of Highest Honors.
- (3) A list of students to whom Honors or Highest Honors in the College have been awarded is published in the COMMENCEMENT PROGRAM, and honors are designated on the University diplomas of students whose names appear on these lists.

COLLEGE OF ENGINEERING

The Department of Engineering, in complement with other University departments, offers courses leading to the degrees of Bachelor of Science, Master of Science, Master of Engineering, and Doctor of Philosophy.

The engineering curriculum, leading to the degree of Bachelor of Science, is an integrated curriculum that emphasizes a thorough understanding of the

following fundamentals of engineering: mathematics, physics, chemistry, life science, mensuration, graphics, materials, engineering mechanics, circuit analysis, thermodynamics and heat transfer, fluid mechanics, strength of materials, engineering design, and engineering economics. Superimposed on this framework are 18 or more units pertinent to a major field of engineering, and 21 or more units selected from the humanities, the arts and social studies. The elective courses not only provide for specialization in the last one and one-half years in conventional engineering branches, but also permit the student to make a selection of courses with emphasis on an engineering field or engineering function of his own choosing, subject to College approval. This curriculum serves as a fundamental curriculum for the later achievement of professional competence in whatever field of engineering the graduate may enter.

The engineering curriculum is accredited by the Engineers' Council for Professional Development, 25-33 West 39th Street, New York 18.

The curriculum requires 140 units and is designed for completion in four years of full-time study. Students who engage in part-time employment, or who choose to take a broader program than required, may plan to devote more than four years to their undergraduate studies.

An optional Cooperative Work-Study Program enables students to obtain pre-engineering experience by working for pay in an approved industrial position during a portion of their college years.

Most students will find it desirable to complete the first and second years of college study at a junior college. There are in California approximately sixty public junior colleges, most of which offer instructional programs equivalent to the first two years of the engineering curriculum. The University of California accepts at full value the college-level courses completed with satisfactory grades at these junior colleges, up to a maximum of 70 units.

Upon admission to the College of Engineering, students are assigned to faculty advisers and are under the guidance of the Dean of the College of Engineering. Study programs are arranged in conference with the adviser and must be approved by the Dean.

Students in the College of Engineering may receive Honors at graduation for high scholarship or for distinction in advanced work. Students who display marked superiority may be recommended for the special recognition of Highest Honors at graduation. Honors are conferred exclusively on the basis of outstanding intellectual achievement which is measured primarily by grades, although faculty recommendations based on eminent performance in special studies, research, or other work may be considered as an infrequent alternative criterion. The normal basis for selection of honors candidates is a grade-point average, based on upper division work only, of 3.25 for Honors and 3.75 for Highest Honors. Students must have completed at least 50 units of upper division work at the University of California to qualify. Eminent performance in special studies, research, or other work is also recognized by the Engineering Achievement Award upon recommendations of the faculty and approval of the Committee on Student Relations.

Students who plan to seek advanced degrees are referred to page 36 of this bulletin and to the ANNOUNCEMENT OF THE GRADUATE DIVISION, NORTHERN SECTION.

THE ANNOUNCEMENT OF THE COLLEGES OF ENGINEERING, BERKELEY AND LOS ANGELES, gives information concerning the history of the Colleges, facilities for instruction and research, Engineering Extension, and other related matters.

ADMISSION TO ENGINEERING

Attention is directed to the fact that the last days for filing applications for admission to the University by students desiring enrollment in the College of Engineering are August 15, 1961, for fall, 1961, admission; January 15,

1962, for spring, 1962, admissions. Admission to the College of Engineering is largely confined to beginning freshmen and to upper division students.

An engineering qualifying examination must be taken by all applicants for admission to the College of Engineering at both the lower division and upper division levels. The examination is to be taken the semester previous to that in which the applicant desires to register. No other test results may be substituted for those of the appropriate engineering qualifying examination. The formal application for admission to the University as well as the application to take the test must be filed before the date scheduled for the examination. Students not taking the test on the date scheduled will not be considered for admission to the College of Engineering in the semester immediately following.

There are two engineering qualifying examinations: the *Engineering Examination, Lower Division*, is required of all applicants for admission prior to the junior year; it is an aptitude test designed to demonstrate the applicant's general scholastic ability and his ability to comprehend scientific materials and principles, and to use mathematical concepts. The *Engineering Examination, Upper Division*, is required of applicants for admission at and above the junior level, and must be passed satisfactorily by all students, whether new or continuing, prior to beginning the work of the junior year; it is an achievement test covering lower division courses in mathematics, physics, chemistry and engineering. The same examinations are required for admission to the College of Engineering either at Berkeley, Davis, or Los Angeles. A list of the places and times for the examinations may be obtained from the Director of Admissions at either campus. Application blanks for these examinations should be obtained by the prospective student several months before he plans to enroll in the University. A \$5 fee will be charged for each examination if taken with a group of three or more persons at the regularly scheduled times; otherwise the fee is \$10. No fee will be charged for the engineering test when taken at the regularly scheduled times, where applicants are required to take both it and the College Entrance Examination Board Scholastic Aptitude Test.

Admission at the Freshman Level

While most applicants will take their first two years in engineering at a junior college, an applicant may qualify for admission to the University in freshman standing under any one of the several plans of admission described on pages 8C-11C of this bulletin, including the College Entrance Examination Board Scholastic Aptitude Test and the *Engineering Examination, Lower Division*. It is important for applicants expecting to enter the College of Engineering to include the following subjects in the list of high school courses taken to satisfy the University admission requirements:

Algebra	2 units	Chemistry or physics	
Plane geometry	1 unit	(both are desirable)	1 unit
Trigonometry	$\frac{1}{2}$ unit	Mechanical drawing	1 unit

Students lacking the above preparation will find it necessary to make up equivalent courses while in college, thereby delaying graduation.

Admission at the Junior Level

In general, students will be admitted to the College of Engineering only at the freshman and junior levels. The *Engineering Examination, Upper Division*, but not the College Entrance Examination Board Scholastic Aptitude Test, is required of students entering at the junior level. Prerequisite to all upper division engineering courses is upper division standing in the College of Engineering. Upper division standing for both new and continuing

students is determined by a combination of lower division grades and the score in the *Engineering Examination, Upper Division*.

In place of the first two years of the engineering curriculum given below, transfer students should complete a program which is *recommended for transfer students by the junior college, or other institution attended*, and which also includes the following minimum requirements for junior standing in Engineering at the University:

	<i>Minimum Number of Units</i>
Analytic geometry and calculus.....	12
Chemistry (for engineering and science students).....	8
Physics (for engineering and science students).....	10
Engineering (which must include some units in each of the following subject areas: graphics, properties of materials, surveying or engineering measurements, and statics).....	10
Humanities and social studies.....	6
Unspecified subjects (3 units may be humanities and social studies; the remainder to be in engineering and scientific subjects, which may include units, in addition to required units, in mathematics, chemistry, physics and engineering subjects; none may be in military science and/or physical education).....	10
	<hr style="width: 10%; margin-left: auto; margin-right: 0;"/> 56

Students who enter with *only* these 56 units will require more than 4 semesters to complete the upper division of the engineering curriculum.

Students transferring from other colleges and universities to the University of California for the study of engineering should have adequate training in subjects basic to the level at which transfer is planned. The full senior year, comprising a minimum of 30 units, in all cases must be completed at the University of California.

Students who wish to transfer to the College of Engineering from a technical institute or junior college technical education program will be expected to meet existing University requirements for admission to the freshman year. In consultation with a faculty counselor, placement in engineering courses will be determined by the student's previous scholarship record and his performance on an appropriate aptitude or achievement test. After he has demonstrated ability to do the work required in the College of Engineering with a satisfactory grade-point average, the College of Engineering will evaluate his noncertificate terminal courses and recommend transfer credit for them to the extent that they are found to have served the student as preparation for his advanced work in engineering.

The Colleges of Engineering on the Berkeley and Los Angeles campuses have adopted a policy of reciprocity whereby students who have completed all the requirements for upper division standing in either of the Colleges of Engineering will be admitted with upper division standing in the other College of Engineering.

ENGINEERING CURRICULUM

All requirements for the degree of Bachelor of Science are met upon completion of: (1) the required courses and elective program of the engineering curriculum listed below, together with the attainment of at least a grade C average in all courses of upper division level offered in satisfaction of subject requirements and required electives of the student's curriculum, and (2) the general University requirements, including American History and Institutions, military science, physical education, minimum scholastic standing, and senior residence.

	Units First Semester	Units Second Semester
<i>Freshman Year*</i>		
Subject A (if required) .....	..	..
†Military science or air science.....	1	1
Physical education	1	..
Engineering 4A-4B	3	3
Chemistry 1A-1B	5	5
Mathematics 5A-5B	5	3
Physics 1A .....	..	3
Electives .....	..	3‡
	15	18§

<i>Sophomore Year*</i>		
†Military science or air science.....	2	2
Engineering 4C-4D	3	3
Engineering 15A-15B	3	3
Mathematics 6A-6B	3	3
Physics 1C-1D	3	3
Electives	4‡	4‡
	18§	18§

<i>Junior Year*</i>		
Engineering 100A-100B	3	3
Engineering 102B	3	..
Engineering 103A .....	..	3
Engineering 104A-104B	3	3
Engineering 105A-105B	3	3
Engineering 108B	2	..
Mathematics 110C	3	..
Electives	1‡	6‡
	18§	18§

<i>Senior Year*</i>		
Engineering 104C-104D	4	4
Engineering 109A	2	..
Electives	12‡	13‡
	18§	17

Requirement in English

Proficiency in written English is a requirement of the College of Engineering. Students entering the upper division who did not make a satisfactory score in the English portion of the Upper Division Engineering Examination are required to undertake remedial work in English composition.

All written work is engineering courses, both lower and upper division, is

* See pages 32-33 for freshman and sophomore requirements for transfer students.

† Naval science may be substituted for military or air science if approved. Additional elective courses are to be substituted for military or air science by those students who are exempt from the requirement.

‡ Will vary depending on elective courses selected.

§ Will vary normally from 17 to 19 units depending on elective courses selected.

* Admission to junior status in the College of Engineering is determined on the basis of lower division grades and the score on the *Engineering Examination, Upper Division*. Applicants for junior status from all sources, including applicants from the University's lower division, will be required to meet the same standard.

required to be of acceptable quality in English. Engineering instructors systematically report deficiencies to the Dean, who then prescribes appropriate remedies.

Students required to take remedial English courses may thereby have their graduation delayed.

Electives in the Engineering Curriculum

The engineering curriculum provides for an individualized program based on 42 units of elective work chosen by the student with the approval of his adviser and of the Dean of the College of Engineering. The 42 units are divided into two types of elective, as follows.

1. The Major Field Electives: A minimum of 18 units must be devoted to a field of engineering endeavor selected by the student. At least 15 of these units must be in upper division courses. This program should contain a reasonable balance of courses in the practice and in the science of engineering and may include appropriate advanced courses in other departments of the University. Each student, in consultation with faculty advisers, selects a program suited to his individual needs and interests and directed toward his particular engineering objective. Three units of work in engineering design and 3 units in engineering economy are required of all students and may be accomplished within the upper division major field electives.

Three units of study must be in the life sciences and may be accomplished within either the major field or the nonmajor field electives, whichever field is appropriate to the course selected. Subjects such as psychology, physiology, bacteriology, etc., are acceptable, as are the applied life science courses, Engineering 130A, 130B.

2. The Humanistic Electives: A minimum of 21 units must be devoted to humanistic social subjects such as literature, philosophy, the arts, and the social studies. Of these, a minimum of 9 units must be in upper division courses. The 21 units must include at least one coherent group of 8 to 10 units. In general, the group should contain a minimum number of lower division or introductory courses and a maximum number of upper division or advanced courses. The University requirement in American History and Institutions may be satisfied within this category, but students are strongly urged to meet this requirement by examination (see page 24C of this bulletin).

Three units of the 42 units of elective subjects may be chosen from either major field or humanistic field courses.

Credit for Military, Air, or Naval Science

Lower division: six units are acceptable toward the baccalaureate.

Upper division: six units are acceptable in lieu of 6 units lower division humanistic elective; three additional units are acceptable in lieu of the 3 optional elective units.

To be eligible to receive the degree of Bachelor of Science, in addition to meeting the University scholarship requirement, a student must have achieved at least a grade C average in all courses of upper division level offered in satisfaction of subject requirements and required electives of the student's curriculum.

Optional Senior Year at Berkeley or Davis

Students desiring to take advantage of the wide variety of senior courses on the Berkeley campus or of the senior agricultural engineering offerings on the Davis campus may elect to complete part or all of the senior year of the engineering curriculum, not exceeding 36 units of work, on one of those campuses. In consultation with faculty advisers and with approval of the Dean

of the College of Engineering, Los Angeles, such students will substitute appropriate Berkeley or Davis offerings for courses Engineering 109A, 104C, and 104D. The major field electives of such students will be made up largely of Berkeley or Davis campus courses chosen from the offerings of two or more departments.

The College of Engineering on the Berkeley campus offers curricula in agricultural engineering, ceramic engineering, civil engineering, electrical engineering, engineering science (engineering physics), geological engineering, industrial engineering, mechanical engineering, metallurgy, mineral engineering, and process engineering. These curricula are printed in the GENERAL CATALOGUE, DEPARTMENTS AT BERKELEY, and in the ANNOUNCEMENT OF THE COLLEGES OF ENGINEERING, BERKELEY AND LOS ANGELES. Students in the College of Engineering on the Los Angeles campus may elect to work toward a Bachelor of Science degree from the College of Engineering on the Berkeley campus. Such students will, with the aid of a Los Angeles faculty adviser, choose Los Angeles campus courses which satisfy the requirements of the Berkeley curriculum selected. Transfer to the Berkeley campus will be effected at the appropriate level, but at least the final 30 units must be completed in residence at Berkeley. The first three years of most, but not of all, of the Berkeley curricula may be completed at Los Angeles.

GRADUATE STUDY

Admission to Graduate Status

In addition to meeting the requirements of the Graduate Division, the student must have completed an undergraduate curriculum in engineering substantially equivalent to that given at the University of California with an undergraduate scholarship record equivalent to at least a 3.0 grade-point average (based on 4.0 maximum) in all engineering and upper division courses undertaken. An applicant who fails to meet the requirement above must complete additional course work before being admitted to graduate status. These courses will not be accepted toward the unit requirement for the M.S. degree.

Students who have completed other curricula may be required to enroll in certain undergraduate engineering courses which generally will not be accepted in fulfillment of the requirements for advanced degrees.

Effective spring semester, 1962, all applicants will be required to take the Advanced Engineering Test of the Graduate Record Examination. The test is given four times a year in various locations in the United States and several foreign countries.

Applications for the Graduate Record Examination may be secured by applying to the Educational Testing Service, 4640 Hollywood Boulevard, Los Angeles 27, California (for those living in the western hemisphere) and to Educational Testing Service, 20 Nassau Street, Princeton, New Jersey (for those living in the eastern hemisphere).

The Testing Service must be requested to forward the test results to the Secretary, Committee on Graduate Study and Research, Department of Engineering.

There is a fee of \$8 for the Advanced Engineering Test.

Areas of Study

The Department of Engineering is prepared to offer graduate study and research in many areas of engineering. In addition, graduate students in engineering are urged to supplement their programs with appropriate offerings from the departments of Business Administration, Chemistry, Mathematics, Meteorology, Physics, or other fields closely allied to engineering.

Requirements for the Master's Degree

In general, students will follow Plan I for the degree of Master of Science in Engineering. (Only under special circumstances is Plan II allowed.) Stu-

dents will satisfy the requirements by enrolling in appropriate courses chosen in accordance with a plan prepared in conference with graduate engineering adviser and approved by the department. A minimum of 60 per cent of the total unit requirement, both graduate and upper division undergraduate work, must consist of courses in engineering, mathematics, physics, or chemistry. The student may wish also to complete certain analytical and professional courses on other campuses of the University of California.

Requirements for the Doctor's Degree

The following information supplements the general requirements appearing on pages 71-73.

A student who has just completed his requirements for the M.S. degree and desires to proceed toward the Ph.D. must file Form 1, Notice of Intention to Proceed to Candidacy for the Degree Doctor of Philosophy, with the Committee on Graduate Study and Research of the Department of Engineering for approval to do so.

The basic program of study toward the Ph.D. degree in engineering is built around three fields. Certain fields of study have been established as follows:

Applied Mathematics

Biotechnology

Chemical Physics

Circuit Theory

Computers

Control Systems

Engineering

Dynamics

Electromagnetic Theory

Fluid Mechanics

Heat Transfer

Information Systems Engineering

Management and Administration

(a) Production Management

(b) Administration

Natural Resources-Petroleum

Production

Neutron Transport

Properties of Materials

(a) Ceramics

(b) Physical Metallurgy

Structural Mechanics

Statistics

Thermodynamics

However, the department feels that many significant contributions have arisen and will continue to emerge from a reorientation of existing knowledge and, therefore, that no classification scheme can be considered as unique. Thus prospective Ph.D. candidates will be allowed, and in certain cases encouraged, to undertake (as fields of study) areas which have been previously undefined. Approval of a Ph.D. program is based upon the set of fields considered as a whole, and is granted by the Departmental Committee on Graduate Study and Research acting for the Chairman of the Department.

The requirements for a particular field generally may vary with the student's particular objective, although minimum requirements exist for each field. Ordinarily, the student will engage both in formal course study and in individual study in meeting the field requirement, which is satisfied upon passing the preliminary examination.

While the emphasis in a Ph.D. program is on the ability to correlate knowledge, rather than on the mere satisfaction of course requirements, the extent of a properly chosen field of study is such that the competent student will be able to complete the three field requirements in two years of full-time graduate study or the equivalent.

In general, students in engineering must earn the M.S. degree before the Graduate Study and Research Committee will consider a proposal for a Ph.D. program. However, the course work leading to the M.S. degree will, if selected properly, aid in meeting the field requirements.

Preliminary Examinations.—The Graduate Study and Research Committee will consider proposed programs from properly qualified graduate students. If the fields are felt to be appropriate, the committee will notify the student and will recommend a guidance committee which is also in charge of the

examinations in the three fields. In order that the proposal be adequately considered and the guidance committee properly appointed, the suggested program must be outlined in detail, except for established fields.

After the completion of the study for the field as outlined by the members of the guidance committee in charge, the student may take the preliminary examination, which will include not less than a four-hour written examination.

Foreign Language.—The student should propose the foreign languages to the Graduate Study and Research Committee at the time of his proposal of the three fields or study. In some cases, the undergraduate elective selection may profitably include a foreign language if a Ph.D. degree is visualized at that time.

Qualifying Examination.—After the student has demonstrated his competence in the three fields and has passed the language examinations, the Graduate Study and Research Committee will notify the Graduate Division of his readiness for the qualifying examination and will recommend the committee for this examination, generally as follows: staff member directing research, chairman; members of the guidance committee; two staff members from other departments.

The details of the qualifying examination are at the discretion of the committee, but ordinarily will include a review of the preliminary examinations and a broad inquiry into the student's preparation for research. In most cases, the qualifying examination is oral, the preliminary examinations usually constituting the written portion as required by the Graduate Division (page 73)

Dissertation.—The candidate shall prepare his dissertation in accordance with the instructions furnished by the Graduate Division, except that the dissertation shall be typed on vellum (carbon backed), so that it may be reproduced by the ozalid process. The thesis must be unbound, unperforated, and unpunched. The candidate shall furnish the vellum original (with pages separated by tissues) plus three ozalid copies to the Graduate Division, and one ozalid copy to the instructor in charge of his thesis.

Off-Campus Graduate Program

In addition to the course offerings on the Los Angeles campus, the Department of Engineering has established several other centers of graduate instruction. This provides an opportunity for graduates in engineering to take courses off campus which may satisfy the unit and academic residence requirements for the Master of Science Degree in engineering. Special permission may also be granted these students, allowing them to perform the research and analysis required for the thesis off campus. The off-campus programs consist of courses, usually offered in the evening, devoted to engineering science. They are unified programs providing a basis for advanced technical applications. The courses are designed primarily to assist in the over-all development of professional competence and to broaden the technical background, rather than to provide specialty courses directly related to the student's immediate assignment in industry. The present off-campus graduate program is available in the following areas: San Diego, China Lake (U. S. Naval Ordnance Test Station), Orange Belt (Pomona, Azusa, Corona, Riverside, Ontario), Point Mugu (U. S. Naval Air Missile Test Center), Paramount.

Engineering Executive Program

The Department of Engineering offers an engineering executive program leading to a Master of Engineering degree. This program is designed to meet the needs of engineers who, within the next decade, will fill top executive positions in industry. Applications will be received both from persons recommended and sponsored by their firms and from individuals. Applications are open only to individuals who are qualified for regular graduate status in engineering, and whose full-time industrial experience extends over at least five years. A student must be accepted in regular graduate status to be eligible

for this program. The fee is \$350 each semester. The last day to file applications for acceptance for the 1961 fall semester was March 1, 1961.

COLLEGE OF FINE ARTS

The College of Fine Arts was established on July 1, 1960, replacing the former College of Applied Arts as the administrative structure housing, as a nucleus, the already established departments of Art, Music, and Theater Arts. The College of Fine Arts believes that through the combining of scholarly study with creation and performance high competence in the arts can effectively be developed at the University level. The objective is a professional education of the highest quality for the creative and performing artist on the one hand, and the historian and critic of the arts on the other.

The departments of Art, Music, and Theater Arts offer four-year curricula, each leading to the degree of Bachelor of Arts. By completing additional requirements set by the School of Education, students may also secure *teaching credentials* in connection with these majors.

The College temporarily administers the major in business education and the interdepartmental curricula in apparel design and apparel merchandising, but these programs are being discontinued as explained on page 45.

REQUIREMENTS FOR GRADUATION

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

Units.—The minimum number of units for the degree shall be 120, of which at least 66 units shall be outside the major department. At least 12 units shall be in upper division courses, including 6 or more units outside the major department.

Scholarship.—A "C" average (2.0) is required on all work completed in the University of California, exclusive of University Extension. A "C" average is also required in all upper division courses in the major.

Residence.—All candidates for the degree must be registered in the College of Fine Arts while completing the final 24 units.

Students transferring from other institutions or from University of California Extension with senior standing must complete in the College of Fine Arts at least 18 units in upper division courses, including 12 or more units in the major department. This regulation does not apply to students transferring from other colleges within the University.

Courses taken at a junior college after the completion of 70 units toward the degree may satisfy lower division subject requirements, but they are not given unit credit toward the 120 units required for graduation. Junior college credits may not apply on any upper division requirement.

University Extension.—Courses in University of California Extension (either class or correspondence) may be offered in satisfaction of requirements for the bachelor's degree provided they bear the same number as acceptable courses in the regular session. (Equivalent courses bear the prefixes XL, XB, XB, XSB, or X.) Extension courses may not, however, be offered as a part of the residence requirement. Concurrent enrollment in resident courses and in University Extension courses is permitted only when the entire combined program has been approved in advance by the Dean's office.

NOTE: University Extension courses yield subject and unit credit but no *grade-point* credit toward the degree.

Subject Requirements.—The student shall complete the specific subject requirements established by the University, the College of Fine Arts, and the student's major department:

General University Requirements†

- A. Subject A (English Composition).
- B. Air Science, Military Science, or Naval Science 4 semesters (men).
- C. American History and Institutions.

General College Requirements

The general requirements of the College of Fine Arts are planned to insure a degree of basic skill in communication, both in English and in at least one foreign language, and to give the student an introduction to each of the broad fields of human learning: natural science, social science, and the humanities. It is intended that these requirements will be spread over the entire undergraduate program, and students are encouraged to take both upper and lower division courses for the completion of these requirements.

Any course applied on one of the (A) to (E) requirements may not also be applied on another of these requirements.

A. English Reading and Composition. At least 6 units of English reading and composition (English 1A-1B) with grades of "C" or better. This requirement may be met in part by passing a proficiency examination in English 1A, set and administered by the Department of English with the approval of the Executive Committee of the College of Fine Arts.

B. Foreign Language. At least 12 units in one foreign language. Without reducing the total number of units required for the bachelor's degree, high school work with grades of "C" or better and not duplicated by college work§ will count as follows: 4 units for the first two years together, and 4 units each for the third and fourth years.

The requirement may also be met by passing a proficiency examination in one language. 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. Courses in foreign literature in English translation may not be applied on this requirement.

With the approval of the chairman of the student's major department and the dean of the College, 16 units in two languages may be presented in lieu of 12 units in one language. *This approval is by petition only.*

C. Natural Science. At least 9 units of natural science, including 3 units each from groups 1 and 2, and one course having a minimum of 30 hours of laboratory work. Courses marked with an asterisk (*) meet the laboratory requirement. A high school course acceptable for the admission requirement in laboratory science satisfies the College laboratory requirement, but does not reduce the requirement of 9 units of college courses in natural science, or the specific requirement of 3 units in physical science and/or mathematics, and 3 units in biological science.

1. Physical science and/or mathematics.

- Astronomy 1, 100.
- Chemistry 1A*, 2, 2A*.
- Geography 1, 3, 115.
- Geology 2, 2L*, 3*, 101.
- Mathematics C, D, 1, 3A, 37.
- Meteorology 3.
- Physics 2A*, 2B*, 10, 21*.

† For details concerning these requirements, including bases for exemption, see pages 21C-24C of this bulletin.

§ Any student who because of lapse of time or other circumstances feels unable to continue successfully a language begun in high school may consult the department of the language concerned regarding the possibility of repeating all or part of the work for credit. Such credit counts on the 120 units required for the bachelor's degree, but credit is not allowed toward the required 12 units in foreign language for both the high school courses and the college work duplicating them.

2. *Biological sciences.*

Anthropology 1.

Bacteriology 1*, 6.

Biology 12.

Botany 1*, 2*, 3*.

Life Sciences 1A-1B (both 1A and 1B must be completed to count on the science requirement).

Paleontology 101.

Psychology 1B, 108.

Zoology 1A*, 1B*, 15*, 25*, 150*.

3. *History of science and/or philosophy of science.*

Astronomy 100.

Bacteriology 11.

History 125A, 125B, 126, 128.

Philosophy 20B.

Zoology 138, 140.

D. *Social Sciences.* At least 9 units of social science, including 6 units of history of western civilization (History 1A-1B). Courses used by the student to satisfy the American History and Institutions requirement may not be applied on this requirement.

Anthropology 1, 2, 3, 102, 103, 110, 124, 125, 127.

Economics 1A, 1B, 13, 100A, 100B, 101.

Geography 2, 5A, 5B, 100, 121 to 181.

History, all courses.

Political Science 1, 2, 101, 102, 103, 110, 112, 113, 125, 141, 146.

Psychology 1A, 1B, 33, 101, 110, 112, 113, 120, 126, 135, 145A, 145B, 181.

Sociology 1, 2, 101, 122, 124, 126, 129, 142, 143, 144, 161.

E. *Humanities.* At least 9 units of humanities, including 3 or more units in each of two of the following three areas. Courses offered by the student's major department are not applicable.

1. *The Arts.*

Art, all courses.

Dance: Physical Education 34, 35, 36A, 36B, 36C, 36D, 38, 150A, 150B, 151, 153A, 153B, 154, 155.

Integrated Arts 1A, 1B.

Music, all courses.

Theater Arts, all courses.

2. *Literature.*

Humanities 1A-1B.

English, American, or foreign literature, including works in translation.

3. *Philosophy.*

Philosophy 3, 4, 5, 6A, 6B, 20A, 20B, 30, 31, 104, 112, 114, 136, 146A, 146B, 147, 149, 170A, 170B.

Optional General College Requirements

Students graduating prior to September, 1965, have the option of satisfying the general requirements of the discontinued College of Applied Arts *in lieu of the foregoing general requirements of the College of Fine Arts.* (In all cases, the general University requirements and the major requirements will be those currently in effect at the time of graduation.) The optional requirements, *which must be met in full*, are as follows:

A. *Either:*

A. **Foreign Language.* At least 16 units in one foreign language. With-

* See degree (*) footnote on next page.

out reducing the total number of units required for upper division standing or the bachelor's degree, high school work with grades of C or better and not duplicated by college work[§] will count as follows: 4 units for the first two years together, and 4 units each for the third and fourth years. The requirement may also be met by passing a proficiency examination in one language. Courses in foreign literature in English translation may not be applied on this requirement. (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.)

- A. *Natural Science.* At least 12 units chosen from the following list, including at least one course having 30 or more hours of laboratory work. Courses marked with an asterisk (*) meet the laboratory requirement. Only college courses may apply on the natural science requirement.

Anthropology 1.
 Astronomy 1, 2*.
 Bacteriology 1*, 6.
 Biology 12.
 Botany 1*, 2*, 3*, 6*.
 Chemistry 1A*, 1B*, 2, 2A*, 5A*, 5B*, 8, 9*, 10*.
 Geography 1, 3, 5A.
 Geology 2, 2L*, 3*.
 Life Sciences 1A-1B (both 1A and 1B must be completed to count on the science requirement).
 Mathematics C, D, 1, 3A, 3B or 3H, 37, and Statistics 1.
 Meteorology 3 (or Geography 3), 4.
 Mineralogy 6A-6B*.
 Physics 1A*, 1B*, 1C*, 1D*, 2A*, 2B*, 10, 21*.
 Psychology 1B.
 Zoology 1A*, 1B*, 4*, 15*, 25*.

OR

- A. A combination of *Foreign Language and Natural Science* to be distributed as follows:

Foreign Language.—At least 16 units in not more than two languages. Without reducing the total number of units required for upper division standing or the bachelor's degree, high school work with grades of C or better and not duplicated by college work[§] will count as follows: 4 units for the first two years together, and 4 units each for the third and fourth years. If a new language is begun in college, it may not apply on this requirement unless course 2 with its prerequisites is completed. The requirement may also be met by passing a proficiency examination in one language. Courses in foreign literature in English translation may not be applied on this requirement.

Natural Science.—At least 9 units chosen from the natural science list set forth above, including at least one course having 30 or more hours of laboratory work.

* Courses offered in satisfaction of the language or natural science requirement may not be used on the year-course requirement.

§ Any student who because of lapse of time or other circumstances feels unable to continue successfully a language begun in high school may consult the department of the language concerned regarding the possibility of repeating all or a part of the work for credit. Such credit would count on the 60 units required for upper division standing and on the 120 units required for the bachelor's degree; but credit is not allowed toward the required 16 units in foreign language for both the high school courses and the college work duplicating them.

B. Matriculation Mathematics.—Elementary algebra and plane geometry. If these subjects were not completed in the high school, they may be taken in University of California Extension, but without credit.

C. °Three Year Courses.—A year course chosen from three of the following seven groups, one sequence to be selected from group 1, 2, or 3. Only the courses specified below are acceptable.

1. English, Speech:

English 1A-1B, 46A-46B.

Speech 1, 2, 3, 4.

English 1A and either Speech 1 or 3.

2. Foreign language: No high school work may be counted on this requirement.

Arabic 1A-1B.

Chinese, any two consecutive courses from the following: 1A, 1B, 13A, 13B.

French, any two consecutive courses from the following: 1, 2, 3, 4.

German, any two consecutive courses from the following: 1, 2, 3, 3PS, 4.

Greek 1, 2.

Hebrew 1A-1B.

Italian, any two consecutive courses from the following: 1, 2, 3, 4.

Japanese, the consecutive courses: 9A, 9B.

Latin, any two consecutive courses from the following: 1, 2, 3, 4.

Portuguese, any two consecutive courses from the following: 1, 2, 3.

Scandinavian 1, 2, or 11, 12.

Slavic Languages 1, 2, 3A, 3B.

Spanish, any two consecutive courses from the following: 1, 2, 3, 4, 25A, 25B.

3. Mathematics:

Any two of the following courses: Mathematics C, D or 1, 3A, 3B, 3H, 37; Statistics 1.

4. Social Sciences:

Anthropology 1, 2.

Economics 1A-1B.

Geography 1, 2, 5A-5B.

History 1A-1B, 5A-5B, 6A-6B, 7A-7B, 8A-8B.

Political Science 1, 2.

Sociology 1, and either 2 or 12.

5. Psychology:

Psychology 1A, and either 1B or 33.

6. Philosophy:

Philosophy 6A-6B, 20A-20B, 30-31.

7. Music, Art, Theater Arts (A student majoring in art, music or theater arts may not present a year course in his major department):

Art 1A-1B, 10A-10B, 20A-20B, 30A, and either 30B or 30C.

Integrated Arts 1A-1B.

Music 1A-1B, 3A-3B, 20A-20B, 30A-30B.

Theater Arts 5A-5B.

D. Minor.—A graduation† minor in the College of Fine Arts consists of 20 units of coordinated courses, of which at least 6 units must be in closely related upper division courses. All courses in a given department are considered closely related. A minor may consist of courses chosen entirely from one department, or it may be a group minor including related courses from several fields.

† A graduation minor is not necessarily a "teaching" minor acceptable for the general secondary teaching credential. See ANNOUNCEMENT OF THE SCHOOL OF EDUCATION for definitions of approved teaching minors.

* See degree (°) footnote on page 42.

With a group minor, the lower division work may include courses from several departments, although it is recommended that two year courses be included. The 6 units of upper division work must be from one department, normally a year sequence.

Possible group minors are listed below. Students planning other combinations must secure advance approval from the Dean's Office *before* taking the courses.

Business administration, economics.

English, speech, theater arts.

Humanities: art, folklore, humanities, integrated arts, literature, music, philosophy.

Life science: bacteriology, biology, botany, life sciences, physiological psychology, zoology.

Physical science: astronomy, chemistry, engineering, physical geography, geology, mathematics, meteorology, mineralogy, physics.

Social science: anthropology, economics, geography, history, political science, psychology, sociology.

Note: The minor may not include:

a. Any course in the student's major department.

b. Any course from another department applied on a student's major or specifically listed by number as applicable on the student's upper division major.

c. Any Education courses applied on a teaching credential.

d. Foreign language or other courses completed in high school.

e. Courses in the mother tongue of a foreign student, unless approved by petition.

Departmental Requirements—The Major

Each candidate for the bachelor's degree shall have completed a major or curriculum in the College of Fine Arts with a scholarship average of at least two grade points per unit in all upper division courses, and shall have been recommended by the chairman of his major department or curriculum committee.

A major is composed of not less than 36 units, and shall include at least 24 units in upper division courses. The major includes both lower and upper division courses, arranged and supervised by the department and approved by the Executive Committee of the College.

A curriculum is composed of not less than 36 units nor more than 54 units from several departments, including at least 24 units in upper division courses. The curriculum includes both lower and upper division courses, selected and supervised by a curriculum committee 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 adjustments approved by petition when necessary. All upper division courses in the student's major department are automatically applied on his major.

The major must, in its entirety, consist (1) of courses taken in resident instruction at this or another university, or (2) of courses with numbers having the prefix X, XB, XL, XR, or XSB taken in University of California Extension.

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.

No student is permitted to change his major after the opening of the last semester of the year in which he intends to graduate.

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

Departmental *majors* and interdepartmental *curricula*, with opportunities for specialization as indicated, are offered in the following fields:

Curricula leading to the A.B. degree: *Curricula leading to the B.S. degree:*

MAJOR IN ART

History of Art
History and Studio
Pictorial Arts*
Design*

MAJOR IN MUSIC*

MAJOR IN THEATER ARTS

Theater Arts
Language Arts*

MAJOR IN BUSINESS EDUCATION

(To be discontinued in summer of 1962)
Office Administration
Accounting
General Business
Merchandising

CURRICULUM IN APPAREL DESIGN

(To be discontinued in summer of 1964)

CURRICULUM IN APPAREL

MERCHANDISING
(To be discontinued in summer of 1962)

With the proper selection of courses, including those set by the School of Education, teaching credentials are available in the majors and specializations marked with an asterisk (*).

The B.S. degree curricula in Apparel Design, Apparel Merchandising, and Business Education are being discontinued as indicated above. Students able to graduate by the terminal dates given will be admitted to these programs in 1961-1962 on the following basis: sophomore standing (30 or more units) required for admission to Apparel Design; senior standing (90 or more units) required for admission to Apparel Merchandising and Business Education.

CURRICULUM IN APPAREL DESIGN

Preparation for the Major. Art 10A-10B, 30A-30B, Economics 1A-1B, Home Economics 16.

The Major.—Thirty-six units of coordinated upper division courses, including Art 119B, 180 (8 units); Home Economics 161, 170, 172, 175, 176, 177A-177B; and additional courses chosen from Art 187A, 187B, and other upper division art courses approved by the student's adviser.

CURRICULUM IN APPAREL MERCHANDISING

Preparation for the Major.—Art 30A-30B, Business Administration 1A-1B, Economics 1A-1B, Home Economics 16.

The Major.—Thirty-six units of coordinated upper division courses, including Art 119B, 180 (2 units); Business Administration 150, 160, 162, 163; Home Economics 161, 170, 172, 175; and additional courses chosen from Art 187A, 187B; Business Administration 165, 168; Home Economics 176, 177A, 177B; Psychology 180.

HONORS

HONOR STUDENTS

The list of honor students each semester shall include the names of students completing the previous semester's program with distinction, or who otherwise qualify for honor status according to criteria established by the Executive Committee of the College of Fine Arts.

HONORS WITH THE BACHELOR'S DEGREE

1. Honors shall be granted at graduation to students who have completed the major with distinction, and who have a general record satisfactory to the College Committee on Honors. Departmental recommendations shall be reported to the Dean of the College.
2. The special distinction of Highest Honors may be awarded to students who, in the judgment of their departments, display marked superiority in their major subject. Departmental recommendations shall be reported to the Dean of the College.
3. The Committee on Honors shall nominate students for Honors or Highest Honors on the basis of criteria established by the Executive Committee of the College of Fine Arts.
4. A list of students to whom Honors or Highest Honors have been awarded shall be published in the Commencement Program.

SCHOOL OF BUSINESS ADMINISTRATION

The School of Business Administration at Los Angeles, replacing the College of Business Administration, was established in the spring of 1950. The School admits students of junior or higher standing and offers curricula leading to the undergraduate degree of Bachelor of Science. The School of Business Administration is a professional school of the University whose purpose is to provide for qualified students a well-balanced education for careers in business at the management and administrative levels. The general and specific requirements of the School are designed to furnish a broad preparation for careers of management rather than a highly specialized proficiency in particular occupations. The two-year curriculum leading to the degree of Bachelor of Science consists of a basic program of professional education for business management plus specialization in one field. The basic program attempts to create an understanding of the operation of the business enterprise within the whole economy; to develop proficiency in the use of such tools of management as accounting, business law, statistical and economic analysis; and to provide knowledge of the principles of management in several functional fields. Upon completing the basic program, students undertake a minimum of four courses in their chosen field of emphasis. Opportunity for concentration is offered in the fields of accounting, finance, insurance, production management, personnel management and industrial relations, marketing, transportation and traffic management, and real estate and urban land economics, business statistics and information processing.

Admission

In accordance with the general objectives of the School of Business Administration, students are accepted on the basis of intellectual capacity and academic preparation as demonstrated by their work in the first two years of college. A student is eligible to apply for admission to the School of Business Administration if he (1) has been admitted to the University, and (2) has completed or has in progress a minimum of 60 units of college credit with at least a grade C average.

Lower Division Requirements

An organized program of study in preparation for a professional curriculum in the School must satisfy the following requirements:

- (1) the general University requirements, listed in this bulletin.
- (2) the lower division requirements of one of the colleges of the University of California.

For example, these may be fulfilled by meeting the requirements for upper division standing in the College of Letters and Science (Berkeley or Los Angeles), the prebusiness curriculum in the College of Letters and Science (Los Angeles), or upper division standing in the College of Fine Arts (Los Angeles). Organized programs of study offered by departments within such colleges as Engineering, Agriculture, or Letters and Science, at any campus of the University of California, are acceptable if junior standing is achieved.

- (3) the following specific requirements or their equivalents:
 - (a) Business Administration 1A-1B, Elementary Accounting.
 - (b) Economics 1A-1B, Principles of Economics.
 - (c) Mathematics 32B, Introductory Mathematical Analysis for Business, or Mathematics 3B, Analytic Geometry and Calculus, Second Course.
 - (d) English 1A, English Composition.
 - (e) Completion of course 2 (or the equivalent) in a foreign language.

Students who have completed 60 units, including work in progress, with a grade C average should apply immediately for admission to the School even though they may have lower division course deficiencies in the above categories. These must be removed during the student's first semester in residence in the School.

Application for acceptance by the School of Business Administration (Los Angeles) should be filed with the Office of Admissions not later than August 15 for the fall semester and not later than January 15 for the spring semester.

Students who wish to transfer from other colleges or schools of the University of California, Los Angeles, to the School of Business Administration must file an application in the Office of the Assistant Dean, BAE 250, not later than July 15 for the fall semester and not later than December 1 for the spring semester.

Students who are in the prebusiness curriculum in the College of Letters and Science and who have achieved junior standing but who do not transfer into the School cannot take upper division business courses.

Requirements for the Degree of Bachelor of Science

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

1. A minimum of 128 units. A candidate must have attained at least a grade C average or twice as many grade points as units attempted.
2. A candidate for the degree must be registered in the School of Business Administration while completing the final 24 units of work and must have followed organized semester programs approved by the Dean. This regulation applies both to students entering the School of Business Administration from another university and to students transferring from other divisions of this University.

Students admitted to senior standing in the School of Business Administration (Los Angeles) on the basis of credit from other institutions or on the basis of credit from University Extension, must complete in residence, subsequent to such admission, a minimum of 24 units composed of

at least 18 units of upper division Business Administration courses, including at least 6 units in their chosen field of concentration.

The faculty of the School of Business Administration expects its graduates to be well-rounded individuals who possess not only an understanding of the fundamentals of business, but also, a sound foundation in the sciences and humanities. Students who come to the School with highly specialized backgrounds will be required, therefore, to take appropriate courses in other areas of knowledge. The Department of Business Administration also regards proficiency in the use of written and spoken English as one of the requirements for the satisfactory completion of every course.

3. Completion of requirements (a) to (e) below is required of all candidates.

a. *University requirement of American History and Institutions.*

b. *Basic Courses:* All students in the School of Business Administration must complete the following courses in their proper sequence:

Business Administration 100. Business Economics.

Business Administration 101. Business Fluctuations and Forecasting.

Business Administration 108. Legal Analysis for Business Managers.

Students who transfer to the School of Business Administration with 3 units credit for law must take Business Administration 105B to meet their business law requirement.

Business Administration 115. Business Statistics.

Business Administration 120. Intermediate Accounting or Business Administration 120M. Managerial Accounting.

Business Administration 190. Organization and Management Theory. Economics 135. Money and Banking.

Functional Courses:

Business Administration 131. Business Finance.

Business Administration 140. Elements of Production Management.

Business Administration 150. Elements of Personnel Management.

Business Administration 160. Elements of Marketing.

It is the policy of the School of Business Administration to require courses 100 and 115 to be taken concurrently, and to require courses 100, 115, and 120 or 120M to be taken in the student's first semester in the School, followed immediately by a second semester program that includes course 101 and Economics 135. In addition, students must meet their business law requirement in the junior year. Thus, the basic tools of economic analysis, business law, statistics, and accounting are acquired before the senior work begins in the functional areas of concentration. Any adjustments in the programs of entrants, necessitated by subject deficiencies from lower division, or any other reason, may be made only by the Assistant Dean for Student Affairs.

- c. *The field of concentration:* At least three courses aggregating not less than 9 units in one of eight following fields (may not include basic required courses listed under (b) above):

Accounting

Finance

Insurance

Production Management

Personnel Management and Industrial Relations

Marketing

Transportation and Traffic Management

Real Estate and Urban Land Economics

Business Statistics and Information Processing

With the approval of the Dean, a student may change his field of concentration. At least two courses must be taken after the field has been specified.

Students who wish to elect a different field of concentration may propose an area comprised of three or more courses selected either inside or outside the department, or partially inside and partially outside the department. It is expected that the proposed group of courses be appropriately integrated with the general program which the student wishes to follow. This privilege is extended to students who demonstrate academic ability and a particular interest in a special area. Selection of a special field and the specific courses therein must have the written approval of the Assistant Dean for Student Affairs before the work is undertaken.

- d. *Electives*: At least 17 units in departments other than Business Administration of which 9 units must be in upper division courses.
- e. *Scholarship requirements*
1. At least a C average in all work undertaken in the University.
 2. At least a C average in all upper division courses taken under requirements (b) and (c) above and any other upper division courses in business administration, business education, and economics.
 3. At least a C average in all subjects undertaken in the field of concentration (c) above.

TYPICAL PROGRAM

The typical program for a student entering the School of Business Administration might be as follows:

JUNIOR YEAR			
<i>First Semester</i>	<i>Units</i>	<i>Second Semester</i>	<i>Units</i>
Business Administration 100.....	3	Functional course	3
Business Administration 115.....	3	Functional course	3
Business Administration 108.....	4	Business Administration 101.....	3
Business Administration 120 or		Economics 135	3
120M	3	Electives	5
Functional course	3		
	<hr/>		<hr/>
	16		17

SENIOR YEAR			
<i>First Semester</i>	<i>Units</i>	<i>Second Semester</i>	<i>Units</i>
Functional course	3	Business Administration 190.....	3
Field of Concentration course.....	3	Field of Concentration course	3
Electives	12	Field of Concentration course.....	3
		Electives	8
	<hr/>		<hr/>
	18		17

There may be minor adjustments in this program to permit the early completion of the first course in the student's field of concentration.

HONORS

The Executive Committee of the School will recommend for Senior Honors Privileges and for Honors or Highest Honors with the bachelor's degree such students as it may judge worthy of that distinction.

GRADUATE SCHOOL OF BUSINESS ADMINISTRATION

The Graduate School of Business Administration was established in August, 1955, and assumes responsibility for the graduate curricula formerly under the jurisdiction of the School of Business Administration. The Graduate School of Business Administration offers curricula leading to the degrees of Master of Business Administration and Doctor of Philosophy in business administration.

The broader directives of the Graduate School include the following: (1) to provide professional education which will develop in qualified students the intellectual and personal attributes that are prerequisite for successful careers in management or as staff specialists in public or private enterprises; (2) to prepare the exceptionally qualified, mature students for careers as teachers and research scholars in business and business management; (3) to offer management development programs for experienced businessmen who may profit from an intensive study of management theory and practices; and (4) to enlarge the body of systematic knowledge about business administration, the management process, and the environment in which the enterprise functions, and to disseminate this knowledge through publications and improved teaching materials.

The School recognizes the importance of improving management of the economy through the preparation of persons who will have responsibility for making decisions. In a free, competitive enterprise society, the combined judgments of business managers probably constitute the greatest single influence upon the economic welfare of society. Success in business is increasingly the result of risk-taking enterprise and innovation, backed by systematic intelligence about available technology, markets, finance, and people. The graduate business school faculty in a university properly strives to understand and to influence these changes, and to transmit to mature students a systematic approach to business problem-solving.

All students interested in applying to the Graduate School of Business Administration should consult the ANNOUNCEMENT OF THE GRADUATE SCHOOL OF BUSINESS ADMINISTRATION.

Admission

Applicants for both the M.B.A. and the Ph.D. programs follow the same procedures. The degree programs of the School are under the jurisdiction of the Dean of the Graduate Division. The regulations of the Graduate Division as well as those of the Graduate School of Business Administration should be observed.

Application forms must be filed by each student for both the Graduate Division and the Graduate School of Business Administration not later than August 1 for the fall semester, and not later than December 1 for the spring semester. The Graduate Division application must be accompanied by a money order or bank draft of \$5 in payment of application fees. Payment must be for the exact amount of the fee and should be made payable to The Regents of the University of California.

Admission to Graduate Status.—Graduate students are admitted to graduate status on the basis of promise of success in the work proposed, as judged primarily by (1) the candidate's previous college record and (2) his performance on the Admission Test for Graduate Study in Business.

1. To be admitted in graduate status in the department a student is required to have an undergraduate scholarship record of at least the equivalent of 2.5 grade-point average (halfway between grade B and C) in all courses taken

in the junior and senior years and in junior-senior courses in business administration and economics; and a B average or better in all postbaccalaureate course work.

In an exceptional case an applicant who fails to meet this requirement may, at the discretion of the Assistant Dean of the Graduate School of Business Administration, be recommended for admission on a trial basis. Such a recommendation will be made only when the applicant's qualifications give promise that he may pursue the degree program with success. It will not be made for an applicant who has already completed the equivalent of the first year of the Master of Business Administration program or by an applicant for admission to the Ph.D. program. For departmental restrictions applying to students so admitted see the ANNOUNCEMENT OF THE GRADUATE SCHOOL OF BUSINESS ADMINISTRATION.

2. All applicants are required to take the Admission Test for Graduate Study in Business. The test is given four times a year in various locations in the United States and several foreign countries. Students must write to the Educational Testing Service, 20 Nassau Street, Princeton, New Jersey, for information regarding application and the time and place of the examination, and they should request the service to forward the test results to the Graduate School of Business Administration. If an applicant does not take the examination before filing applications for admission he must explain this failure when filing; and if otherwise eligible, he will be admitted and will be required to take the examination at the next scheduled date.

3. All applicants for admission to the Ph.D. program are requested to arrange a personal interview with the Assistant Dean. Interviews are conducted at various universities throughout the United States.

Admission to Part-Time Study.—No one fully employed in industry is eligible for admission to the Ph.D. program. However, a limited number of fully employed students are admitted to the M.B.A. program. Part-time students must meet all above-stated requirements for admission, be in continuous residence during the course of their program, and carry a minimum of 6 units per semester. Courses are scheduled in the late afternoon and evening to assist part-time students in completing their degree objective. Any one considering part-time study should consult with the Assistant Dean with respect to the feasibility of his program.

Leave of Absence.—Graduate students planning to be away from the University for any semester must file a Leave of Absence Petition. Failure to take an official leave of absence will constitute presumptive evidence that the student has withdrawn from the graduate program.

A student on a leave of absence has the right to resume his graduate studies upon termination of that leave. A commitment for readmission is made by the Graduate Division and the Graduate School of Business Administration when the leave of absence is granted. This privilege of readmission may be denied, however, if in the opinion of the graduate division denial is required because of special circumstances. Leaves of absence are granted for no longer than one academic year. While on a leave of absence, graduate students may use neither University facilities nor the time of faculty members.

A special application for readmission is required of persons formerly registered in a regular session as a graduate student and had not been granted an official leave of absence.

Renewal of Application for Admission.—A renewal of application is required of persons who were admitted to a fall or spring semester but did not register. This application is obtained at the Graduate Division, and is to be filed not later than August 1 for the fall semester and December 1 for the spring semester. Attendance in a summer session does not constitute admission or regular registration in graduate status.

Requirements for the Degree of Doctor of Philosophy

The following information supplements the statement of general requirements for the Doctor of Philosophy degree in the ANNOUNCEMENT OF THE GRADUATE SCHOOL OF BUSINESS ADMINISTRATION.

Basic University Requirements.—See pages 71-74. Special departmental requirements are:

Program of Study.—The program of study leading to the Ph.D. degree in business administration embraces five fields of study. Two of these fields, management theory and policy and general economic theory, are included in every doctoral program. The other fields may be chosen from the list currently offered by the Department of Business Administration: accounting, finance, personnel management, production management, marketing, insurance, real estate, transportation, and statistics and information processing. With the approval of the guidance committee, a candidate may elect two of the above fields in the Department of Business Administration, and a third field from another department in the University.

A student is expected to complete as many courses as necessary to prepare satisfactorily for the qualifying examination. There is no specified unit requirement for the Ph.D. degree.

In addition to the work outlined above, effective July 1, 1958, all students must satisfy the following course requirements, or their equivalent.

Business Administration 120 or 120M or 120G, plus one advanced course (graduate or undergraduate) in accounting.

Business Administration 115, plus one advanced course (graduate or undergraduate) in statistics.

Business Administration 118.

Business Administration 299R (must be completed by the second year of graduate work).

Students should consult the Assistant Dean concerning the appropriate amount of formal educational preparation necessary for the successful completion of the program of study.

Qualifying Examinations.—Students must pass written qualifying examinations in the five fields of concentration. Examinations in each field are scheduled once every semester and on request during the Summer Session. No student may sit for a qualifying examination until the language requirement is satisfied. On the completion of the five written examinations, students must pass an oral examination embracing the entire field of business administration. The oral examination supplements the written examinations by permitting the faculty to examine the student's general knowledge of business administration as well as permitting further exploration of his knowledge in any individual field on which he has already written an examination.

Requirements for the Degree of Master of Business Administration

FIRST-YEAR PROGRAM

The first year of the M.B.A. program requires the mastery of five required fields and five elective fields. These fields are defined below in terms of the courses offered in the Department of Business Administration on the Los Angeles campus (course numbers refer to courses in the Department of Business Administration unless otherwise indicated):

†*Required Courses*—(102G and 120G are prerequisites to all other core courses. The following may be taken concurrently: 108G, 115G, 135G, 140G, 150G, and 160G.)

1. Business Economics 102G (100 and 101).
2. Accounting 120G (120 or 120M).
3. Business Law 108G (108).

† For titles and descriptions of courses see pages 121-136.

4. Business Statistics 115G (115).
5. Organization and Management Theory 190G (190).

†*Elective Courses (any five)*

1. Money and Banking (Economics 135).
2. Finance 131G (131 or 133).
3. Insurance 135G (135).
4. Production Management 140G (140).
5. Personnel Management 150G (150).
6. Marketing 160G (160).
7. Transportation and Traffic Management (170).
8. Real Estate and Urban Land Economics (180).

(Explanation of course numbers: Courses numbered without the G suffix are offered regularly in the Department of Business Administration for undergraduate students, and are generally available for students in the Graduate School of Business Administration. Courses numbered with the suffix G are offered exclusively for students in the Graduate School, regardless of their degree objective or status.)

First-year graduate students may satisfy parts of this requirement by independent study and examination with special permission of the Assistant Dean of Student Affairs.

Graduate students who are already prepared in one or more of the above fields, as evidenced by satisfactory completion of the above courses or their equivalent, may elect to begin a part of the program of the second year of the M.B.A., with the approval of the Dean.

SECOND-YEAR PROGRAM

The second-year program consists of a minimum of 24 units of which at least 12 units must be in 200-series courses. The program has three parts:

- | | |
|--|------------|
| (a) Major field of concentration | 9-15 units |
| (b) Business Economics and Business Management requirement | 6 units |
| (c) Electives | 3-9 units |

Total	24 units
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Major Field of Concentration.—Each student must select a major field and complete in it between 9 and 15 units of work. At least 9 units of this work must be 200-series courses, excepting where specifically directed otherwise by the Assistant Dean. Courses offered in fulfillment of requirement (b) may not be applied to the major field requirement.

Business Economics and Business Management Requirement.—The student will select one 3-unit course in each of the following categories:

Business Economics: BA 200, 201 or 202 (3 units)

Business Management: BA 290, 291 or 292 (3 units)

Electives.—The student must elect between 3 and 9 units *outside* of categories (a) and (b) above. For this requirement courses may be elected from any graduate offerings in the University or from the undergraduate offerings in the department of business administration labeled with an asterisk in the ANNOUNCEMENT OF THE GRADUATE SCHOOL OF BUSINESS ADMINISTRATION, LOS ANGELES.

A written comprehensive examination is given in the major field of concentration.

Residence of at least one academic year on the Los Angeles campus is required for the M.B.A. degree candidate. The 24 units of the second-year program must be completed on the Los Angeles campus, and a minimum of 4 units must be taken for two semesters.

† For titles and descriptions of courses see pages 121-136.

Fields of concentration available in the M.B.A. program are as follows:

- a. Statistics and Information Processing
- b. Accounting
- c. Finance
- d. Production Management
- e. Personnel Management and Industrial Relations
- f. Marketing
- g. Real Estate and Urban Land Economics
- h. Management Theory and Policy
- i. Insurance
- j. Transportation and Traffic Management

The candidate for degree of Master of Business Administration must pass an integrated comprehensive examination based upon his major field of graduate study. The examination is given in the fourteenth week of each semester. There is no language requirement. The candidate must maintain a grade-point average of 3.0 or better in all work taken in graduate standing, including undergraduate courses taken in restricted status; on the second-year program, in addition, a 3.0 or better grade-point average must be maintained in total work taken in the University subsequent to the master's degree.

SCHOOL OF EDUCATION

Three advanced degrees are offered by the School of Education: Master of Education, Master of Arts (with a major in education), and Doctor of Education. The function of the master's degree programs is the development of leadership in such educational fields as administration, supervision, curriculum development, guidance and counseling, audio-visual communications, and teaching. Students are encouraged to arrange a course of study which will provide breadth in the major areas affecting education, and depth in the field of special interest. Two degree programs are provided, the Master of Arts (Thesis Plan), and the Master of Education (Comprehensive Examination Plan). The course of study is largely determined by the degree objective and the area of special interest selected by the candidate. The doctoral program is provided to develop high-level specialists in these fields as well as to prepare students for college teaching and for educational research. Comprehensiveness and flexibility are especially noteworthy characteristics of the advanced degree programs. The graduate student in the School of Education is thus given both depth and specialization in his program.

The School of Education offers curricula leading to certificates of completion and state credentials authorizing service in the following fields: kindergarten-primary; general elementary; junior high school; general secondary; junior college; teaching exceptional children (speech correction and lipreading, mentally retarded); school librarianship; general pupil personnel services (counseling, child welfare and attendance, school social work, school psychometry, school psychology); supervision; elementary school administration; secondary school administration and general school administration. In addition to maintaining the foregoing curricula, the School of Education provides opportunity for individual programs of study meeting the requirements of the State Board of Education for credentials in certain other fields.

Admission to Undergraduate and Professional Programs

To be eligible for enrollment in undergraduate and professional courses in the School of Education (education courses in the 100 or 300 series) a student must meet the following requirements:

Any student in good standing in the University of California, who has completed the lower division requirements in one of the colleges of the Uni-

versity, or the equivalent, may enroll in one or more introductory courses, but for one semester or for one Summer Session only.

To be eligible for enrollment during a second semester a student must satisfy additional requirements in four areas:

Academic Achievement.—Before mid-term of the first semester or Summer Session the student must have forwarded directly to the Office of Student Services, official up-to-date transcripts of all college credits. His transcripts must show (a) an over-all grade-point average of 2.0 or higher if an undergraduate, 2.5 if a graduate, (b) a grade-point average in education courses of 2.0 or higher if an undergraduate, 2.5 if a graduate, and (c) a grade-point average in standard subject matter courses, not including courses in "performance" fields, of 2.0 or higher. In order to remain in a teaching program after admission undergraduate students must maintain a grade-point average of 2.0 (elementary) or 2.5 (secondary). Graduate students must maintain a grade-point ratio of 2.75 for continuing in the program.

Communication Skills.—Under the auspices of the Office of Student Services, during his first semester or Summer Session the student must pass standardized tests in English (e.g., reading comprehension and mechanics of expression), and in arithmetic concepts. The student must also demonstrate that he is free of gross speech defects.

Physical and Mental Health.—During his first semester or Summer Session in education courses the student must report to the Student Health Service in order to obtain preliminary approval for the study of education, indicating that his physical and mental health is such that he can perform the duties normally expected of teachers at the academic level he plans to teach.

Personal Fitness.—An individual with a criminal record, or one incapable of normal personal-social relationships, is barred by law from teaching in the schools of California.

NOTE: Ordinarily a student will be informed of the above requirements and corresponding deadlines during the first week of his first semester in education courses. However, it is the student's responsibility to be aware of and comply with these requirements.

Admission to Graduate Status in Education

In order to qualify for graduate status in education, the student must (1) hold a degree of Bachelor of Arts or Bachelor of Science from the University of California, or its equivalent; (2) demonstrate adequate preparation in social and theoretical foundations of education, educational psychology, and educational measurement or statistics; (3) have earned a grade-point average of at least 2.5 in the 100 series courses, and (4) have earned a grade-point average of at least 2.75 in education courses in the 100 series. For special requirements for admission to the doctoral program, see page 31, ANNOUNCEMENT OF THE SCHOOL OF EDUCATION.

Counseling

The Office of Student Services helps prospective students in education to discover the fields and levels of vocational opportunities and to decide the program to follow in order to achieve their chosen professional objectives. Students may request: (a) interpretation of test results; (b) referral to a credentials adviser; (c) referral to community agencies for preteaching experience with children; (d) referral to a remedial program for reading or spelling; and (e) counseling on personal and professional problems. Students may seek appointments on such matters at any time.

The Office of Student Services is maintained as a professional advisory service of the School of Education to render assistance in the interpretation and application of requirements, and in the planning of programs leading to teaching credentials and certification for other public school services. It serves as a central depository for technical and professional information on credential matters and certification procedures. Services are available to students, faculty, in-service teachers, counselors in other colleges, and school administrators. The counselors serve as program advisers for all students working toward basic teaching credentials, for special teacher training programs such as the program for retired military personnel, and for provisional credential holders qualifying for a credential renewal through this University. Preliminary evaluations and general information relative to advanced credentials for specialized services in the schools are also prepared by the counselors. Consultations are available by appointment to students from the freshman year through graduate standing.

A complete statement of curricula, requirements, and procedures in the School of Education will be found in the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES, which may be obtained at the office of the Dean of the School of Education, Los Angeles campus, or by mail upon application to the Registrar of the University of California, Los Angeles 24, California.

SUPERVISED TEACHING†

Supervised teaching is provided in: (1) the University Elementary School, comprising a nursery school, kindergarten, and the elementary grades; (2) a number of especially selected elementary and secondary schools in Los Angeles and Santa Monica. Special provisions for demonstration have been made at the University Elementary School and at the following schools in Los Angeles City: Warner Avenue Elementary School, Emerson Junior High School, and University High School. The work in supervised teaching is organized and administered by the directors of training and a corps of supervisors and training teachers, chosen by the University authorities.

MASTER OF ARTS IN EDUCATION

The Master of Arts degree is designed to permit maximum flexibility in program planning. The major portion of the course work is structured around the candidate's thesis problem.

Amount and Distribution of Work.—At least twenty semester hours and a thesis must be completed in graduate status. The units must be taken in graduate (200) or upper division (100) courses, and at least 8 of the 20 units must be in strictly graduate work in education. With permission of the candidate's chairman and the Head of the Office of Student Services, advanced courses in departments other than Education may be accepted in partial fulfillment of the degree requirement.

The course of study for all candidates for the Master of Arts degree must include:

1. Course work from any of the basic areas not present in the candidates' background preparation (see Admission Requirements, page 55).
2. Education 200A—Fundamentals of Educational Research.
3. Courses selected from one or more of the following fields of specialization:
 - a) *Area I.* Theoretical and Social Foundations.
(See courses 100-109, 201-209, 250-254)
 - b) *Area II.* Educational Psychology and Counseling
(See courses 110-119, 210-219, 255-259)

† Consult the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES.

- c) *Area III. Curriculum and Instruction*
(See courses 120-139, 220-239, 260-269)
 - d) *Area IV. Administration and Supervision*
(See courses 240-249, 270-279)
4. For other requirements see ANNOUNCEMENT OF THE SCHOOL OF EDUCATION and pages 69-71 of this bulletin.

MASTER OF EDUCATION DEGREE

The Master of Education degree is designed to provide a comprehensive background in the basic fields affecting the study of education and to test the retention of such knowledge by a series of examinations in three fields: (1) either principles of education and sociology of education, or history of education and comparative education; (2) educational psychology and counseling; and (3) an optional field suited to the candidate's special area of concentration and jointly determined by the candidate and his adviser.

The Master of Education is a professional degree and carries the additional requirement that the candidate must have obtained, or be working toward, a teaching credential or certificate.

Amount and Distribution of Work.—Twenty-four units of upper division (100) and graduate (200) courses are required, of which at least twelve units must be in strictly graduate courses in the School of Education. The following course patterns are suggested for the various examinations:

1. Either Principles of Education and Sociology of Education: 108, 206A, 206B, or History of Education and Comparative Education: 201A, 201B, 204A, 204B.
2. Educational Psychology and Counseling: 114, 119 (prerequisite), 210, 215A.
3. Optional examination chosen from among the following:
 - A. History of Education (by individual consent)
 - B. Comparative Education (by individual consent)
 - C. Philosophy of Education (by individual consent)
 - D. Sociology of Education: 108, 208A, 208B
 - E. Development and Learning: 210, 211, 212
 - F. Differential Education: 116, 118 or 216A, 216B
 - G. Measurement and Statistics: 200B, 214A, 214B
 - H. Pupil Personnel Services: 116, 213A, 215A
 - I. Early Childhood Education: 220, 222A, 222B
 - J. Elementary Education: 220; and 4 units selected from 224A, 224B, 225A, 225B, 226A, 226B, 227A, and 227B
 - K. Secondary Education: 220, 230A, 230B or 247A
 - L. Vocational Education: 217, 238A, 238B
 - M. Business Education: 137, 237A, 237B
 - N. Audio-Visual Education: 219A, 239A, 219B or 239B
 - O. Higher Education (by individual consent)
 - P. Adult Education (by individual consent)
 - Q. Administration: 240A, 240B, 240C
 - R. Supervision: 241A, 241B or 241C, 241D

The basic course of study outlined above will vary with each individual candidate depending upon his previous preparation in the field of education. Fifth-year students working on a general secondary credential, or candidates who hold a teaching credential may have completed some of the above courses in undergraduate status. In such cases, the candidate will have the opportunity for a broader selection of courses. See ANNOUNCEMENT OF THE SCHOOL OF EDUCATION and pages 69-71 of this bulletin.

DOCTOR OF EDUCATION DEGREE

The program for the Doctor of Education degree has been designed to meet the increasing complexity in the field of education and the growing demand for a wide variety of abilities for leadership needs in education. A significant aspect of the program is its flexibility in meeting individual differences in interest, background and career objectives.

From the areas listed below each candidate must select a major field of concentration which will comprise the major portion of his study, the area of his dissertation, and the major area for his qualifying examinations. In addition, each candidate must select two related fields of study, one in the Department of Education, and the second either in Education or in another department. Qualifying examinations are given in both the related fields.

A candidate may elect to encompass a total area for breadth of knowledge, or he may select a subarea for depth and intensity of understanding. However, except as authorized by the Committee on Graduate Degrees only one selection from each of the four major areas is permitted in the combination of his major and related fields. Candidates are urged to take part of their doctoral study in the other disciplines available on a large University campus.

Areas of specialisation open to candidates for the Doctor of Education degree.

- I. Theoretical and Social Foundations of Education (Comprehensive); or
 - A. Comparative Education
 - B. History of Education
 - C. Philosophy of Education
 - D. Sociology of Education
- II. Educational Psychology and Counseling (Comprehensive); or
 - A. Development and Learning
 - B. Differential Education
 - C. Measurement and Statistics
 - D. Pupil Personnel Services
- III. Curriculum and Instruction (Comprehensive); or
 - A. Early Childhood Education
 - B. Elementary Education
 - C. Secondary Education
 - D. Higher Education
 - E. Adult Education
 - F. Audio-Visual Education
 - G. Business Education
 - H. Vocational Education
- IV. Administration and Supervision (Comprehensive)
- V. Other departments (must be a related field). Course work may be taken in any other department if the work is directly related to the student's doctoral objectives, if the student's sponsor approves the plan, and if the sponsor can work out details with the other department in a manner approved by the Committee on Graduate Degrees in the Department of Education.

Because of the number of possible variations in combinations of major fields of concentration and various related fields, programs of study for the doctorate must be planned with each individual candidate. The graduate adviser in the Office of Student Services guides each candidate in the early formulation of his program, and suggests appropriate faculty members who might serve as the candidate's sponsor. However, it is the responsibility of the candidate to seek and find sponsorship from one of the resident graduate faculty members in the Department of Education. (For further details of this program see the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION.)

SCHOOL OF LAW

Applicants for admission to the School of Law must have a bachelor's degree from an accredited institution and must have taken the Law School Admission Test. The application for admission to the School of Law must be made on forms supplied by the School of Law, University of California, Los Angeles 24, California, and transcripts of all college, university, and professional school records, including the records of work completed on the Los Angeles campus of the University of California, must be sent from the institutions of origin to the School of Law, University of California, Los Angeles 24. If the applicant is currently enrolled in a college or university, the transcripts should cover all work completed to date, including a statement showing work in progress. The transcripts should be accompanied by a statement indicating the date on which it is expected the work in progress will be completed, and the necessary supplementary transcripts should be sent to the School of Law.

The Educational Testing Service will supply each applicant with a bulletin of information concerning the Law School Admission Test. For permission to take the Law School Admission Test, applicants should write directly to the Educational Testing Service, 20 Nassau Street, Princeton, New Jersey, requesting an application blank and bulletin of information listing places where the test may be taken.

Admissions will be on a competitive basis. Official notice of admission, or denial of admission, will be sent at the earliest possible date.

SCHOOL OF LIBRARY SERVICE

In December of 1958 the Regents of the University of California authorized the establishment of the School of Library Service on the Los Angeles campus, to begin a course of instruction in September, 1960, leading to the Master of Library Science degree. The curriculum, of 24 to 30 units (depending upon previous academic preparation of the student), is a graduate program which normally requires two regular semesters and a Summer Session to complete. The M.L.S. degree is accepted in the United States and in many other countries as the basic preparation for professional positions in municipal, county, college, university, school, children's, and special library service. In addition to required courses offered by the School of Library Service, elective courses in library service and in other University departments are recommended to provide a basis for specialized preparation.

Requirements for admission include admission to graduate status by the Graduate Division, an undergraduate course of study appropriate to graduate study in librarianship, a grade-point average accepted by both the Graduate Division and the School of Library Service, and a reading knowledge of at least two modern foreign languages, preferably German and French. Applicants are also required to have a score submitted on the Aptitude Test of the Graduate Record Examination. Further information concerning entrance requirements, degree requirements, the California State Credential for School Librarians, age limitations, and exclusions due to physical handicaps may be obtained from the Office of the School of Library Service.

SCHOOL OF MEDICINE

The School of Medicine on the Los Angeles campus, which opened in 1951, admits a first-year class of candidates for the M.D. degree each fall. Applications for the class entering in September, 1962, together with all transcripts of record and other necessary documents, must be filed between May 1, 1961, and November 30, 1961, with the Office of Admissions, University of California, Los Angeles 24. Application forms and information may be secured from that office.

The requirements for admission to the first-year class of the School of Medicine meet or exceed those set by the Association of American Medical Colleges.

Basis of Selection.—Enrollment is limited and highly selective. Candidates will be chosen on the basis of the following considerations: (1) undergraduate and, where applicable, graduate scholarship; (2) score on the Medical College Admissions Test which should have been taken preferably in May and in any case not later than October of the year during which application is made (this test is administered for the Association of American Medical Colleges by The Psychological Corporation); (3) interview of the applicant by a member or members of the Admissions Committee of the School of Medicine; and (4) letters of recommendation.

Preference is given to students who, in the opinion of the Committee on Admissions, present evidence of broad training and high achievement in their college training, of capacity for establishment of effective working relations with people in extracurricular activities and employment, and of possessing in greatest degree those traits of personality and character essential to success in medicine.

Except under extraordinary circumstances, no more than seven candidates (10 per cent) who are not California applicants will be admitted. To be considered a California applicant, a student must meet one of the following requirements: (1) he must have completed 60 units or more in an accredited college or university in the State of California, or (2) he must be a legal resident of the State of California, who lived in the State immediately prior to beginning his premedical work and who left the State temporarily for completion of all or part of his premedical work.

Successful candidates must pass a physical examination before registration. The faculty has the right to sever at any time the connection with the School of Medicine of any student who is considered physically, morally, or mentally unfit for a career in medicine.

Premedical Training.—Ordinarily the requirement for admission to the first-year class of the School of Medicine is a baccalaureate degree but in exceptional instances students who have completed at least three full academic years (90 semester units toward a baccalaureate degree) at an approved college or university may be admitted.

The academic years should be devoted to obtaining as broad an education as possible. The major objectives should be: (1) facility in the use of English, written and spoken; (2) facility in quantitative thinking, represented by mastery of at least elementary mathematics; (3) such training in physical and biological science as will make possible ready comprehension of medical science and result in a thorough comprehension of the scientific method; (4) a foundation for an ever-increasing insight into human behavior, thought, and aspiration through study of individual man and his society, as revealed both by the social sciences and the humanities; and (5) some knowledge of a language and culture other than the student's own.

These objectives will ordinarily require completion of the following studies:

1. English composition or literature, 6 units.
2. Mathematics, 3 units.
3. Physics, 8 units.
4. Chemistry, two semesters of inorganic chemistry and one semester each of organic chemistry and quantitative analysis.
5. An additional semester of chemistry (e.g., organic or physical), or mathematics at the level of calculus, or physics. Elementary biochemistry will not satisfy this requirement.
6. Zoology, including vertebrate embryology, 12 units.

7. A classical or modern foreign language, 12 units of college work, or its high school equivalent,* or attainment of facility in reading a foreign language achieved by other means. If work has been done in two languages, 8 units of each will be acceptable.

Under exceptional circumstances consideration will be given applicants not fully satisfying these requirements. In addition, students working for baccalaureate degrees must fulfill the specific requirements for such degrees.

In the time not occupied by the required courses, students should undertake studies directed to the fourth objective stated above, guided by their own interests. Preference will not be given students who major in natural science since intensive study in the social sciences and in the humanities is considered at least equally valuable.

Completion of Requirements.—The student must, with the occasional exceptions cited above, complete all premedical requirements before beginning the first year of medical studies, although these requirements need not be completed at the time application for admission is filed.

Admission to Advanced Standing.—Students who have completed one or two years in an approved medical school and who desire to transfer to this School should apply to the Office of Student Affairs of the School of Medicine for instructions. Applications will be received after May 1, but not later than July 15. In no case will applications for transfer to the fourth-year class be considered.

Graduate Work.—Graduate work leading to the degrees of Master of Science and Doctor of Philosophy is authorized in anatomy, biophysics, infectious diseases, pharmacology, physiological chemistry, physiology, and radiology. See the departmental announcements elsewhere in this bulletin for further information. For details concerning the professional curriculum, consult the ANNOUNCEMENT OF THE SCHOOL OF MEDICINE, LOS ANGELES.

SCHOOL OF NURSING

The Regents of the University of California authorized the establishment of a School of Nursing at Los Angeles in the summer of 1949. The School admits students of junior or higher standing, and offers curricula leading to the degrees of Bachelor of Science and Master of Science in nursing.

Three curricula are available:

1. *The Basic Nursing Program* leading to the Bachelor of Science degree provides for a close interweaving of general and professional education. The social, emotional, and health aspects of nursing are emphasized throughout the curriculum. Nursing laboratory practice under the guidance of faculty members is provided in hospitals, outpatient clinics, schools, homes, and community health centers.

Requirements for admission:

Admission to the University.

Completion of 60 units of college work, including courses required by the School of Nursing.

Personal recommendations as required by the School of Nursing.

Eligibility for the study of nursing as determined by demonstrated aptitudes, recommendations, interviews, physical examinations and scholastic attainment.

2. *The Program for Registered Nurses* leading to the Bachelor of Science degree provides for a close interweaving of general and professional education. Nursing laboratory practice under the guidance of faculty members is provided in hospitals, outpatient clinics, schools, homes, and community health centers.

* In a single language, the first two years of high school work are credited with 4 units, and the third and fourth years are credited with 4 units each.

Requirements for admission:

- Graduation from an accredited school of nursing and evidence of the fulfillment of the legal requirements for the practice of nursing.
- Personal and professional recommendations as required by the School of Nursing.
- Eligibility for the study of nursing as measured by the National League for Nursing Graduate Nurse Examination and other tests administered by the University.
- Completion of the lower division requirements or transfer credit evaluated as the equivalent. (See the ANNOUNCEMENT OF THE SCHOOL OF NURSING.)

3. Under the jurisdiction of the Graduate Division, Southern Section, the School of Nursing administers *programs leading to the Master of Science degree*. These programs are designed to prepare professional nurses for clinical specialization and for administrative, supervisory, and teaching positions in schools of nursing, hospitals, and public health agencies. For further information about the graduate programs in nursing, consult the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION, and the ANNOUNCEMENT OF THE SCHOOL OF NURSING.

Requirements for admission:

- Graduation from a recognized college or university having an accredited basic nursing program satisfactory to the School of Nursing, Los Angeles, and the Graduate Division, Southern Section.
- or
- Graduation from an accredited school of nursing offering satisfactory basic preparation in nursing and from a recognized college or university with a major satisfactory to the School of Nursing, Los Angeles, and Graduate Division, Southern Section.
- Evidence of the fulfillment of the legal requirements for the practice of nursing.
- Satisfactory completion of the National League for Nursing Graduate Nurse Examination, Plan C.
- An undergraduate scholarship record satisfactory to the School of Nursing, Los Angeles, and to the Graduate Division, Southern Section.
- Personal and professional recommendations as requested by the School of Nursing, Los Angeles.

Admission.—Applications for admission to the Basic Program and to the Registered Nurse Program in the School of Nursing should be filed not later than August 15 for the fall semester and not later than January 15, for the spring semester.* Applications for admission to the Graduate Program should be filed not later than August 1 for the fall semester and not later than December 15 for the spring semester. The School of Nursing reserves the right to admit students on the basis of scholarship, recommendations, interviews, and demonstrated aptitudes.

Applications for admission to the undergraduate programs (accompanied by a \$5 application fee) should be filed with the Office of Admissions, University of California, 405 Hilgard Avenue, Los Angeles 24, California.

Applications for admission to the graduate programs (accompanied by a \$5 application fee) should be filed with the Graduate Division, Southern Section, University of California, Los Angeles 24, California.

Educational programs are planned in the School of Nursing after evaluations of credentials have been made by the Office of Admissions or the Graduate Division following receipt of applications for admissions.

* Applications from foreign students should be filed not later than May 1 for the fall semester and October 1 for the spring semester.

REQUIREMENTS FOR THE DEGREE OF BACHELOR OF SCIENCE

The degree of Bachelor of Science will be granted upon fulfillment of the following requirements.

For the Student in the Basic Program

1. The candidate shall have completed at least 126 units of college work, and shall have satisfied the general University requirements.
2. The candidate shall have completed satisfactorily a minimum of 60 units of upper division courses.
3. After admission to the School of Nursing, the candidate shall have completed the specified units of college work acceptable to the faculty of the School.
4. The candidate shall have maintained at least a C average.
5. The candidate shall have completed all required nursing courses in the School of Nursing and must have maintained a grade of at least a C in all clinical nursing courses.

For the Student in the Registered Nurse Program

1. The candidate shall have completed at least 126 units of college work, of which 60 shall be in upper division courses, and shall have satisfied the general University requirements. Not more than 30 units toward the required total will be granted the registered nurse for work completed in a hospital school of nursing.
2. The candidate shall have maintained at least a C average and must have maintained a grade of at least C in all clinical nursing courses.
3. The candidate must have completed the major in nursing and additional upper division college work acceptable to the faculty of the School of Nursing, and shall have been registered in the School while completing the final 24 units of work.

HONORS

The faculty of the School of Nursing or a duly authorized committee thereof shall recommend for Honors or Highest Honors such senior students as it may judge worthy of that distinction.

REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE

The degree of Master of Science will be granted upon fulfillment of the following requirements:

1. The candidate shall have met the general requirements of the Graduate Division, Southern Section. (See page 69).
2. The candidate shall have completed in graduate or upper division courses: at least 20 units for Plan I of which 14 shall be graduate courses in nursing; at least 24 units for Plan II of which 14 shall be graduate courses in nursing. The additional units required for the degree may be distributed among courses in the 100 or 200 series subject to approval by the student's faculty adviser.

For further information concerning graduate work consult the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION.

SCHOOL OF PUBLIC HEALTH

General Purpose.—The purpose of the programs of education offered in public health is to provide the student with a thorough understanding of the principles and theory of public health, and a working knowledge of research methods. Courses of study are designed to present administration and research within the concepts described by Winslow's definition of public health—"the

art and science of prolonging life, preventing disease and promoting physical and mental efficiency, through organized community effort."

The graduate programs of study are open to physicians, dentists, engineers, veterinarians, clinical psychologists, nurses, statisticians, and to persons with certain other academic or professional preparation.

Degrees Offered.—Five degrees are offered, as follows: Bachelor of Science, Master of Science, Master of Public Health, Doctor of Public Health, Doctor of Philosophy in biostatistics.

BACHELOR OF SCIENCE DEGREE

A four-year undergraduate program leading to a Bachelor of Science degree in public health is offered in the University. The lower division curriculum of 60 units may be taken in the College of Letters and Science. Undergraduate students who have satisfactorily completed at least 60 units of work in one of the colleges of the University, or who have transfer credits evaluated as equivalent, may apply for admission to the School of Public Health.

Premedical and pre dental requirements can be met while satisfying the requirements for the Bachelor of Science in public health. By proper planning and selection of electives, prepharmacy and pre dental hygiene curriculum students can also satisfy the admission and degree requirements of the School.

In the general framework of academic study in public health, students may wish to choose particular courses as background to specialization, either in graduate study or in their future professions. Some such graduate areas of concentration are: biostatistics, epidemiology, health administration, occupational health, medical records library science, public health education, public health nutrition, and environmental health. Interested students are urged to discuss this with their adviser.

Candidates for the degree of Bachelor of Science must have completed at least 120 units of college work, of which at least the last 24 units must have been completed while enrolled in the School of Public Health. The student must earn at least twice as many grade points as the number of units of work undertaken in the University.

PREPARATION FOR THE MAJOR

Courses recommended for the first two years of college work in preparation for upper division study in the School of Public Health will be found under the Prepublic Health Curriculum and Prenutritional Sciences Curriculum in the College of Letters and Science, pages 23 and 21 of this bulletin.

THE MAJOR, PUBLIC HEALTH SPECIALIZATIONS

- (1) Required public health courses: Public Health 100, 110, 147, 160A, 170.
- (2) In addition to the above requirements, those of one of the following *pregraduate curricula* must be met. In each case electives approved by the department adviser should be added to make a total of at least 120 units, including at least 42 units in upper division.

Biostatistics.—Mathematics 3A–3B, 4A–4B, Statistics 131A–131B, Public Health 160B, 160C, 161. Every student will be required to take courses and study in depth at upper division level an additional subject area as a basis for application of statistical methods and theories.

Health Administration.—A year course at lower division level, or 6 units at upper division level, from anthropology, economics, psychology, or sociology; Zoology 25; Business Administration 135, 150 (or Political Science 185), 152 (or Sociology 161), 190; Public Health 134, 160B (or 161).

Occupational Health.—Chemistry 1B, 8; Speech 1, 2; Psychology 1A, 1B; Zoology 25; Engineering 131A, 172A; Psychology 187; Sociology 131; Public Health 134, 160B. Recommended electives include:

Business Administration 150, 152 (or Sociology 161); Psychology 145A-145B; Public Health 160C.

Environmental Health.—Chemistry 1B, 8 (or 112A); Physics 2A-2B; Engineering 172A; Zoology 151; Public Health 112, 134, 153, 160B. Three units from Economics 101, Psychology 101, Sociology 101 (if the equivalent courses were not taken in lower division). Suggested electives: Anthropology 2, Chemistry 5A, Mathematics 3A, Zoology 100A, 139.

Health Education.—Business Administration 152 (or Sociology 161); Nutritional Sciences 111; Zoology 25; Public Health 134. Electives to include an additional 18 units from at least four of the following areas: anthropology, economics, education, philosophy, political science, psychology, sociology.

Medical Records Library Science.—Public Health 102A-102B, 198, 402A-402B. 6 units of lower division or upper division in anthropology, economics, psychology or sociology. 6 units of upper division in personnel management or administration, and organization and management theory. 3 to 6 units in biological sciences.

THE MAJOR, NUTRITIONAL SCIENCES SPECIALIZATIONS

Nutritional Sciences.—Bacteriology 1; Chemistry 8, 9, 108A-108B; Economics 1B; Mathematics 3A; Nutritional Sciences 11, 101, 113, 114, 115, 117, 142; Public Health 100, 147, 160A; Zoology 1B; and electives chosen from the following list to equal 120 units: Nutritional Sciences 199, Physics 2A, 2B, Physiological Chemistry 101A, 101B.

Dietetics.—Bacteriology 1; Business Administration 1A, 150, 160; Chemistry 8, 9; Economics 1B; Mathematics 3A; Nutritional Sciences 11, 100, 101, 102, 113, 114, 116, 121, 122; Psychology 110; Zoology 1B; and electives chosen from the following list to equal 120 units: Chemistry 108A, 108B, Nutritional Sciences 115, 117, 199, Public Health 100, 147, 160A. (Prepares for the Dietetic Internship.)

MASTER OF SCIENCE DEGREE

The Master of Science degree in public health is intended for persons without previous professional education or experience who have achieved a good academic record, or who attain a high score in an approved graduate study aptitude test, and who present other satisfactory evidence of suitability for advanced study in public health. In view of the waiver of prior professional education, the length of the program is two years, one of which must be a full academic year in residence. The remainder of the program will be planned on an individual basis, according to the student's need, and will include formal courses, research leading to a master's thesis, or supervised work and study in the field. A student who has completed part or all of an undergraduate major in public health may find it possible to satisfy the requirements for this degree in a shorter period of time.

Requirements.—For general requirements, see pages 69 to 71 of this bulletin or the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION. The department normally follows Plan I for the Master of Science degree, but Plan II may be approved in exceptional cases.

A student is required to specialize in one of the following areas: biostatistics, environmental health, epidemiology, health administration, occupational health, public health education, and public health nutrition.

MASTER OF PUBLIC HEALTH DEGREE

The Master of Public Health degree is intended for persons with prior professional training in medicine, dentistry and veterinary medicine.

Admission.—Candidates to be admitted for the degree of Master of Public Health may be either

1. Holders of the degree of M.D. or D.D.S. from an acceptable medical or dental school;* or
2. Holders of a bachelor's degree from an approved college or university with adequate preparation in the sciences basic to public health.
Candidates should also be qualified in some professional capacity for postgraduate education in public health, and should in addition have either
 - a. Professional academic qualifications in engineering, nursing, education, or other fields of public health; or
 - b. Normally, not less than three years of experience in some field of public health practice or teaching of a type acceptable to the School.

GENERAL REQUIREMENTS FOR THE DEGREE

1. At least one year of graduate residence and a program including not less than 24 units of acceptable course work, of which at least 12 units must be in strictly graduate courses in the major subject. The student must maintain at least a grade B average in all work completed in graduate standing. By special permission, a candidate may be authorized to present an acceptable thesis in lieu of 4 of the 24 units required.
2. A comprehensive final examination either in the student's field of specialization or in the general field of public health, as determined by the faculty.
3. At least twelve weeks of approved field service in a public health agency. This may be waived for those presenting evidence of previous qualifying experience. In several areas of study, additional periods of supervised field work or clinical training are required—see the descriptions of the specialized curricula in the ANNOUNCEMENT OF THE SCHOOL OF PUBLIC HEALTH.

A student is required to concentrate in one of the following areas: epidemiology, public health administration, medical care administration, mental hospital administration, general hospital administration, or occupational health.

DOCTOR OF PUBLIC HEALTH DEGREE

The Doctor of Public Health degree is offered to students who qualify in either of two ways. The length of the program will vary according to the student's qualifications. In these programs the emphasis will be on research, planning and development. A doctoral dissertation based on original work is one of the essential requirements for completion of either program.

Prior Master's Degree.—Students who hold a master's degree in public health may be admitted as doctoral candidates if otherwise qualified. A full year in residence is required. The length of the course will vary according to the student's qualifications but, as a rule, will be two or more years. Preference will be given to full-time students.

Integrated Two-Year Course.—A limited number of students who hold doctor's degrees in medicine and other fields may be admitted directly to a two-year Doctor of Public Health program that integrates enrollment in formal courses, research, and the preparation of a doctoral dissertation.

The doctorate in public health is offered primarily as an advanced study and research degree, in the attainment of which students who are already well advanced in a related fundamental field will carry on intensive work in the advancement of this knowledge as related to public health. The areas of specialization follow the pattern of the master's program in public health.

DOCTOR OF PHILOSOPHY DEGREE IN BIOSTATISTICS

A program of study leading to the degree of Ph.D. in biostatistics is offered. Reference should be made to the ANNOUNCEMENT OF THE GRADUATE

* Holders of other acceptable doctoral degrees may qualify under special action.

DIVISION, SOUTHERN SECTION, for general University requirements. The student's program of study must be approved by the department and by the Graduate Council, and it must embrace at the graduate course level three areas of knowledge: biostatistics, mathematical statistics, and a biomedical field such as biology, infectious diseases, medicine, microbiology, pharmacology, physiology, psychology, public health, or zoology. Recommendation for the degree is based on the attainments of the candidate rather than on the completion of specific courses.

NONDEGREE COURSES AND SPECIAL STUDENTS

Persons employed in responsible positions in public health, and other qualified persons, who wish to attend certain courses without applying for a degree, may be admitted as special students—space, time, and circumstances permitting.

Students preparing for foreign assignments may also enroll in courses offered by other departments, for example: government, philosophy, sociology, anthropology, and linguistics, as related to selected countries or regions of the world. Joint programs may be arranged with other departments to meet specific needs, for example: engineering, nuclear medicine and biophysics, radiology, nutrition, psychiatry, infectious diseases, public administration. See course offerings of other departments listed in this bulletin.

SCHOOL OF SOCIAL WELFARE

The School of Social Welfare offers a two-year graduate program in social welfare which is fully accredited by the Council on Social Work Education. The degree of Master of Social Welfare is awarded to students who successfully complete the prescribed two-year program (four semesters) of 46 units and who comply with additional specified requirements.

Full-time students are admitted to the School in the fall semester and are expected to continue in attendance throughout the academic year. A maximum of 24 units may be accepted as transfer credit toward the Master of Social Welfare degree. In the case of transfers, the School will prescribe the work required to qualify for the Master of Social Welfare degree. The School may also require students to audit courses which are believed to be essential even though the student may have been granted credit for a similar course taken in another school. A written evaluation of the transfer student's work will be requested from the school in which the student completed his first-year program.

Because of the highly integrated nature of the School's program and the consequent necessity of taking together at least certain groups of courses, part-time study is not encouraged.

The School of Social Welfare offers courses on the graduate level only. Completion of the University's program in presocial welfare or its equivalent is most desirable as preparation for graduate study in social welfare. Applicants who have not had this preparation will, however, be considered if they have completed a broad undergraduate program in the biological and social sciences and psychology.

Applications for admission should be filed by April 15 for the following fall semester. Applicants must file an "Application for Admission to Graduate Status" with the Graduate Division of the University, and, in addition, must file an application with the School of Social Welfare and submit other specified information. To qualify for admission to the first-year program an applicant must: (1) have a bachelor's degree from an accredited college or university, and through the Graduate Division establish his eligibility for admission to graduate status at the University of California, Los Angeles; (2) have completed at least 15 semester hours in the social sciences and/or

psychology; (3) be not over 35 years of age, unless capacity for professional development in the field of social welfare has been demonstrated in social work or in a closely related field; (4) be physically able to meet the demands of the graduate curriculum, as evidenced by a physical examination conducted by the Student Health Service immediately prior to registration; (5) satisfy the School that he possesses the personal attributes essential for professional education and for successful social work practice.

To qualify for admission to the second-year program, an applicant must:

1. Have successfully completed in an accredited school of social work and within seven years immediately preceding his request for admission to the second-year program, a first-year graduate program meeting the current requirements of this school. First-year students at the School of Social Welfare who successfully complete their work and have a grade-point average of at least 3.0 (B average), automatically qualify for advancement to the second-year program.
2. Be physically able to meet the demands of the graduate curriculum, as evidenced by a physical examination conducted by the Student Health Service immediately prior to registration.
3. Satisfy the School that he possesses the personal attributes essential for further professional education and for successful social work practice.

Admission to courses is by specific approval of the School. Inasmuch as the social work profession is a discipline primarily based upon interpersonal relationships, the School reserves the right to exclude from courses students who have not demonstrated in class, practice, and professional relationships the personal attributes regarded as essential to the successful practice of social work even though the academic work done by such students may be satisfactorily performed. The School reserves the right to exclude from courses any student whose performance as reflected in grades falls below the requirement for the master's degree.

Total enrollment in the School of Social Welfare is limited by the educational resources of the School. As a result, it may not be possible to accept some applicants, even though they may meet all the formal qualifications for admission. Preference in the selection of students therefore will be given to those applicants who appear to be best qualified as indicated by their scholastic achievements, previous experience, personal fitness, and aptitude for the social work profession.

Agencies having stable and progressive programs capable of providing students with educational as well as practical experience are utilized for field instruction. While the overwhelming majority of placements are in the Los Angeles area, a few may be as far away as Camarillo State Hospital to the north and San Diego to the south. Students are assigned to placements on the basis of their particular educational needs and are expected to work within agency policy including the observation of employment practices and, where stipulated by the agency, the signing of oaths sometimes required of agency employees. In a few agencies stipends are paid to students for field work.

A number of federal, state, local, and national agencies make available scholarships and fellowships to graduate students in Social Welfare. Applications are for the most part made directly to the School. Additional information regarding these scholarships may be obtained from the Admissions Office of the School. In addition to these grants, a number of scholarships are offered through national organizations. General information concerning these scholarships may be obtained by writing to the School or to the Council on Social Work Education, 345 East 46th Street, New York 17, New York. Information regarding general University scholarships for which Social Welfare students may be eligible may be secured from the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION.

For information concerning courses and curricula, see the ANNOUNCEMENT OF THE SCHOOL OF SOCIAL WELFARE, LOS ANGELES, and page 437 of this bulletin.

THE GRADUATE DIVISION

SOUTHERN SECTION

The University of California offers on its southern campuses advanced study leading to the degrees of Master of Arts, Master of Business Administration, Master of Education, Master of Engineering, Master of Library Science, Master of Public Administration, Master of Public Health, Master of Science, Master of Social Welfare, Doctor of Philosophy, Doctor of Education, Doctor of Public Health, and to the certificates of completion for the general secondary and junior college teaching credentials and the supervision and administration credentials. For more complete information concerning the work of the Division, and concerning the requirements for higher degrees, consult the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION, and the offerings of the major department under the appropriate section of this bulletin.

DEFINITION OF ACADEMIC RESIDENCE

Every graduate student must register for, attend, and complete upper division courses (courses in the 100 series) or graduate courses (200 series) amounting to at least 4 units for each semester or 2 units for each summer session, in order to satisfy the minimum residence requirement in candidacy for any higher degree or certificate issued by the University.

STUDY-LIST LIMITS

In order to counteract the tendency to accumulate credits by sacrificing thoroughness and the high scholarly attainment which comes only through intense application, the University restricts the number of units in which a student may enroll.

A graduate student in a regular semester is limited to 16 units when he takes only upper division courses, to 12 units when he takes only graduate courses, and to a total made up in the proper proportion of 12 to 16—as for example, 6 graduate and 8 upper division—when he takes both upper division and graduate courses.

Only students enrolled in the Graduate Division may be appointed as Teaching Assistants and Research Assistants. They are limited to three-fourths of the above study-list totals and may not be employed more than 50 per cent time without the consent of the Dean of the Graduate Division. Qualified individuals who are employed full-time outside the University or in a University nonacademic position are limited to 6 units of graduate (200 series) and/or undergraduate courses. Study lists exceeding these limits may be accepted only with the approval of the Dean of the Graduate Division.

REQUIREMENTS FOR THE MASTER'S DEGREE

Preparation.—The candidate's preliminary training for the master's degree should be substantially the equivalent of that represented by the corresponding bachelor's degree. In the University of California, the bachelor's degree indicates eight years of systematic high school and college work distributed according to the University's requirements for the particular college or course in which the degree is offered.

If the candidate's undergraduate course has been deficient in breadth of fundamental training and fails to provide a proper foundation for advanced work in the department or departments of his choice, it probably will be necessary for him to take specified undergraduate courses before proceeding to the degree program or concurrently with it.

The requirements for the master's degree described in the section which follows are those set by the Graduate Council, Southern Section, and are common to all master's degree programs. Individual departments may impose additional requirements. More detailed information about the requirements for the master's degree in a given major will be found under the appropriate major in this bulletin.

The Master of Arts is offered on the Los Angeles campus in the following major fields:

Anthropology	Greek	Near Eastern Languages
Anthropology-Sociology	History	and Literatures
Art	International Relations	Oriental Languages
Astronomy	Islamic Studies	Philosophy
Botanical Science	Italian	Physics
Classics	Journalism	Political Science
Economics	Latin	Psychology
Education	Latin-American Studies	Slavic Languages
English	Linguistics	Sociology
French	Mathematics	Spanish
Geography	Meteorology	Speech
Geology	Microbiology	Theater Arts
German	Music	Zoology

The Master of Science is offered in the following fields:

Anatomy	Horticultural Science	Physiology
Applied Physics	Infectious Diseases	Preventive Medicine
Biological Chemistry	Journalism	and Public Health
Biophysics	Nursing	Psychiatry
Chemistry	Nutritional Science	Public Health
Engineering	Pharmacology	Radiology
Health Education	Physical Education	
Home Economics*	Physiological Chemistry	

A professional Master's Degree is offered in the following major fields:

Business Administration (M.B.A.)	Library Science (M.L.S.)	Public Health
Education (M.Ed.)	Public Administration	(M.P.H.)
Engineering (M.Engr.)	(M.P.A.)	Social Welfare (M.S.W.)

Application for Advancement to Candidacy.—Applications for advancement to candidacy must be filed not later than the second week of the semester in which the requirements are to be completed. Students are warned that such advancement is not automatic, but requires a formal application distinct from registration. The form for advancement to candidacy is available at the Graduate Division office.

Amount and Distribution of Work.—A student must pursue one of the following plans at the option of the department of his major field for fulfillment of the requirements for the master's degree. Under either plan all requirements for the degree must be satisfied within a calendar year from the time of completion of the course requirement.

Plan I: Thesis Plan.—At least 20 units and a thesis are required. The units must be taken in graduate or upper division undergraduate courses, and at least 8 of the 20 must be strictly graduate work in the major subject. No unit credit is allowed for the thesis. After these general and the special departmental requirements are met, the student may take any course in the 100 or 200 series, although he is subject to his major department's guidance in the distribution of his work among the departments. In addition, the major de-

* Limited to Home Economics Education.

partment may require any examination which seems necessary to test the candidate's knowledge of his field.

Plan II: Comprehensive Examination Plan.—A minimum of 24 units of upper division and graduate courses are required, of which at least 12 units must be in strictly graduate courses in the major subject. After these general and the special departmental requirements are met, the student may take any course in the 100 or 200 series, although he is subject to his major department's guidance in the distribution of his work among the departments. A comprehensive final examination in the major subject, its kind and conduct to be determined by the department concerned, is taken by each candidate. A department may require a special paper or other work in addition to the comprehensive examination.

Scholarship.—Only courses in which the student is assigned grades A, B, or C are counted in satisfaction of the requirements for the master's degree. Furthermore, the student must maintain an average of at least three grade points a unit in those courses and also in all others elected at the University subsequent to the bachelor's degree; this includes upper division or lower division courses taken in graduate status. Four grade points for each unit of credit are given to grade A, three points to grade B, two points to grade C, one point to grade D, none to grades E and F.

Foreign Language.—Each department shall determine at its option whether a reading knowledge of a foreign language shall be required of a candidate for the master's degree. The examination in all cases is to be administered by an examiner under the supervision of a committee of the Graduate Council.

Residence.—The minimum period of academic residence required is two semesters, of which at least one semester must be spent at Los Angeles in graduate status. The requirement may be satisfied in part by residence on other campuses of the University of California.

For degree purposes, a student is not regarded as in residence unless he is registered in graduate status and is actually attending regularly authorized University exercises amounting to at least 4 units of upper division or graduate work in a regular session, or 2 units in a summer session.

Ordinarily all the work for the master's degree is expected to be done in residence, but a graduate of this University or any other approved candidate may complete part of his work in absence, subject to the approval of the Graduate Council, the regulations on study in absence, and the minimum residence requirement of one year.

The Thesis.—The thesis is the student's report, in as brief a form as possible, of the results of his original investigation. Although the problems for master's degree candidates are of limited scope, they must be attacked in the same systematic and scholarly way as problems of greater magnitude, as for example, one under investigation by a candidate for the doctor's degree. Before beginning his work on a thesis, the student must receive the approval of his major department and the instructor concerned, on the subject and general plan of investigation. Detailed instructions concerning the physical form in which theses must be submitted may be had upon application to the Dean of the Graduate Division.

REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

The fields of study in which the degree of Doctor of Philosophy is offered on the Los Angeles campus of the University are listed as follows:

Anatomy	Biophysics	Economics
Anthropology	Biostatistics	Engineering
Anthropology-Sociology	Botanical Science	English
Art History	Business Administration	French
Biological Chemistry	Chemistry	Geography

Guidance Committees.—On receiving such notification an informal guidance committee will be appointed by the department or interdepartment group of the student's field of study to assist the student in making out his program and in preparing him for the qualifying examinations. This committee must give its written approval to the department before the student is permitted to take these examinations and it ceases to exist as soon as he has passed the qualifying examinations.

Doctoral Committees.—Upon nomination of the department or interdepartment group of the student's field of study a doctoral committee will be appointed by the Graduate Council. Nomination of the doctoral committee should be made on Form 2, which is available at the Graduate Division Office. This committee shall consist of not fewer than five members, three of whom shall be from the department of the candidate's major and two from a department or departments other than the major. The doctoral committee conducts the qualifying oral examination (in some cases also the written examinations), and conducts the final oral examination. For this final oral examination additional members may be appointed to the committee by the Dean of the Graduate Division in consultation with the department. With the unanimous consent of all members of the committee, three members of the committee may be designated to supervise and pass upon the student's dissertation,* but all members of the committee shall have the opportunity to read the dissertation and shall participate in the final oral examination.

Qualifying Examinations.—Before he is admitted to candidacy, the student must pass a series of qualifying examinations, both written and oral. The written examinations may be administered by the department of the student's field of study, but the oral examination must be conducted by his doctoral committee. The qualifying oral examination is never open to the public. The report on the qualifying examinations should be made on Form 3, which is available at the Graduate Division Office. The report form must be signed by the members of the doctoral committee.

Advancement to Candidacy.—Upon receipt of the report on the qualifying examinations an application form for advancement to candidacy (Form 4) will be sent to the candidate. The candidate must file his application with the Dean of the Graduate Division after it has been properly approved by the chairman of his doctoral committee and the advancement to candidacy fee has been paid. The Dean of the Graduate Division will then determine whether all formal requirements have been met.

A minimum period of resident study approximately equivalent to two semesters must intervene between the date of formal advancement to candidacy and the date of the final examination. The semester in which the student is advanced to candidacy will be counted as a full semester for the purpose of the residence requirement, provided advancement to candidacy (including filing of the completed form and payment of the fee) occurs at or before mid-term and the student is registered for 4 or more units.

The Dissertation.—A dissertation on a subject chosen by the candidate and approved by his doctoral committee, bearing on his principal study and showing his ability to make independent investigation, is required of every candidate for the degree. In its preparation the candidate is guided by his doctoral committee, which also passes on the merits of the completed dissertation, and the approval of this committee, as well as that of the Graduate Council, is required before he is recommended for the degree. Special emphasis is laid on this requirement. The degree is never given merely for the faithful completion of a course of study, however extensive.

* At the time of filing the dissertation with the Graduate Division, a certificate of unanimous consent, signed by the committee chairman, must accompany all approval pages carrying only three signatures.

The dissertation must be typewritten† or printed. Specific instructions concerning the form may be obtained from the Dean of the Graduate Division.

Final Examination.—The candidate's final examination is conducted by his doctoral committee. The examination is oral and deals primarily with the relations of the dissertation to the general field in which its subject lies. Admission to the final examination may be restricted to committee members, members of the Academic Senate, and guests of equivalent academic rank from other institutions. The report on the final examination should be made on Form 5, which is available at the Graduate Division Office. The report form must be signed by the members of the doctoral committee.

REQUIREMENTS FOR THE DEGREE OF DOCTOR OF EDUCATION

The requirements for the degree of Doctor of Education are similar in general outline to those of the degree of Doctor of Philosophy; for a detailed statement consult the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES, or page 57 of this bulletin.

DEGREE OF DOCTOR OF PUBLIC HEALTH

For the requirements for the degree of Doctor of Public Health, see the ANNOUNCEMENT OF THE SCHOOL OF PUBLIC HEALTH, LOS ANGELES, or page 66 of this bulletin.

THE BACHELOR'S DEGREE FOR GRADUATE STUDENTS

In general, the University of California discourages candidacy for a second bachelor's degree, even if the proposed major is in a new field; at the same time, it recognizes that there are cases in which such a degree may legitimately be sought. *Students wishing to become candidates for a second bachelor's degree will apply to the Admissions Office for admission as undergraduate students.* Admission is subject to the approval of the Director of Admissions and of the dean of the appropriate college who shall also set requirements and make recommendations for the degree. No persons will be recommended for the bachelor's degree who have not satisfied substantially, at the time of procedure to the degree, the conditions imposed upon other undergraduate students at the University of California, including the completion of at least 24 units of course work in continuous residence.

MULTIPLICATION OF HIGHER DEGREES

The duplication of higher degrees is discouraged on the same basis as the duplication of the bachelor's degree. The holder of a master's degree in a given field received at another institution may not become a candidate for a degree in the same field in the University. Petitions for a master's degree in a different field will be considered on their merits.

† If the thesis is typewritten, both the original and first carbon must be on bond paper of one hundred per cent rag content. Onionskin paper is not acceptable. If the thesis is prepared by Ozalid process, the candidate is required to submit to the Dean of the Graduate Division the original copy on vellum and two Ozalid copies. Candidates for degrees in engineering are required to submit the original on vellum and three Ozalid copies.

COURSES OF INSTRUCTION OFFERED AT LOS ANGELES, FALL AND SPRING SEMESTERS, 1961-1962

The course offerings listed in this publication are subject to
change without notice

CLASSIFICATION AND NUMBERING

Courses are classified and numbered as follows:

Undergraduate Courses.—These are of two kinds, lower division and upper division.

A lower division course (numbered 1-99, or sometimes indicated by a letter if the subject is one usually given in high school) is open to freshmen and sophomores.

An upper division course (numbered 100-199) is advanced study in a field which has been pursued in the lower division, or elementary work in a subject of sufficient difficulty to require the maturity of upper division students. Courses in the 100 series may be offered in partial satisfaction of the requirements for the master's degree, if taken with the approval of the major department and when registered in graduate status.

Graduate courses (numbered 200-299) are open only to students accepted 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; adequate preparation will consist normally of the completion of at least 12 units of upper division work basic to the subject of the graduate course.

Professional teacher-training courses (numbered 300-399) are highly specialized courses dealing with methods of teaching, and are acceptable toward academic degrees only within the limitations prescribed by the various colleges or schools. Courses in this series do not yield credit toward a higher degree.

Professional courses (numbered 400-499), other than teacher-training courses, are acceptable toward academic degrees only within the limitations prescribed by the various colleges, schools, or Graduate Division, Southern Section.

University Extension courses bearing numbers prefixed by X, XB, XL, XR, XSB yield credit toward an academic degree. Such courses are rated, with respect to the general and specific requirements for the bachelor's 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.

ABBREVIATIONS

In the following list of courses, the credit value of each course in semester units is indicated by a number in parentheses after the title. A unit of registration is one hour of the student's time at the University, weekly, during one semester, in lecture or recitation, together with the time necessary in preparation therefor; or a longer time in laboratory or other exercises not requiring preparation. The session in which the course is given is shown by Roman

numerals: I for the fall semester, and II for the spring semester. A course given throughout the period September to June is designated Yr. The assignment of hours is made in the SCHEDULE OF CLASSES to be obtained at the time of registration.

Year Courses.—A course designated by a double number (for example, Economics 1A-1B) is continued through two successive semesters, ordinarily beginning in the fall semester. Each half of the course constitutes a semester's work. The first half is prerequisite to the second unless there is an explicit statement to the contrary. The instructor makes a final report on the student's work at the end of each semester. Unless otherwise noted, the student may take the first half only and receive final credit for it.

AFRICAN LANGUAGES

For courses in the African languages, see under Department of Near Eastern and African Languages.

AGRICULTURAL ENGINEERING

(Department Office, 2066 Engineering Building)

Russell L. Perry, M.E., *Professor of Agricultural Engineering (Vice-Chairman of the Department)*.

The Major.—The major is offered by the Colleges of Engineering, Los Angeles and Berkeley, with the senior year given only on the Davis campus. See the ANNOUNCEMENT OF THE COLLEGES OF ENGINEERING and the BULLETIN OF THE COLLEGE OF AGRICULTURE.

LOWER DIVISION COURSE

*1. Introduction to Agricultural Machinery, Structures and Processing.

(2) II.

Mr. Perry

Lecture, two hours. Field trips may be scheduled.

Development of mechanization of farming. Principles of operation of farm machinery and power equipment. Functional and structural requirements of farm buildings. Unit operations of processing farm products.

AGRICULTURE

Daniel G. Aldrich, Jr., Ph.D., *Professor of Soils, Berkeley (University Dean of Agriculture)*.

Sidney H. Cameron, Ph.D., *Professor of Horticultural Science (Dean of the College of Agriculture, Los Angeles)*.

Claude B. Hutchison, M.S., LL.D., D.Agr. (hon.c.); *Professor of Agriculture, Emeritus, Berkeley, and Dean, Emeritus*.

Robert W. Hodgson, M.S., *Professor of Subtropical Horticulture, Emeritus (Dean of the College of Agriculture, Emeritus)*.

Letters and Science List.—All undergraduate courses in botany; Floriculture and Ornamental Horticulture 146A-146B; Horticultural Science 111; Irrigation and Soil Science 101, 108, 110A; and Plant Pathology 120. For regulations governing this list, see page 2.

Upper Division Courses.—All upper division courses announced by the College presuppose at least junior standing, though sophomore students may take certain upper division courses. Juniors and seniors in colleges other than

* Not to be given, 1961-1962.

Agriculture may elect such courses in the College of Agriculture as they are qualified to pursue.

Curriculum.—Four majors in the plant science curriculum are offered on the Los Angeles campus; namely, botany, floriculture and ornamental horticulture, general horticulture, and subtropical horticulture (for requirements see sections under the College of Agriculture and the departments of Botany, Horticultural Science, and Floriculture and Ornamental Horticulture). For requirements of the major in botany in the College of Letters and Science see sections under the College of Letters and Science and the Department of Botany.

Preparation for Other Majors in the Plant Science Curriculum and for Other Curricula in the College of Agriculture.—See the BULLETIN OF THE COLLEGE OF AGRICULTURE and consult the appropriate advisers for students in agriculture.

Course Offerings.—On the Los Angeles campus courses are offered by the following departments of the College of Agriculture: Agricultural Engineering (see page 76). Botany (see page 115). Entomology (see page 221). Floriculture and Ornamental Horticulture (see page 222). Horticultural Science (see page 269). Irrigation and Soil Science (see page 274). Plant Pathology (see page 390).

AIR SCIENCE

(Department Office, 141 Building 1M)

John W. Oberdorf, B.S., Colonel, U. S. Air Force, *Professor of Air Science (Chairman of the Department)*.

Mervin M. Taylor, B.S., Major, U. S. Air Force, *Associate Professor of Air Science*.

Eugene A. Gray, B.S., Captain, U. S. Air Force, *Assistant Professor of Air Science*.

James B. Lamb, B.S., Captain, U. S. Air Force, *Assistant Professor of Air Science*.

Thomas J. Phillips, B.S., 1st Lieutenant, U. S. Air Force, *Assistant Professor of Air Science*.

Letters and Science List.—All undergraduate courses in this department up to a total of 12 units are included in the Letters and Science List of Courses.

NOTE: This in no way prejudices counting additional Department of Air Science courses up to the 12 units of non-Letters and Science credit accepted toward the degree. For regulations governing this list, see page 2.

College of Engineering.—6 units of lower division credit and 9 units of upper division credit for Department of Air Science courses are accepted toward a degree in the College of Engineering.

Air Force Reserve Officers' Training Corps

The mission of the Air Force R.O.T.C. is to develop in selected college students, through a program of instruction, those qualities of leadership and other attributes essential to their progressive advancements to positions of increasing responsibility as commissioned officers in the United States Air Force. The purpose and objectives of the program are:

1. To develop in cadets an understanding of the Air Force mission, organization, operations, problems and techniques.
2. To develop in cadets the ability to work with others on group activities and assume a leadership role when required.

3. To educate and prepare cadets to discharge the responsibilities required of them as Air Force officers.

Basic Course—Foundations of Air Power.

LOWER DIVISION COURSES

The lower division or basic courses in either Military or Air Science are prescribed for all first- and second-year undergraduate male students who are citizens of the United States, have not reached their twenty-fourth birthday, and are physically fit for military service. Students other than those required to take R.O.T.C. training may be informally enrolled in Air Force R.O.T.C. on application. The professor of Air Science may, at his discretion, allow credit for portions or all of the Air Science I and II courses for equivalent training obtained from active service in one of the Armed Forces. The Air Science basic course consists of one hour of Leadership and Command laboratory per week for the first two academic years and two hours of formal academic instruction per week during the second semester of the freshman year and the first semester of the sophomore year. The Air Force loans a formally enrolled basic student, without charge, all the required Air Science textbooks, instructional equipment, and regulation Air Force uniforms. Air Force equipment is to be returned in good condition on completion of the course and students are held liable for loss or damage. Informally enrolled Air Force R.O.T.C. students may be supplied Air Force texts and training equipment if available, but not a uniform.

1A. Introduction to A.F.R.O.T.C. (½) I. The Staff
Leadership laboratory consisting of introduction to drill and six classroom hours designed to acquaint the student with the U.S.A.F. and the A.F.R.O.T.C. program.

1B. Foundations of Air Power. (2½) II. The Staff
Elements and potentials of air power; air vehicles and principles of flight; military instrument of national security; professional opportunities in the U.S.A.F.; leadership laboratory.

21A. Fundamentals of Aerospace Weapon Systems. (2½) I. The Staff
Prerequisites: courses 1A and 1B.
Evolution of aerial warfare; elements of aerial warfare; employment of air forces; space operations; leadership laboratory.

21B. Air Force Orientation and Motivation. (½) II. The Staff
Prerequisites: courses 1A and 1B.
Leadership laboratory consisting of drill and command and six classroom hours designed to provide information and motivation toward an Air Force career.



In order to obtain credit for courses 1A and 21B, students must complete, in addition to Leadership and Command laboratory, a two- or three-semester hour college course approved by the Department of Air Science as contributing to the professional educational background of an Air Force officer. Related courses required of students enrolled in the Advanced Course will not be approved for credit in the basic course. University courses approved for credit in Air Science 1A and 21B are listed at the end of this section.

UPPER DIVISION COURSES

Students who will successfully complete, or are credited with, the basic course may apply for enrollment in the advanced course of Air Science during their sophomore year. Selection of students for the advanced course is de-

terminated by academic standing on the campus, aptitude for officer training as determined by written examination, interest as demonstrated while enrolled in the basic course, physical examination, and Air Force quota allocations received by the University. Quotas are allotted to the University according to Air Force requirements at the time cadets will be placed on active duty. Those selected will then be required to contract with the Air Force for the officer training as pilots or navigators, for technical positions, or for general service. Each cadet will serve in the position for which he is trained on entering active duty.

The advanced Air Science program comprises four hours of formal academic instruction and one hour of leadership laboratory per week for two academic years. One hour of the four academic hours is taught by the department. Three hours are selected standard University courses. The advanced course students organize and operate an Air Force training activity. Advanced students are expected to devote a part of their study time, in addition to scheduled instruction, to planning, administering, and managing the cadet activities. The advanced course of Air Force R.O.T.C. includes a summer camp of four weeks' duration, normally following the Air Science III academic year.

A student, to qualify for formal enrollment in advanced course, must:

1. Not have reached his twenty-fifth birthday at the time of admission and be able to graduate with four semesters of academic work, and must graduate in two academic years.

2. Make application to appear before a board of officers appointed for selecting students for the advanced course. This board normally meets during March and November of each year.

3. Have completed satisfactorily a written aptitude-test battery.

4. Successfully pass a physical examination prescribed for Air Force officers.

5. Execute a written agreement with the Air Force to complete the Air Force R.O.T.C. advanced courses, to attend the prescribed summer training, and to accept a commission as an Air Force officer, if offered.

Advanced Air Force R.O.T.C. formally enrolled cadets may be enlisted members of the Air Force Reserve, and as such must retain their reserve status during the advanced course. They may not hold a commission in any of the Armed Forces in any capacity.

Appointments must be physically sound, well-informed, and of robust constitution. Applicants desiring to enter flying training as pilots must have 20-20 vision, uncorrected, in each eye. Normal color perception is required. Applicants for training as navigators must have uncorrected distance vision of better than 20-50 bilaterally, correctible to 20-20 bilaterally, and near vision of 20-20 bilaterally, uncorrected.

Advanced-course appointments are available to outstanding students who are unable to qualify physically or do not desire flying training. These applicants must have at least distant-vision of 20-200 or better bilaterally, correctible to 20-20 in one eye and 20-30 in the other.

Formally enrolled advanced course Air Force R.O.T.C. students receive a government commutation of ration allowance amounting to \$81 per quarter during the two advanced academic years, in addition to a major portion of the required Air Science texts and training equipment. Students attending summer training are paid at the rate of \$78 a month, in addition to rations, quarters, and travel expenses.

JUNIOR YEAR

131A. Air Force Commander, His Staff and the Air Base. (1) I. The Staff
Prerequisite: completion of basic course. Concurrent enrollment in speech 1 or credit for successful completion of the course.

Air Force Commander, his staff, the air base staff study. Leadership laboratory.

131B. The Military Justice System. (1) II. The Staff

Prerequisite: completion of the basic course. Concurrent enrollment in Psychology 181 or credit for successful completion of the course.

An introduction to military law. Leadership laboratory.

SUMMER TRAINING

Summer training is required of all Air Force Advanced Course Cadets before commissioning. Attendance at a summer training unit is normally accomplished during the summer months between the junior and senior years of college.

Summer Training. (3) 232 hours of four weeks' duration.

Prerequisite: courses 131A and 131B. Summer Training Unit Staff

Processing in and out; physical training; individual weapons; familiarization flying; field exercises; United States Air Force Base experience.

This course is held at selected Air Force Bases.

SENIOR YEAR

141A. Weather and Navigation. (1) I. The Staff

Prerequisite: Courses 131A and 131B. Concurrent enrollment in Political Science 127 or credit for satisfactory completion of the course.

An introduction to flying-type Air Force duty. Leadership training.

Required only of flying training applicants.

141B. Briefing for Commissioned Service. (1) I. The Staff

Prerequisites: Courses 131A and 131B.

Briefing for commissioned service. Leadership laboratory. Concurrent enrollment in Geography 181 or credit for satisfactory completion of the course.

RELATED COURSES IN OTHER DEPARTMENTS

Speech 1. Introduction to Speech. (3)

Psychology 181. Applied Human Relations. (3)

Political Science 127. International Relations. (3)

Geography 181. Political Geography. (3)

These courses are required of all cadets before commissioning. It is recommended that they be taken during the junior and senior years in the order shown.

COURSES APPROVED FOR CREDIT IN AIR SCIENCE 1A AND 1B

Anthropology and Sociology—All lower division courses.

Astronomy—1, 2, and 4.

Bacteriology—1.

Botany—All lower division courses.

Business Administration—1A and 1B.

Chemistry—All lower division courses.

Economics—All lower division courses.

Engineering—4A, 4B, 4C, 4D, 15A and 15B.

English—46A, 46B.

French—1, 2, 3, 4.

Geography—All lower division courses.

Geology—2, 3.

German—1, 2, 3, 3PS, 4.

Scandinavian Languages—All lower division courses.

History—All lower division courses.

Italian—1, 2, 3, 4.

Journalism—2.

Mathematics—3A, 3B, 4A, 4B, 5A, 5B, 6A, 6B, 32A, 32B, 37.
 Meteorology—3, 4.
 Near Eastern Languages—All lower division courses.
 Oriental Languages—1A, 2B, 9A, 9B.
 Philosophy—6A, 6B, 20A, 20B, 25, 30, 31.
 Physics—All lower division courses except 41B.
 Political Science—All lower division courses.
 Psychology—All lower division courses.
 Slavic Languages—1, 2, 3A, 3B.
 Spanish and Portuguese—1, 2, 3, 4.
 Zoology—1A, 1B, 15, 25.

ANATOMY

(Department Office, 13-276 Medical Center)

W. Ross Adey, M.D., *Professor of Anatomy and Physiology.*
 John D. French, M.D., *Professor of Anatomy and Director of the Brain Research Institute.*
 John D. Green, M.D., *Professor of Anatomy.*
 H. W. Magoun, Ph.D., *Professor of Anatomy and Lecturer in Medical History.*
 C. Donald O'Malley, Ph.D., *Professor of Medical History.*
 Daniel C. Pease, Ph.D., *Professor of Anatomy.*
 Charles H. Sawyer, Ph.D., *Professor of Anatomy (Chairman of the Department).*
 Robert D. Tschirgi, M.D., Ph.D., *Professor of Anatomy and Physiology.*
 Carmine D. Clemente, Ph.D., *Associate Professor of Anatomy.*
 Earl Eldred, M.D., *Associate Professor of Anatomy.*
 Richard C. Greulich, Ph.D., *Associate Professor of Anatomy and Oral Biology.*
 Richard E. Ottoman, M.D., *Associate Professor of Radiology and Anatomy.*
 Arnold B. Scheibel, M.D., *Associate Professor of Anatomy and Psychiatry.*
 Charles A. Barraclough, Ph.D., *Assistant Professor of Anatomy.*
 Lawrence Kruger, Ph.D., *Assistant Professor of Anatomy.*
 David S. Maxwell, Ph.D., *Assistant Professor of Anatomy.*
 Richard W. Young, Ph.D., *Assistant Professor of Anatomy.*

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. Other degrees may be acceptable for those students specializing in medical illustration. 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 to full graduate status.

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 graduate student undertaking to enter the profession of anatomy should apply himself directly to attaining the Ph.D. degree. The Department of Anatomy offers the Master of Science degree only for the restricted purposes of individuals whose major interests lie in allied fields such as medical illustration, paramedical subjects, and the postgraduate programs of doctors of medicine.

A. Candidates for the master's degree may elect to follow either the thesis or examination plan. Under either plan a candidate may count no more

than 6 units of Anatomy 290 (research) toward the required credit-unit total.

B. Courses required.

1. Two of these courses:

Anatomy 101, Microscopic Anatomy (5 units)

Anatomy-Physiology 103, Basic Neurology (6)

Anatomy 207, Gross Anatomy (8)

2. One departmental seminar course.

C. A candidate taking the master's degree on the examination plan must pass a written examination upon: (1) general aspects of anatomy; (2) a restricted field of anatomy or kindred subject matter. These examinations cannot be substituted for the departmental examination required of the Ph.D. candidate.

D. No foreign language is required.

Requirements for the Doctor of Philosophy Degree

A. These courses are required of all doctoral candidates in anatomy:

Anatomy 101, Microscopic Anatomy (5 units)

Anatomy-Physiology 103, Basic Neurology (6)

Anatomy 207, Gross Anatomy (8)

Anatomy 290, Research

Physiology 101, Mammalian Physiology (8)

Participation in at least two different graduate seminar courses of the Department of Anatomy.

Courses selected by the student and his adviser as necessary to his program.

B. Further requirements:

1. A reading knowledge of (a) German and (b) French or Russian, unless it can be demonstrated that another language or other field of study substituted for one of the languages would be more valuable for the program.

2. Successful completion of oral qualifying examinations.

3. Presentation and defense of a thesis.

4. All doctoral candidates are expected to gain teaching experience by assisting in one of the major anatomy courses for a minimum of one semester.

5. The graduate student may upon option of the department be required to take English 106S (3 units), Advanced Composition for Majors in the Physical and Life Sciences.

UPPER DIVISION COURSES

101. Microscopic Anatomy. (5) I.

Mr. Pease, Mr. Green, Mr. Greulich, Mr. Kruger, Mr. Young

Prerequisite: admission to School of Medicine or consent of the instructor.

Microscopic study of the tissues and organs of the human body.

103. Basic Neurology. (3) II.

Mr. Magoun, Mr. Adey, Mr. Tschirgi, Mr. Scheibel

Prerequisite: admission to School of Medicine or consent of the instructor. Must be taken concurrently with Physiology 103.

Lectures, conferences, demonstrations, and laboratory procedures necessary to an understanding of the function of the human nervous system.

GRADUATE COURSES

207. Gross Anatomy. (8) I.

Mr. Sawyer, Mr. Eldred, Mr. Clemente, Mr. Barraclough, Mr. Maxwell

Prerequisite: consent of the instructor.

Lectures and dissection of the human body.

- 240. History of Medicine.** (1) II. Mr. O'Malley in charge
Survey of the development of scientific and medical thought from ancient times to the present.
- 241. History of the Clinical Sciences.** (1) II. Mr. O'Malley in charge
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.
- 250. History of the Biological Sciences.** (1) I, II. Mr. O'Malley in charge
Discussions of current outlook, methods, and ideas in the biological sciences in the light of the general history of these sciences.
- 251. Seminar in Microscopic Anatomy.** (1-2) I, II. Mr. Pease, Mr. Green
Prerequisite: consent of the instructor.
- 252. Seminar in Medical History.** (2) I, II. Mr. O'Malley
Prerequisite: ability to read at least one foreign language.
Bibliography and readings, class discussion and papers on selected topics in the history of medicine. Semester I, beginnings to 1600; Semester II, 1600 to present.
- 253. Seminar in Experimental Neurology.** (1-2) I, II. Mr. Magoun in charge
Prerequisite: consent of the instructor.
- 254. Research Seminar in Mental Health.** (1) I, II. The Staff
Prerequisite: Anatomy-Physiology 103 or the equivalent.
Interdisciplinary seminars by senior research workers and staff dealing with problems related to mental health.
- 255. Seminar in Endocrinology.** (1-2) I, II. Mr. Sawyer, Mr. Barraclough
Prerequisite: consent of the instructor.
- 256. Survey of the Basic Neurological Sciences.** (2) I, II. The Staff
Prerequisite: Anatomy-Physiology 103 or the equivalent.
Lectures and laboratory exercises dealing with the most recent advances in the study of the central and peripheral nervous system.
- 290. Research.** (1-6) I, II. The Staff

ANTHROPOLOGY AND SOCIOLOGY

(Department Office, 360 Haines Hall)

- Ralph L. Beals, Ph.D., *Professor of Anthropology and Sociology.*
Joseph B. Birdsell, Ph.D., *Professor of Anthropology.*
†Donald R. Cressey, Ph.D., *Professor of Sociology.*
†Walter R. Goldschmidt, Ph.D., *Professor of Anthropology and Sociology.*
Harry Hoiyer, Ph.D., *Professor of Anthropology.*
Svend Riemer, Ph.D., *Professor of Sociology.*
Ralph H. Turner, Ph.D., *Professor of Sociology and Anthropology.*
Constantine Panunzio, Ph.D., *Professor of Sociology, Emeritus.*
Eshref Shevki, Ph.D., *Professor of Sociology and Anthropology, Emeritus.*
†Wendell Bell, Ph.D., *Associate Professor of Sociology and Anthropology.*
Melville Dalton, Ph.D., *Associate Professor of Sociology.*
†Harold Garfinkel, Ph.D., *Associate Professor of Sociology.*
†William A. Lessa, Ph.D., *Associate Professor of Anthropology.*
Clement W. Meighan, Ph.D., *Associate Professor of Anthropology.*
Richard T. Morris, Ph.D., *Associate Professor of Sociology.*

† Absent on leave, 1961-1962.

William S. Robinson, Ph.D., *Associate Professor of Sociology and Anthropology.*

Melvin Seeman, Ph.D., *Associate Professor of Sociology.*

Johannes Wilbert, Ph.D., *Visiting Associate Professor of Anthropology.*

Charles R. Wright, Ph.D., *Associate Professor of Sociology.*

William O. Bright, Ph.D., *Assistant Professor of Anthropology.*

Pedro Carrasco, Ph.D., *Assistant Professor of Anthropology.*

Lindsey S. Churchill, Ph.D., *Assistant Professor of Sociology.*

†Oscar Grusky, Ph.D., *Assistant Professor of Sociology.*

†Joel M. Halpern, Ph.D., *Assistant Professor of Anthropology.*

*John T. Hitchcock, Ph.D., *Assistant Professor of Anthropology.*

John E. Horton, Ph.D., *Assistant Professor of Sociology.*

Raymond J. Murphy, Ph.D., *Assistant Professor of Sociology.*

Henry B. Nicholson, Ph.D., *Assistant Professor of Anthropology.*

*Wendell Oswalt, Ph.D., *Assistant Professor of Anthropology.*

Council S. Taylor, Ph.D., *Assistant Professor of Anthropology.*

———, *Assistant Professor of Sociology.*

———, *Instructor in Sociology.*

Jack H. Prost, Ph.D., *Acting Instructor in Anthropology.*

John Takeshita, M.A., *Acting Instructor in Sociology.*



Ruth Riemer Eilersieck, Ph.D., *Research Associate in Sociology.*

C. Wayne Gordon, Ph.D., *Associate Professor of Sociology in the School of Education.*

Leo G. Reeder, Ph.D., *Lecturer in Sociology in the School of Public Health.*

Roy T. Simmons, M.A., *Research Associate in Anthropology.*

Claude Warren, M.A., *Graduate Research Archaeologist and Lecturer in Anthropology.*

Letters and Science List.—All undergraduate courses in anthropology and sociology are included in the Letters and Science List of Courses. For regulations concerning this list, see page 2.

FIELD OF CONCENTRATION IN ANTHROPOLOGY

Preparation.—Required: Anthropology 1, 2, Sociology 1 or 101, 12, 18 or an equivalent approved by the Department; any 6 units chosen from Psychology 1A-1B, Geography 1-2 or 101, History 1A-1B, 8A-8B, Life Science 1A-1B, Zoology 1A-1B, 15, Geology 2, 3, Oriental Languages 32, 42, Spanish 42, 44; and fulfillment of the general requirements of the University and the College of Letters and Science.

The Field of Concentration.—Thirty upper division units distributed as follows:

1. Anthropology 102, 103, 125, and 9 additional units in anthropology. Linguistics 170 may be used to satisfy 3 units of this requirement.

2. Six units of upper division sociology. Any course except 101, 142, 185.

3. Six additional units chosen from one of the following fields: Sociology; Linguistics 170; Psychology 120, 126, 137, 139, 143, 145A-145B, 147; Folklore 101, 105, 190; any course in regional or cultural geography; Geology 107, 117; any upper division history course in regional history; any upper division course in Near Eastern languages or Oriental languages; any political science course in Group IV (comparative government); Paleontology 101, 111, 137; Zoology 100A-100B, 106.

Upper division courses in sociology will apply toward the requirement that at least 12 upper division units shall be outside a single department.

† Absent on leave, 1961-1962.

‡ Sabbatical leave in residence, fall semester, 1961-1962.

* In residence spring semester only, 1962.

The student must also meet the requirements of the University and the College of Letters and Science for graduation.

FIELD OF CONCENTRATION IN SOCIOLOGY

Preparation.—Required: Sociology 1 or 101, 12 and 18, Anthropology 1 and 2, Psychology 1A or 101, and fulfillment of the general requirements of the University and the College of Letters and Science. The student should consult a detailed statement of requirements and recommendations available at the departmental office. Each student must apply to the department for assignment to an adviser.

The Field of Concentration.—Thirty upper division units distributed as follows:

1. Eighteen upper division units in sociology, not including courses 101 and 142. Students planning graduate study or a professional career in sociology should include course 117.

2. Six units chosen from anthropology.

3. Six additional upper division units selected with advance written approval of the adviser from one of the following groups: anthropology; economics; folklore (may be combined with 3 units of history or 3 additional units of anthropology); geography; history; philosophy; political science; psychology.

Upper division courses in anthropology will apply toward the requirement that at least 12 upper division units shall be outside a single department.

Candidates for the General Secondary Credential.—The undergraduate requirements for a teaching major in social science may be fulfilled by completing the preparation as outlined in the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, and items 1 and 2 for the field of concentration in anthropology or items 1 and 2 for the field of concentration in sociology. Six upper division units in history selected with the approval of the adviser may be substituted for one of the lower division year courses in history and may also apply on the field of concentration.

Social Welfare.—Students whose primary interest is in social welfare may either fulfill the requirements of the field of concentration in sociology or of the curriculum in presocial welfare (see page 16). Students planning on graduate training in social welfare at this University should consult the ANNOUNCEMENT OF THE SCHOOL OF SOCIAL WELFARE.

Admission to Graduate Status

In addition to meeting the requirements of the Graduate Division, the student must have a bachelor's degree in anthropology or sociology or its equivalent. Students lacking this requirement will be required to make up subject deficiencies before proceeding with the advanced degree program. Upon admission to graduate status, students should consult the department regarding the orientation examinations in anthropology or sociology, which are given to provide a basis for preparing a plan of study. The examination in sociology is given in enrollment week or the first week of classes, while the anthropology orientation examination is given slightly later in the semester. These examinations are required of all graduate students, and they are used for advisory purposes only. Students will not be refused registration on the basis of the examinations.

Requirements for the Master's Degree

The Department will ordinarily follow Plan II but may accept Plan I in special cases. A syllabus giving the details of the general requirements and of the required examinations may be obtained from the departmental office.

Students are permitted to specialize in anthropology, or sociology, or a combination of both fields.

For the M.A. degree in anthropology, the student is required (1) to complete a reading examination in one foreign language, normally French or German, (2) to complete 24 units of course requirements in anthropology and sociology as a graduate student, at least 12 of which must be graduate courses, and (3) to pass a comprehensive examination.

For the M.A. degree in sociology, the student is required (1) to complete a reading examination in one foreign language, normally French or German, (2) to complete 24 units of course requirements in sociology and anthropology as a graduate student, at least 12 of which must be graduate courses (course 118 must be completed either in graduate or undergraduate status), (3) to pass a comprehensive examination, and (4) to complete a master's report.

For the joint degree in anthropology and sociology, the student is required (1) to complete a reading examination in one foreign language, normally French or German, (2) to complete 30 units in graduate status divided as follows: at least 6 graduate units in anthropology and 6 in sociology, 6 upper division or additional graduate units in the discipline in which the candidate received the A.B. degree, and 12 upper division units or additional graduate units in the other discipline, (3) to pass a comprehensive examination covering the basic aspects of the two disciplines. The foreign language requirement may be waived for students taking sociology 117 and 118 or 118 and 119. However, students planning to proceed to the Ph.D. degree should not elect this alternative, and those who subsequently decide to seek the Ph.D. will be required to pass one foreign language examination before pursuing further graduate study. This 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 ordinarily must possess the master's degree and must conform to the general requirements set by the Graduate Division for the Ph.D. degree. (The M.A. degree is sometimes waived in exceptional cases, especially in anthropology. Consult the syllabus available in the departmental office.)

Students may take the doctor's degree in anthropology, sociology, or in a combination of both fields. 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 candidate must demonstrate his competence as a research scholar and his ability to give instruction in his field.

Every candidate for the doctor's degree must take a written and oral qualifying examination. A syllabus defining the fields covered by these examinations may be secured from the office of the department.

Candidates for the doctor's degree are expected to spend a period in field work in the course of which they may collect data for the doctoral dissertation. Only in exceptional cases will students be exempted from this requirement.

The dissertation and the final oral examination 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.

ANTHROPOLOGY AND SOCIOLOGY

GRADUATE COURSE

274A-274B. Departmental Seminar. (1-1) Yr.

Prerequisite: consent of the instructor.

The Staff

ANTHROPOLOGY**LOWER DIVISION COURSES**

- 1. General Anthropology. (3) I, II.** The Staff
Human biology and physical anthropology; the relation of man and the animals; the origin and antiquity of man; fossil man; anthropometry; the criteria of race and racial classification; current racial theories; race problems.
- 2. General Anthropology. (3) I, II.** The Staff
Lecture, three hours; quiz, one hour. May be taken without Anthropology 1. The nature of culture; culture growth and history; a survey of the range of cultural phenomena, including material culture, social organization, religion, language, and other topics.
- 3. Introduction to Archaeology: Prehistory and Culture Growth. (3) I.** Mr. Meighan
Development of archaeology as an anthropological study; objectives and methods of modern archaeology; important archaeological discoveries throughout the world; contributions of archaeology toward understanding development of human culture.

UPPER DIVISION COURSES

Courses 1, 2, or upper division standing are prerequisite to all upper division courses, except as otherwise stated.

- 102. Ethnology. (3) I, II.** Mr. Carrasco, Mr. Hitchcock, Mr. Taylor
Major theories of culture; survey of principal culture types and their distribution; discussion of ethnological problems.
- 103. Culture History. (3) I.** Mr. Nicholson
The birth of civilization as revealed by archaeology, with concentration on developments in the Near East and Asia since the Neolithic period; theories of cultural development based on these discoveries.
- 104. Old World Archaeology. (3) II.** Mr. Meighan
Early archaeological cultures of the Old World: Asia, Africa, and Europe. Primarily concentrated on the period from the Upper Paleolithic to the Neolithic.
- 105. American Indians North of Mexico. (3) I, II.** Mr. Oswalt
An introductory survey of the Indians of North America, north of Mexico; origins, languages, civilizations, and history.
- 106. Archaeology of North America. (3) I, II.** Mr. Meighan, Mr. Nicholson
Prehistory of North American Indians; prehistoric culture areas; relations with historic Indians.
- 107. Indians of South America. (3) II.** Mr. Oswalt
An introductory survey of the Indians of South America; origins, languages, civilizations and history.
- 110. Language and Culture. (3) II.** Mr. Bright, Mr. Hoijer
The study of language as an aspect of culture; the relation of habitual thought and behavior to language; the problem of meaning.
- *123. Nomadic Societies. (3) II.** _____
Prerequisite: upper division standing and consent of the instructor.

* Not to be given, 1961-1962.

Pastoralism and tribal organization, with special reference to Central Asia and the Middle East. Relations of pastoral nomadic and peasant agricultural peoples. Conquest, sedentarization, and the transformation of organization.

124. Comparative Religion. (3) I, II. Mr. Lessa
The origins, elements, forms, and symbolism of religion; the role of religion in society.

125. Comparative Society. (3) I, II. Mr. Goldschmidt
Prerequisite: upper division standing and Anthropology 2, or Sociology 1 or 101, or consent of the instructor.

The analytical study of organized social life in societies of varying degrees of complexity; group formation and function; the relation of value systems to organized interpersonal behavior; systems of status; economic institutions and the role of property; the problem of control and authority in society.

126. Invention and Technology. (3) I. Mr. Meighan
Prerequisite: upper division standing.

A survey of the technologies of primitive peoples. Technological progress; the characteristics of invention; factors in the adoption of inventions.

127. Primitive Art. (3) II. Mr. Taylor
Development and change of conventions in the visual art forms of various nonliterate peoples; effects of craftsmanship, materials, and local culture on primitive art.

128. Kinship and Social Organization. (3) I, II. Mr. Carrasco, Mr. Hitchcock
Kinship systems in primitive society and their significance in the organization of social life. Theories of kinship, marriage regulations, and kinship role patterns.

129. Primitive Economies. (3) II. Mr. Carrasco
Economic life of primitive peoples and precapitalistic civilizations, with emphasis on the integration of the economy with technology and with social and political institutions.

137. Indians of California. (3) I, II. Mr. Bright, Mr. Oswalt
Native peoples of California; their origins, languages, and culture.

139. Peoples of Africa. (3) I. Mr. Taylor
The native cultures of Africa south of the Sahara; cultural history and diversity. Problems in cultural adjustment in modern Africa.

140. Ancient Civilizations of Middle America. (3) I. Mr. Nicholson
Pre-Spanish culture history of Middle America as revealed by archaeology and early Spanish writings: Aztecs, Toltecs, Maya and their predecessors, with emphasis on social and political systems, economic patterns, art, architecture, and intellectual achievements.

141. Indians of Modern Mexico. (3) I. Mr. Beals, Mr. Carrasco
The contemporary Indian groups in Mexico; the present cultures and their derivations; the problem of the mixed culture; Indian influences on modern Mexican culture.

142. Ancient Civilizations of Andean South America. (3) II. Mr. Nicholson
Pre-Spanish culture history of Andean South America as revealed by archaeology and early Spanish writings, with special emphasis on the Inca and their predecessors in Peru: social and political systems, economic patterns, religion, art, architecture, and intellectual achievements.

- 144. Arctic Cultures. (3) I.** Mr. Oswalt
A survey of arctic peoples, their prehistory, aboriginal life, and current cultural status.
- 145. Peoples of Eastern Europe and the Soviet Union. (3) II.** Mr. Halpern
Social organization, religion, class structure and other topics dealing with the various ethnic groups in Eastern Europe and the U.S.S.R. both past and present. Agricultural, nomadic and urban societies in this area, including central Asia, will be studied.
- *146. Peasant and Tribal Cultures of India. (3) I.** Mr. Hitchcock
Indian civilization as revealed in the archaeological record and in peasant and tribal communities. Main issues in contemporary research.
- 147. Peoples of the Pacific. (3) I, II.** Mr. Lessa
The aboriginal civilizations of Australia, Malaysia, Melanesia, Micronesia, and Polynesia in prehistoric and modern times; changes arising from European contact and colonization.
- 148. Cultures of Southeast Asia. (3) I.** Mr. Halpern
Survey of civilizations and tribal peoples of the area between India and China. Emphasis on cultural interrelationships in the framework of both historical and contemporary problems.
- 150. Physical Anthropology. (3) II.** Mr. Prost
Lecture, three hours; laboratory, two hours. Prerequisite: consent of the instructor.
A general survey of human osteology in terms of racial variations. The methodology of measurements and observations will require laboratory work.
- 151. The Genetics of Race. (4) I.** Mr. Birdsell
Prerequisite: Anthropology 1.
A general survey of the techniques and problems of racial classification. Emphasis is on the genetic approach; and the methods of modern classical genetics and population genetics are applied to human evolution.
- 155. Fossil Man and His Culture. (3) I.** Mr. Prost
The comparative anatomy of fossil man as examined against a framework of the available cultural remains and the ethnological aspects of the environment. The Paleolithic cultures of the Old World are reviewed as a part of the content.
- 162. History of Anthropology. (3) I, II.** Mr. Beals, Mr. Hitchcock
Prerequisite: Anthropology 1 and 2, and senior standing. Prerequisite to graduate work in the theory and method of anthropology.
A systematic survey of the development of anthropology as a scientific field, especially designed for majors in anthropology and sociology.
- 165. Acculturation and Applied Anthropology. (3) II.** Mr. Halpern
Prerequisite: upper division standing and Anthropology 2 or Sociology 1 or 101. Recommended: Anthropology 125.
The impact of Western civilization upon native societies; characteristic social and cultural adjustments to the impact; community disintegration and reintegration; anthropological problems in colonial and native administration.
- 195. Methods and Techniques of Field Archaeology. (2) II.** Mr. Meighan
Lecture, one hour; laboratory, three hours. During part of the semester

* Not to be given, 1961-1962.

Saturday field work is substituted. Prerequisite: consent of the instructor.

The organization of archaeological surveys and excavations, aims and working methods. Archaeological mapping, photography, and recording.

196. **Methods and Techniques of Archaeology.** (2) I. Mr. Meighan
Lecture, one hour; laboratory, three hours. Prerequisite: consent of the instructor.

The interpretation and presentation of archaeological finds. Chronological sequencing; stylistic and statistical analysis; documentation, publication. Techniques of preservation, restoration and illustration of artifacts.

199. **Special Studies in Anthropology.** (1-4) I, II. Mr. Carrasco in charge
Prerequisite: senior standing and consent of the instructor.

GRADUATE COURSES

250. **Theory and Method of Anthropology.** (2) I. The Staff

251A-251B. **Myth and Ritual.** (2-2) Yr. Mr. Lessa

256A-256B. **Social Anthropology.** (2-2) Yr. Mr. Goldschmidt

257A-257B. **Problems in Cultural Anthropology.** (2-2) Yr.
Mr. Beals, Mr. Carrasco, Mr. Hitchcock

265A-265B. **Cultures of Latin America.** (2-2) Yr. Mr. Beals, Mr. Carrasco

266A-266B. **African Cultures.** (2-2) Yr. Mr. Taylor

267A-267B. **Seminar in Directed Culture Change.** (2-2) Yr.
Mr. Halpern, Mr. Murphy

269A-269B. **Problems in Archaeology.** (2-2) Yr. Mr. Meighan

273A-273B. **Human Population Genetics.** (2-2) Yr. Mr. Birdsall

276. **Man and His Ecological Relations.** (2) II. Mr. Birdsall

299. **Research in Anthropology.** (1-6) I, II. Mr. Goldschmidt in charge

400. **Museum Methods.** (2) II. Mr. Meighan in charge
Lecture, one hour; laboratory, two hours. Prerequisite: consent of the instructor. Not counted toward the major in anthropology.

Care and recording of museum specimens; design and installation of museum exhibits; use of photographs, dioramas, and similar displays. Field trips to local museums and experience in processing and installation of museum exhibits.

RELATED COURSE IN ANOTHER DEPARTMENT (see page 285)

Linguistics and Philology 170. **Introduction to Linguistics.** (3) I. Mr. Hoijer

SOCIOLOGY

LOWER DIVISION COURSES

1. **Introductory Sociology.** (3) I, II. The Staff
Survey of the characteristics of social life, the processes of social interaction, and the tools of sociological investigation.

2. **American Social Problems.** (3) I, II. The Staff
Identification and analysis of contemporary social problems in the United States; an attempt to establish criteria by which the educated layman can judge the probable effectiveness of various schemes for social betterment.

12. Sociological Analysis. (3) I, II.

The Staff

Prerequisite: course 1 or 101. Required of majors.

Development and application of the basic tools and concepts of course 1 by means of an examination of selected monographic works.

18. Interpretation of Quantitative Data. (3) I, II.

The Staff

Prerequisite: course 1 or 101, or may be taken concurrently. Satisfies the statistics requirement for the major in sociology and anthropology.

The interpretation of statistical measures, tables, and graphs of the types most frequently encountered in sociological literature.

UPPER DIVISION COURSES

Course 1 or 101, or the equivalent, and upper division standing are prerequisite to all upper division courses in sociology unless otherwise stated.

101. Principles of Sociology. (3) I, II.

The Staff

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.

117. Introduction to Sociological Research Methods. (3) II. Mr. Robinson

A systematic treatment of the logic of qualitative 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 material.

118. Intermediate Quantitative Methods. (3) I. Mr. Churchill, Mr. Robinson

Prerequisite: courses 12 and 117, and Sociology 18, Statistics 1, or some other course in statistics approved by the department. Required for the M.A. in sociology.

A brief systematic course in the logic and practice of statistical methods of use to sociologists.

119. Advanced Quantitative Methods. (3) II.

Mr. Robinson

Prerequisite: course 118. Required for the Ph.D. in sociology.

A continuation and elaboration of course 118. Designed for students with professional objectives.

120. Social Disorganization. (3) I, II.

Mr. Grusky, Mr. Takeshita

An examination of various symptoms of social disorganization, such as individual maladjustment, and a general survey of the processes through which societies become disorganized.

122. Social Change. (3) II.

Mr. Murphy

A study of patterns of social change, resistance to change, and change-producing agencies and processes.

124. Collective Behavior. (3) I, II.

Mr. Seeman, Mr. Turner

Characteristics of crowds, mobs, publics, social movements, and revolutions, their relation to social unrest and their role in developing and changing social organization.

126. Culture and Personality. (3) I.

Mr. Turner

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.

128. Formal Organizations. (3) I.

Mr. Dalton, Mr. Grusky

Institutional analysis of administrative structures and voluntary associations; informal organization, ideology, bureaucracy, decision-making, and morale.

- 129. Mass Communications.** (3) I. Mr. Wright
 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.
- 131. Industry and Society.** (3) I, II. Mr. Dalton
 Prerequisite: upper division standing.
 A sociological analysis of industry. Attention given to factors in the status group awareness and occupational role-learning of workers and managers; interaction between technological social systems; the interplay between official and unofficial action, and between industry and community.
- 135. Social Class in America.** (3) I. Mr. Murphy
 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.
- 142. Marriage and the Family.** (3) I, II. Mr. Riemer
 Prerequisite: upper division standing. May not be counted toward the field of concentration in sociology. No credit will be given for this course if credit has been received for Sociology 162.
 The marriage-family system; development, modern functions, characteristics, and maladjustments.
- 143. Urban Sociology.** (3) I, II. Mr. Riemer, Mr. Wright
 Urban and rural cultures; the characteristics of cities in Western civilization, with emphasis on the American metropolis.
- 144. Rural Society.** (3) II. _____
 The characteristics of rural social systems in contrast to urban; the nature of folk societies; development of major agricultural traditions in America, with emphasis upon the effects of industrialization of rural life; problems in policy and administration of agriculture in modern America.
- 145. Community and Ecology.** (3) I. Mr. Bell
 Comparative studies of community structure and organization. Application of the ecologic, sociometric and similar techniques to community research.
- 147. Social Aspects of Housing and City Planning.** (3) II. Mr. Riemer
 Prerequisite: course 143.
 Implications for family and urban social relationships of housing floor plans and plans for neighborhoods and cities.
- 150. Latin-American Societies.** (3) II. Mr. Beals
 Prerequisite: upper division standing.
 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.
- 161. Group Processes.** (3) I. Mr. Churchill, Mr. Morris
 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.
- 162. Process and Socialization in the Family.** (3) I. Mr. Turner
 No credit will be given for this course if credit has been received for Sociology 142.

Examination of the processes of interaction, decision-making, role differentiation, conflict, integration, and socialization within the family and their interrelations with society.

166. Population and Society in the Middle East. (3) I. Mr. Shevky

Prerequisite: upper division standing and consent of instructor.

A survey of the Middle Eastern societies; their historic and environmental bases; the contemporary demographic and cultural situation.

167. Comparative Sociology of the Middle East. (3) II. _____

Prerequisite: upper division standing and consent of instructor.

A review of the unity of Middle Eastern societies in Islam and their diversity exemplified by such nomadic peoples as the Bedouin, countries in process of rapid modernization such as Turkey and Israel, colonial situations as in Algeria and Morocco, and underdeveloped areas as Iran and the Arabian countries.

170. Backgrounds of Sociological Thought. (3) I. Mr. Dalton

Survey of attempts, from early literate societies to the twentieth century to understand the nature of man and society; the social origins of this intellectual background; the course of these ideas in the development of sociological theory.

171. Development of Sociological Theory. (3) I. Mr. Horton, Mr. Morris

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.

172. Contemporary Sociological Theory. (3) II. Mr. Morris

A critical examination of significant theoretical formulations, 1920 to the present; an analysis of the relation between theoretical development and current research emphases.

180. Sociology of Education. (3) I, II. Mr. Gordon

(Same as Education 108.)

Studies 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, formal and informal groups, school culture, roles of teachers, students, and administrators.

181. Sociopathic Behavior. (3) I. Mr. Garfinkel

Prerequisite: course 120.

Various types of sociopathic behavior analyzed from the standpoint of social isolation and social control.

182. Criminology. (3) I. Mr. Cressey

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.

183. Social Control. (3) I. Mr. Grusky

Theories of social control; consideration of the agencies and means involved in the control of social deviation.

184. Control of Crime. (3) II. Mr. Cressey

Theories of punishment; methods of dealing with convicts; social organization of police, courts, prisons, probation, and parole.

185. The Field of Social Welfare. (3) II. Mr. Riemer

Prerequisite: course 120.

A sociological analysis of social work as an institution. Attention given to agency organization and functions.

186. Population Problems. (3) I. Mr. Takeshita

Implications for social organization and social policy of population size and composition, birth and death rates. Consideration of social problems related to population increase, population redistribution, and other trends.

187. Political Sociology. (3) II. Mr. Bell

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.

189. Ethnic and Status Groups. (3) II. Mr. Seeman

A study in social stratification; the statuses of the chief minorities in the continental United States with comparisons drawn from Jamaica, Hawaii, and other areas; the development, operation, and effects of such policies as selective immigration, assimilationism, ethnic pluralism, and racism.

190. American Ethnic Problems. (3) II. _____

A topical study, especially of Southern California. The characteristics of the "visible" ethnic groups, e.g., Japanese, Mexican, and Negro; their organization, acculturation, and differentiation. The operation of segregation, discrimination, and programs of counteraction.

199. Special Studies in Sociology. (1-4) I, II. Mr. Bell in charge

Prerequisite: senior standing and consent of the instructor.

GRADUATE COURSES

214. The Measurement of Sociological Variables. (2) II. _____

Prerequisite: courses 117 and 118.

Theory and technique of measurement in sociology. Construction, application, and interpretation of measurement techniques, especially the forms of scaling.

216. Questionnaire and Schedule Construction. (2) I. Mr. Wright

Prerequisite: graduate standing and consent of the instructor.

Procedures, methods, and problems in the collection of data by means of interview and questionnaire.

217. Interviewing and Interviewer Training. (2) I. Mr. Morris

Prerequisite: graduate standing and consent of the instructor.

Problems and methods of sociological interviewing; development of interview skills; the selection and training of interviewers; the administration of interview studies.

218. Sample Survey Methods in Sociological Research. (2) I. Mr. Robinson

Prerequisite: courses 117 and 118.

Principles and procedures of the sample survey from design through administration and analysis; relation of the survey to other methods of data collection; sampling procedures, practice in punch-card processing of actual surveys.

219. Factor Analysis as a Sociological Research Tool. (2) I. Mr. Robinson

Prerequisite: courses 117 and 118.

The principles of factor analysis and its application to sociological problems; use of traditional R-technique in analysis of complexes of statistical variables and in testing conceptual hypotheses in sociology; Q-technique and the determination of types; recent developments.

224. **Problems in Social Psychology.** (2) II. Mr. Grusky
226. **Leadership and Social Structure.** (2) I. Mr. Bell
 A comparative analysis of types of leadership in different social structures with particular attention to the recruitment and career patterns of leaders.
227. **The Sociology of Knowledge.** (2) I. Mr. Horton
229. **Selected Problems in Communications.** (2) II. Mr. Wright
236. **Social Change in the Middle East.** (2) I. _____
237. **Social Stratification in the Middle East.** (2) II. _____
250. **Methodological Problems.** (2) I. Mr. Seeman
251. **Social Maladjustment.** (2) II. Mr. Garfinkel
252. **Criminology.** (2) I. Mr. Cressey
253. **Quantitative Methods in Sociology.** (2) II. Mr. Robinson
254. **Penology.** (2) II. Mr. Cressey
- 255A-255B. **Systematic Sociological Theory.** (2-2) Yr. Mr. Morris
- *256A-256B. **Demography.** (2-2) Yr. _____
257. **Sociology of the Arts.** (2) II. Mr. Horton, Mr. Murphy, Mr. Taylor
- *258. **Marriage and the Family.** (2) II. Mr. Riemer
260. **Industry and Society.** (2) II. Mr. Dalton
- 261A*-261B. **Ethnic Minorities.** (2-2) Yr. Mr. Seeman
262. **Selected Problems in Urban Sociology.** (2) II. Mr. Bell
263. **Social Stratification.** (2) II. Mr. Morris
264. **Professions in the American Society.** (2) II. Mr. Murphy
269. **Collective Behavior.** (2) II. Mr. Turner
270. **Selected Problems in Socialization.** (2) I. Mr. Turner
- 299A. **Research in Sociology for M.A. Degree Candidates.** (1-3) I, II.
 Mr. Seeman in charge
- 299B. **Research in Sociology for Ph.D. Candidates.** (1-6) I, II.
 Mr. Turner in charge

ARABIC

For courses in Arabic, see under Department of Near Eastern and African Languages

ARCHAEOLOGY

For courses in archaeology, see under Departments of Anthropology and Sociology, Classics, and Oriental Languages.

* Not to be given, 1961-1962.

ARMENIAN

For courses in Armenian, see under Department of Near Eastern and African Languages.

ART

(Department Office, 1118 Dickson Art Center)

- Laura F. Andreson, M.A., *Professor of Art.*
 J. LeRoy Davidson, Ph.D., *Professor of Art.*
 Annita Delano, *Professor of Art.*
 Henry Dreyfuss, *Visiting Professor of Art.*
 Lester D. Longman, Ph.D., L.H.D., *Professor of Art (Chairman of the Department).*
 †Carl D. Sheppard, Jr., Ph.D., *Professor of Art.*
 Frederick S. Wight, M.A., *Professor of Art and Director of Art Galleries.*
 Robert S. Hilpert, M.A., *Professor of Art, Emeritus.*
 Louise Pinkney Sooy, *Professor of Art, Emeritus.*
 Karl E. With, Ph.D., *Professor of Art, Emeritus.*
 S. Macdonald Wright, *Professor of Art, Emeritus.*
 *Karl M. Birkmeyer, Ph.D., *Associate Professor of Art.*
 William J. Brice, *Associate Professor of Art.*
 Dorothy W. Brown, A.B., *Associate Professor of Art.*
 Warren G. Carter, A.B., *Associate Professor of Art.*
 Archine V. Fetty, M.A., *Associate Professor of Art.*
 ‡Thomas Jennings, M.A., *Associate Professor of Art.*
 John Paul Jones, M.F.A., *Associate Professor of Art.*
 Gordon M. Nunes, M.A., *Associate Professor of Art.*
 Josephine P. Reys, M.A., *Associate Professor of Art.*
 Jan Stussy, M.F.A., *Associate Professor of Art.*
 Helen Clark Chandler, *Associate Professor of Fine Arts, Emeritus.*
 Clara Bartram Humphreys, M.A., *Associate Professor of Fine Arts, Emeritus.*
 Samuel Amato, B.F.A., *Assistant Professor of Art.*
 Oliver W. Andrews, A.B., *Assistant Professor of Art.*
 E. Maurice Bloch, Ph.D., *Assistant Professor and Curator of Prints and Drawings.*
 Jack B. Carter, M.A., *Assistant Professor of Art.*
 Donald W. Chipperfield, M.A., *Assistant Professor of Art.*
 Elliot Elgart, M.F.A., *Assistant Professor of Art.*
 *Alice M. Everett, M.A., *Assistant Professor of Art.*
 J. Bernard Kester, M.A., *Assistant Professor of Art.*
 David B. Manzella, Ed.D., *Assistant Professor of Art.*
 †Jack D. Stoops, Ed.D., *Assistant Professor of Art.*
 Madeleine Boyce Sunkees, B.E., *Assistant Professor of Art.*
 Jerrold Ziff, Ph.D., *Assistant Professor of Art.*
 Robert F. Heinecken, M.A., *Instructor in Art.*
 James N. Trissel, M.A., *Instructor in Art.*
 Ralph C. Altman, *Lecturer in Art.*
 Mary A. Holmes, M.A., *Lecturer in Art.*
 Anne C. B. McPhail, M.S., *Lecturer in Art.*
 Carlo Pedretti, *Lecturer in Art.*
 Simon D. Steiner, M.A., *Lecturer in Art.*
 Phyllis M. Beacom, M.A., *Associate in Art.*

† Absent on leave, 1961-1962.

‡ Sabbatical leave in residence, fall semester, 1961-1962.

‡ In residence, fall semester only, 1961-1962.

* In residence, spring semester only, 1962.

- Christian Choate, A.B., *Associate in Art.*
 James A. Cross, A.B., *Associate in Art.*
 John E. Demaree, B.S., *Associate in Art.*
 Greta M. Grossman, *Associate in Art.*
 Jack M. Hooper, M.A., *Associate in Art.*
 Bramwell Lieber, *Associate in Art.*
 Paul Maguire, M.F.A., *Associate in Art.*
 ———, *Associate in Art.*
 Gerald Samuelson, M.A., *Associate in Art.*
 ———, *Associate in Art.*



Charles F. Bridgman, M.S., *Chief of Visual Aids, Medical Center.*
 Ted Bloodhart, *Principal Medical Illustrator, Medical Center Visual Aids.*

Letters and Science List.—The following courses are included in the Letters and Science List of Courses (for regulations governing this list, see page 2): 1A, 1B, 5, 7, 100A, 100B, 101, 103, 104, 105, 107, 108, 109, 110A, 110B, 110C, 111A, 111B, 111C, 112A, 112B, 113A, 113B, 113C, 113D, 114, 115A, 115B, 115C, 115D, 116A, 116B, 116C, 117A, 117B, 118A, 118B, 119A, 119B, 148, 149A-B-C-D, and 199. Students in the College of Letters and Science may take as many units of art history courses as their program allows, and they may take twelve units of studio courses toward the A.B. degree.

College of Fine Arts

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 the four areas: (1) art history, (2) history and studio, (3) pictorial arts, and (4) design. For information concerning teaching credentials consult the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES.

The department 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.

1. Art History.

Preparation for the Major.—Courses 1A and 1B.

The Major.—A minimum of 36 units, including at least 18 units in period courses 101 to 109, a minimum of six units from courses 110 to 117B, and six units in courses 118A, 118B, and 127. The remaining 6 units may be elected from 101 to 117B. Related courses in anthropology, classics, English literature, foreign languages and literature, history, philosophy, music, and theater arts are recommended.

Preparation for the Following Three Majors.—Eighteen units of lower division art courses, including 1A, 1B, 10A, 10B, 20A, 30A, and 4 additional units selected from courses 20B, 25, 30B, and 30C. Prospective Pictorial Arts majors are advised to elect courses 20B and 25 and prospective design majors courses 30B and 30C.

2. History and Studio.

The Major.—A minimum of 36 units including at least 20 units of history of art selected in consultation with the departmental adviser from courses 101 to 117B; theory and criticism courses 118A, 118B, 4 units; and 12 units of studio courses selected from courses 120 to 195, including 2 units of 127 and 2 units from courses 150 to 195.

3. Pictorial Arts.

The Major.—A minimum of 36 units, including at least 18 units of pictorial arts, selected from courses 120 to 147, including 2 units each of 128, 130, 140,

and 145; 6 units of history of art selected from courses 101 to 117B; theory and criticism 118A-118B, 4 units; and 8 units of art electives.

4. Design.

The Major.—A minimum of 36 units, including at least 18 units of design courses selected from courses 119A, 119B and 150 to 195; 6 units of history of art from courses 101 to 117B; theory and criticism courses 118A-118B, 4 units; 2 units of 127; 6 units of art electives.

Art Education.—Prospective high school teachers should register for course 370 and major in design or pictorial arts. In order to obtain a certificate they must elect in lower and upper division courses at least 10 units in pictorial arts, and 12 units in design of which 4 must be in courses numbered from 187A to 195. Prospective elementary teachers who do not major in art should register for courses 7 and 330.

Graduate Division

Admission to Graduate Status.—In addition to meeting the requirements of the Graduate Division, the student must have a bachelor's degree or its equivalent, and should have a major in art and a field of specialization: history and theory of art, pictorial arts, design, or art education. Students whose 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. For more detailed information, write to the Chairman of the Department of Art and enclose a transcript or summary of academic record.

Requirements for the Master's Degree.—For the general University requirements, see page 69. The Department of Art offers graduate study in four areas of specialization: (1) History and Theory of Art, (2) Pictorial Arts, (3) Design, (4) Art Education. When applying for admission, it is advisable to designate the major field of specialization and, whenever possible, present examples of previous work in the field.

Pictorial Arts or Design.—The master's program with this specialization follows Plan II, a minimum of 24 units of graduate work, including 4 units of an advanced project in the field of specialization. The final comprehensive examination is oral. Those majoring in pictorial arts may stress painting, sculpture, or printmaking in their advanced project and are expected to have a good general knowledge of the history and theory of art. Those majoring in design may stress graphic, industrial, interior, costume, ceramic, or metal design, but the ideal degree candidate is the comprehensive designer rather than the specialist. The specific program for the Master of Arts degree is worked out under the guidance of a staff member in the area of the advanced project.

Art Education.—The master's program with this specialization follows Plan II, a minimum of 24 units of graduate work, including 4 units of an advanced project in art education. The final comprehensive examination is oral. Students must meet a quality standard in a final exhibition of studio work. The degree program consists of a combination of research, lecture and studio courses planned under the guidance of a staff member in art education.

Art History.—The master's program with this specialization follows Plan I, a minimum of 20 semester units and a thesis. The program for the degree is worked out under the guidance of the adviser in the area of specialization. Knowledge of at least one approved foreign language is required; this requirement must be fulfilled by the end of the second semester. A final written examination covers four of the following fields, two of them major and two minor: (1) Primitive and Pre-Classical Art, (2) Classical Art, (3) Medieval Art, (4) Renaissance Art, (5) Baroque Art, (6) Art of the Eighteenth and Nineteenth Centuries, (7) Modern Art, (8) American Art, (9 and 10) Oriental Art,

(11) Theory of Art. Following submission of the thesis the candidate must pass an oral examination.

Doctor of Philosophy Degree in Art History.—In addition to the general University regulations for the Doctor of Philosophy degree, including the dissertation and final examination (see page 71 of this bulletin), a candidate must satisfy the following departmental requirements:

1. Foreign Language. A reading knowledge of French and German is requisite for all candidates except those specializing in Oriental art who may substitute an Oriental language for one of the above. The requirements for the first language should be fulfilled by the end of the first year of graduate work, the requirement for the second language at the end of the second year. Both language requirements must be satisfied before advancement to candidacy for the degree.

2. Qualifying Examination. Preparation for the qualifying examination, which advances the student to candidacy, will include a minimum of four graduate seminars and a term paper or master's thesis demonstrating scholarly competence. The examination is both written and oral and may be combined with the master's examinations if this intention is declared in advance.

LOWER DIVISION COURSES

1A. History of Art. (3) I. Mr. Sheppard
Painting, sculpture, and architecture from prehistoric times to the end of the Middle Ages.

1B. History of Art. (3) II. Mr. Sheppard
Painting, sculpture, and architecture from the Renaissance to the present.

5. Fundamentals of Art. (2) I, II. Miss Holmes
(Former number, 5A.)

A lecture course for the general student in the principles of art and art criticism. Study of terminology and criteria of value. Illustrated with examples of modern and historic painting, sculpture, architecture, and design.

7. Introduction to Art. (3) I, II. Mr. Trissel
(Former number, 5B.)

Lecture one hour; studio six hours. Credit not applicable on the art major. A course for the general student in the appreciation of art, through studies in drawing, painting, and sculpture, and lectures on aesthetic principles and their application to daily life.

10A. Drawing. (2) I, II. Mr. Brice, Mr. Elgart, Mr. Stussy
(Former number, 2A.)
Beginning course in drawing.

10B. Drawing. (2) I, II. Mr. Nunes
(Former number, 4A.)
Prerequisite: course 10A, 20A, or consent of the instructor.
Beginning course in figure drawing.

20A. Painting. (2) I, II. Mrs. Brown, Miss Delano
(Former number, 2B.)
Prerequisite: course 10A or consent of the instructor.
Beginning course in painting.

20B. Painting. (2) I, II. Miss Delano
(Former number, 3.)
Prerequisite: courses 10A, 10B, and 20A or consent of the instructor.
Composition and color.

- 25. Sculpture.** (2) I, II. Mr. Andrews
Modeling and basic sculptural form.
- 30A. Design.** (2) I, II. Mr. Kester, Mr. Samuelson
(Former number, 6A.)
Elements of design in the visual arts; theory and studio projects.
- 30B. Design.** (2) I, II. Mr. Samuelson, Mrs. Sunkees
(Former number, 6B.)
Prerequisite: course 30A.
Two-dimensional studies of line, value, and color.
- 30C. Design.** (2) I, II. Mr. J. Carter, Mrs. Beacom
(Former number, 7A.)
Prerequisite: course 30A.
Three-dimensional studies in materials, form, and structure.

RELATED COURSE IN ANOTHER DEPARTMENT

- Integrated Arts 1A-1B. Man's Creative Experience in the Arts.** (3-3) Yr.
Mr. Davidson, Mr. With

UPPER DIVISION COURSES

I. History and Theory of Art

- 100A. History of Art.** (2) I. Mr. Ziff
(Former number, 118A.)
Not open to students having credit for 1A. Does not count toward the major in art. Painting, sculpture, and architecture from prehistoric times to the end of the Middle Ages.
- 100B. History of Art.** (2) II. Mr. Ziff
(Former number, 118B.)
Not open to students having credit for 1B. Does not count toward the major in art. Painting, sculpture, and architecture from the Renaissance to the present.
- 101. Primitive and Pre-Classical Art.** (3) I. Mr. Altman
Not open to students who have taken courses formerly numbered 101A, 101B, or 101C.
Prehistoric art; the primitive arts of Africa, Oceania, and America; Egyptian and Mesopotamian art and architecture.
- 103. Oriental Art.** (3) I. Mr. Davidson
(Former number, 112.)
Indian, Indonesian, Chinese, and Japanese art and architecture.
- 104. Medieval Art.** (3) II. Mr. Sheppard
Not open to students who have taken courses formerly numbered 103A or 103B.
Art and architecture from the Early Christian through the Gothic period.
- 105. Italian Renaissance Art.** (3) I. Mr. Pedretti
Not open to students who have taken courses formerly numbered 104A or 104B.
Art and architecture from 1300 to 1600 A.D.
- 106. Northern Renaissance Art.** (2) II. Mr. Birkmeyer
Not open to students who have taken courses formerly numbered 105A or 105B.

Art and architecture in the Netherlands, France, and Germany from 1400 to 1600 A.D.

- 107. Baroque Art. (3) I.** Mr. Bloch
Not open to students who have taken courses formerly numbered 106A or 106B.
Seventeenth-century art and architecture in Italy, Spain, Flanders, Holland, France, Germany, Austria, and England.
- 108. European Art from 1700 to 1900. (2) II.** Mr. Ziff
Not open to students who have taken courses formerly numbered 107 or 108.
Art and architecture in France, England, Spain, Italy, and Central Europe.
- 109. Modern European Art. (2) I.** Mr. Wight
(Number prior to 1960-1961, 108B.)
Art and architecture of the twentieth century.
- 110A. Prehistoric and Primitive Art. (3) I.** Mr. Altman
(Former number, 101A.)
Prerequisite 101 or consent of instructor.
- 110B. Pre-Columbian Art. (3) II.** Mr. Altman
(Former number, 101C.)
Prerequisite: course 101 or consent of the instructor.
The prehistoric arts of the Americas.
- 110C. Art of the Ancient Near East. (3) II.** Mr. Altman
(Former number, 101B.)
Prerequisite: course 101 or consent of the instructor.
Art and architecture of Egypt and Mesopotamia.
- 111A. Indian Art. (3) I.** Mr. Davidson
(Former number, 113A.)
Prerequisite: course 103 or consent of the instructor.
Art and architecture of India and Indonesia from prehistoric times to the present.
- 111B. Chinese Art. (3) II.** Mr. Davidson
(Former number, 113B.)
Prerequisite: course 103 or consent of the instructor.
Art and architecture of China from prehistoric times to the present.
- 111C. Japanese Art. (2) II.** Mr. Davidson
(Former number, 113C.)
Prerequisite: course 103 or consent of the instructor.
Art and architecture of Japan from prehistoric times to the present.
- 112A. Art of the Early Middle Ages. (2) I.** Mr. Sheppard
(Former number, 103A.)
Prerequisite: course 104 or consent of the instructor.
Art and architecture before 1000 A.D.
- 112B. Romanesque Art. (2) I.** Mr. Sheppard
Prerequisite: course 104 or consent of the instructor.
Art and architecture of Western Europe in the eleventh and twelfth centuries.
- 113A. Italian Art of the Trecento. (2) I.** Mr. Birkmeyer
Prerequisite: course 105 or consent of the instructor.
Art and architecture of the fourteenth century.

- 113B. Italian Art of the Early Quattrocento.** (2) II. Mr. Birkmeyer
Prerequisite: course 105 or consent of the instructor.
Art and architecture of the early fifteenth century.
- 113C. Leonardo da Vinci.** (3) I. Mr. Pedretti
Prerequisite: course 105 or consent of the instructor.
Art, theory of art, science, and technology of Leonardo da Vinci; predecessors, pupils, and followers; the School of Milan.
- 113D. Michelangelo and High Renaissance Architecture.** (3) II. Mr. Pedretti
Prerequisite: course 105 or consent of the instructor.
Architecture, sculpture, and painting of Michelangelo; architecture of the early sixteenth century.
- 114. Art of the Netherlands in the Fifteenth Century.** (3) I. Mr. Birkmeyer
(Former number, 105A.)
Prerequisite: course 106 or consent of the instructor.
- 115A. Rococo Art.** (2) I. Mr. Ziff
(Former number, 107.)
Prerequisite: course 108 or consent of the instructor.
Art and architecture from 1700 to 1770 in France, Germany, and Italy.
- 115B. Romantic Art.** (3) II. Mr. Ziff
Prerequisite: course 108 or consent of the instructor.
Art and architecture from 1770 to 1850 in England, France, and Germany.
- 115C. Impressionism and Post-Impressionism.** (2) I. Mr. Ziff
Prerequisite: course 108 or consent of the instructor.
French painting from 1860 to 1900.
- 115D. Major Artists of the Twentieth Century.** (2) II. Mr. Wight
Prerequisite: course 109 or consent of the instructor.
- 116A. American Art.** (2) I. Mr. Bloch
(Former number, 110A.)
Painting and sculpture from the Colonial period to 1900 in the United States.
- 116B. American Art.** (2) II. Mr. Bloch
(Former number, 110B.)
Painting and sculpture of the twentieth century in the United States.
- 116C. American Architecture.** (2) I. Mr. Bloch
From the Colonial period to the present in the United States.
- 117A. History of Prints and Drawings.** (3) II. Mr. Bloch
(Former number, 115.)
Development of techniques and history of style and expression from the late Middle Ages to the present.
- 117B. Research Methods in Art History.** (2) I. Mr. Sheppard
(Former number, 117.)
- 118A. Theory and Criticism of Art.** (2) I. Mr. Longman
(Number prior to 1960-1961, 114A.)
Lecture, two hours; discussion, one hour. Prerequisite: courses 1A-1B or 100A-100B or consent of the instructor.
Theoretical foundations of criticism. Analysis of works of historic and modern art. Elements of psychology and sociology of art.

- 118B. Theory and Criticism of Art.** (2) II. Mr. Longman
(Number prior to 1960-1961, 114B.)
Lecture, two hours; discussion, one hour. Prerequisite: courses 1A-1B or 100A-100B or consent of the instructor. It is recommended that 118A be taken before 118B.
Definitions of terms and semantics of critical terminology. Relation of aesthetic meaning to reality and truth. Studies in the criticism of modern art.
- 119A. History of Design.** (2) I, II. Mrs. Sunkees
History of interior design, furniture, and objects of utility.
- 119B. History of Design.** (2) I, II. Miss Everett
History of Western and Oriental costume.

RELATED COURSES IN OTHER DEPARTMENTS

- Classics 102. Classical Art.** (2) I. Mr. Clement
- Classics 151A. The Art of the Aegean Bronze Age.** (2) I. Mr. Clement
- Classics 151B. Greek and Roman Architecture.** (2) II. Mr. Clement
- Classics 151C. Greek and Roman Sculpture.** (2) I. Mr. Clement
- Classics 151D. Greek and Roman Painting.** (2) II. Mr. Clement
- Anthropology 127. Primitive Art.** (3) II. Mr. Taylor
- Oriental Languages 170. Archaeology of China.** (2) II. Mr. Rudolph
- Philosophy 136. Philosophy of Art.** (3) II. Mr. Kaplan

II. Pictorial Arts

Courses 120 to 147 are open to repeated registration, upon recommendation of the student's adviser, up to the maximum credit indicated in each course.

- 120. Life Drawing.** (2-4) I, II. Mr. Amato, Mr. Elgart, Mr. Stussy
(Number prior to 1960-1961, 128A-128B.)
Prerequisite: 10A, 10B, or consent of the instructor. Maximum credit, 6 units.
Studies from the model.
- 125. Drawing.** (2-4) I, II. Mr. Brice
(Number prior to 1960-1961, 127A-127B.)
Prerequisite: 10A, 10B, and 2 units of 120 or consent of the instructor.
Maximum credit, 6 units.
Drawing as a terminal medium of artistic expression.
- 127. Drawing Laboratory.** (2) I, II. Miss Holmes, Mr. Trissell
May be repeated once for credit. Not open to students having credit for course 128.
Studies in style, expression, and aesthetic quality based on historic precedent.
- 128. Advanced Drawing Laboratory.** (2-4) I, II. Mr. Brice
Prerequisite: courses 10A, 10B, and 2 units of 120 or consent of the instructor. Maximum credit, 4 units. Primarily for majors in pictorial arts.
Stylistic analysis and drawing based on historic precedent.

130. Painting. (2-4) I, II.

Mr. Amato, Mrs. Brown, Miss Delano, Mr. Elgart, Mr. Hooper
(Number prior to 1960-1961, 126, 130A, 134A-134B, 135).

Prerequisite: courses 10A, 20A, or consent of the instructor. Maximum credit, 8 units.

Any medium or subject. Composition, interpretation, expression.

135. Life Painting. (2-4) I, II.

Mr. Brice

(Number prior to 1960-1961, 130B.)

Prerequisite: courses 10A, 10B, 20A; 2 units of 120; and 4 units of 130 or consent of the instructor. Maximum credit, 6 units.

Any medium. Composition, interpretation, expression.

140. Prints. (2-4) I, II.

Mr. Jones

(Number prior to 1960-1961, 125A-125B.)

Prerequisite: courses 10A, 10B, 20A, or consent of the instructor. Maximum credit, 8 units.

Engraving, etching, drypoint, aquatint, softground, lithography, woodcut, and mixed media. Traditional and experimental studies. Fine printing.

145. Sculpture. (2-4) I, II.

Mr. Andrews

(Number prior to 1960-1961, 137A-137B.)

Prerequisite: courses 10A, 10B, or consent of instructor. Maximum credit, 8 units.

Modeling or carving. Clay, plaster, wood, stone, metals, and welding. Plaster casting.

147. Photography. (2-4) I, II.

Mr. Chipperfield

Prerequisite: courses 10A, 20A, or consent of the instructor. Maximum credit, 4 units.

Photography as a medium of artistic expression.

148. Scientific Illustration. (2) I.

Mr. Bridgman

(Number prior to 1960-1961, 45.)

Descriptive drawing adapted to the needs of scientists and recommended to students whose major is science; study of media for reproduction.

149A-B-C-D. Biological Illustration. (1-1-1-1) I, II.

Mr. Bridgman

(Number prior to 1960-1961, 139A-B-C-D.)

Prerequisite: course 148 or consent of the instructor.

Descriptive drawing for biologists, with emphasis on scientific observation, interpretation, and rendering.

III. Design

Courses 150, 160, 170, 175, 180, 190, and 195 are open to repeated registration, upon recommendation of the student's adviser, up to the maximum credit indicated in each case.

150. Graphic Design. (2-4) I, II.

Mr. Chipperfield, Mr. Jennings, Mr. Novak
(Number prior to 1960-1961, 140A-140B, 145A-145B, 148, 149.)

Prerequisite: courses 10A, 10B, 30A, 30B, 155, or consent of the instructor. Course 155 may be taken concurrently. Maximum credit, 8 units.

Experimental design in two dimensions, including processes of pictorial reproduction.

155. Lettering. (2) I, II.

(Number prior to 1960-1961, 141A-141B.)

Prerequisite: course 30A or consent of the instructor.

Historical study and basic principles of lettering, typography, and calligraphy, with studio projects.

- 157. Illustration.** (2) I, II. Mr. Chipperfield
 (Number prior to 1960-1961, 146A-146B.)
 Prerequisite: courses 10A, 10B, 20A, 30A, or consent of the instructor.
 Development of pictorial imagination and technical resources in the depiction of specified subject matter.
- 160. Industrial Design.** (2-4) I, II. Mr. Demaree, Mr. Steiner
 (Number prior to 1960-1961, 181A-B-C-D.)
 Prerequisite: course 30A and consent of the instructor. Maximum credit, 8 units. After a first registration in this course, the student should have college physics and engineering drawing or take courses in these subjects concurrently with 160.
 Design of objects for mass production which meet the requirements of aesthetic appeal, social need, and practical function.
- 165A-165B. Structural Design** (2-2) Yr. Mr. W. Carter, Mr. Lieber, Mr. Stoops
 (Number prior to 1960-1961, 180, 181E.)
 Prerequisite: course 30A, 30C, or consent of the instructor.
 Advanced studies in three-dimensional design.
- 167A-167B. Perspective and Rendering.** (2-2) Yr. Mr. Demaree
 (Number prior to 1960-1961, 182A-182B.)
 Prerequisite: course 10A or consent of the instructor.
- 170. Interior Design.** (2-4) I, II. Mrs. Beacom, Mrs. Fetty
 (Number prior to 1960-1961, 152B, 158A-158B, 159A-159B.)
 Prerequisite: course 10A, 30A and consent of the instructor. Maximum credit, 8 units.
 Design of domestic architecture and of architectural interiors.
- 173A-173B. Introduction to Theory and Design of Architecture.** (2-2) Yr. Mr. Choate
 (Number prior to 1960-1961, 155A-155B.)
 Prerequisite: course 30A or consent of the instructor.
- 175. Furniture Design.** (2-4) I, II. Mrs. Grossman
 (Number prior to 1960-1961, 150, 153A-153B.)
 Prerequisite: course 30A or consent of the instructor. Maximum credit, 4 units.
- 177. Landscape Design.** (2) I, II. Mrs. Fetty
 (Number prior to 1960-1961, 152A.)
 Prerequisite: course 30A or consent of the instructor.
 An introduction to the history, theory, and materials of landscape design; projects in contemporary design.
- 180. Costume Design.** (2-4) I, II. Miss Everett, Mrs. Reps
 (Number prior to 1960-1961, 161, 163A-163B, 169A-169B.)
 Prerequisite: courses 10A, 10B, 30A, or consent of the instructor. Maximum credit, 8 units.
- 187A-187B. Textile Design.** (2-2) Yr. Mrs. Sunkees, Mr. Kester
 (Number prior to 1960-1961, 175A-175B, 176A-176B.)
 Prerequisite: course 30A and consent of the instructor.
 Design of printed and woven textiles.
- 190. Ceramics.** (2-4) I, II. Miss Andreson, Mr. Kester
 (Number prior to 1960-1961, 170A-170B, 171.)
 Prerequisite: course 30A or consent of the instructor. Maximum credit, 8 units.

195. **Metal Design.** (2-4) I, II. Mr. W. Carter
 (Number prior to 1960-1961, 177A-177B.)
 Prerequisite: course 30A and 30C, or consent of the instructor. Maximum credit, 8 units.

SPECIAL STUDIES FOR ALL MAJORS

199. **Special Studies in Art.** (1-4) I, II. The Staff
 Prerequisite: senior standing and consent of the instructor and adviser.
 Open to repeated registration upon recommendation of adviser. Maximum credit, 6 units.
 Projects may be in History and Theory of Art, Pictorial Arts, or Design.

GRADUATE COURSES

Prerequisite for all courses: consent of the instructor. All courses may be repeated for credit upon recommendation of adviser.

History of Art Seminars

250. **Primitive Art.** (2) I. _____
 252. **Medieval Art.** (2) I. Mr. Sheppard
 253. **Italian Renaissance Art.** (2) I, II. Mr. Birkmeyer, Mr. Pedretti
 254. **Northern Renaissance Art.** (2) I, II. Mr. Birkmeyer
 257. **European Art from 1700 to 1900.** (2) I. Mr. Ziff
 258. **Modern Art.** (2) II. Mr. Longman, Mr. Wight
 259. **American Art from 1700 to 1900.** (2) II. Mr. Bloch
 260. **Oriental Art.** (2) II. Mr. Davidson
 263. **Theory and Criticism of Art.** (2) I. Mr. Longman

RELATED COURSES IN OTHER DEPARTMENTS

- Classics 251. **Classical Art.** (2) II. Mr. Clement
 Philosophy 269. **Seminar: Philosophy of Art.** (3) II. Mr. Kaplan

Studio Seminars

270. **Drawing.** (2-8) I, II.
 Mr. Amato, Mr. Brice, Mr. Elgart, Mr. Nunes, Mr. Stussy
 271. **Painting.** (2-8) I, II.
 Mr. Amato, Mr. Brice, Mrs. Brown, Miss Delano, Mr. Elgart,
 Mr. Nunes, Mr. Stussy
 272. **Prints.** (2-8) I, II. Mr. Jones
 273. **Sculpture.** (2-8) I, II. Mr. Andrews
 278. **Advanced Studies in Pictorial Arts.** (1) I, II.
 Mr. Longman and Pictorial Arts Staff
 280. **Graphic Design.** (2-8) I, II. Mr. Jennings
 281. **Industrial Design.** (2-8) I, II. Mr. Steiner
 282. **Interior Design.** (2-8) I, II. Mrs. Fetty
 283. **Costume Design.** (2-8) I, II. Mrs. Reps

284. **Ceramics.** (2-8) I, II. Miss Andreson
 285. **Metal Design.** (2-8) I, II. Mr. W. Carter
 288. **Advanced Studies in Design.** (2) I, II. Mrs. Fetty

Special Studies and Research

295. **Advanced Studies and Research in Art Education.** (2-4) I, II.
 Mr. Manzella, Mr. Stoops
 297. **Individual Studies for Graduate Students.** (1-6) I, II. The Staff
 298. **Directed Study and Readings for Master's Degree Candidates.**
 (1-4) I, II. The Staff
 299. **Research on Dissertation or Thesis.** (1-6) I, II. The Staff

PROFESSIONAL COURSES IN METHOD

330. **Art in Elementary Education.** (3) I, II. Mr. Manzella, Miss McPhail
 Studio, six hours.
 A study of objectives and methods with correlated studio activities.
 370. **Principles of Art Education.** (3) I, II. Mr. Stoops
 Lecture, two hours; studio, four hours.
 A study of philosophy, objectives, and methods in secondary education.

UNIVERSITY ART GALLERIES

Located in the east wing of the Dickson Art Center are three well-equipped art galleries. The Willitts J. Hole Art Gallery and the James Kennedy Gallery are devoted to exhibition of the permanent art collections of the University; the East Gallery, to special loan exhibitions which are presented on a regular schedule. Inquiries regarding the galleries should be addressed to the Director of the Art Galleries, Department of Art.

ART HISTORY

For courses in art history, see under Department of Art.

ASTRONOMY

(Department Office, 8105 Mathematical Sciences Building)

- Samuel Herrick, Ph.D., *Professor of Astronomy.*
 Daniel M. Popper, Ph.D., *Professor of Astronomy (Chairman of the Department).*
 George O. Abell, Ph.D., *Assistant Professor of Astronomy.*
 Robert R. Brownlee, Ph.D., *Visiting Assistant Professor of Astronomy.*
 Robert M. L. Baker, Jr., Ph.D., *Lecturer in Astronomy.*

Letters and Science List.—All undergraduate courses in astronomy are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

Preparation for the Major.—Required: Astronomy 2 and 4; Physics 1A-1B-1C-1D or, in exceptional cases, 2A-1C-1D or 2A-2B; Mathematics 1, 3A, 3B, and 4A, or 5A, 5B, and 6A. Recommended: English 106S, speech, and a reading knowledge of French, German, or Russian.

The Major.—Twenty-four upper division units of astronomy, physics, and mathematics, of which at least 18 must be in astronomy, inclusive of course 101 but exclusive of course 199, and all 24 in courses approved by the department.

Majors in Astronomy-Mathematics and Astronomy-Physics.—Attention is directed to the curricula in astronomy-mathematics and astronomy-physics on page 9 of this bulletin.

Requirements for the Master's Degree.—Candidates for the degree of Master of Arts in astronomy may qualify under either Plan I, Thesis Plan, or Plan II, Comprehensive Examination Plan. For the general requirements, see pages 69–71. A candidate must demonstrate a reading knowledge of French, German or Russian; his program of courses and his choice of a thesis subject must be approved by the department. The following undergraduate courses, or their equivalents, are required of all candidates for the master's degree in astronomy: Astronomy 4 (Spherical Astronomy), 101 (General Astronomy), 112 (Astrodynamics), 117A–117B (Astrophysics; in exceptional cases Astronomy 102, Stellar Astronomy, may be substituted for 117A–117B); Mathematics 119A (Differential Equations); Physics 105 or Mathematics 125 (Analytical Mechanics); Physics 121 (Atomic Physics).

The candidate's record must include, in addition to the 20 or 24 units required for the master's degree, 24 units of upper division courses in astronomy, mathematics, and physics approved by the Department of Astronomy. Upon admission to graduate standing, each student is expected to prepare a program of study in consultation with the department.

LOWER DIVISION COURSES

1. Elementary Astronomy. (3) I, II. The Staff

Not open to students who have taken or are taking Astronomy 100 or 101. An introductory survey course in the general principles and the fundamental facts of astronomy, designed primarily for students not majoring in a physical science or mathematics.

2. Practice in Observing. (2) I. Mr. Abell in charge

Prerequisite: course 1 or 100 and plane trigonometry (Mathematics C or its equivalent); or credit or registration in course 4 or 101. Required of students preparing to major in astronomy.

Practical work for beginners, including constellation studies, telescopic observations of celestial objects, and laboratory exercises cognate to the material of course 4 or 101.

4. Spherical Astronomy. (3) I.

Prerequisite: plane trigonometry (Mathematics C or its equivalent). Required of students preparing to major in astronomy. Course 2 may be elected for observatory and laboratory work in connection with this course. Students who have credit for course 3 will receive only 2 units of credit for course 4.

The celestial sphere and its coordinate systems; time; spherical trigonometry and its astronomical applications.

UPPER DIVISION COURSES

Lower division courses in astronomy are not prerequisite to upper division courses unless specified.

100. Historical Development of Astronomy. (3) II.

Prerequisite: upper division standing. Not open to students who have taken or are taking course 1 or 101, and may not be counted on the major in astronomy.

A survey of astronomy, the historical development of its methods and ideas, and its relation to other fields of thought.

101. General Astronomy. (3) I, II. Mr. Brownlee, Mr. Popper

Prerequisite: plane analytic geometry (Mathematics 3A or its equivalent). Open to properly qualified sophomores, as well as upper division students. Course 2 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, and required of students majoring in astronomy.

***102. Stellar Astronomy. (3) II.**

Mr. Abell

Prerequisite: course 101 or its equivalent or course 100 and consent of the instructor. Not open to students who have taken or are taking Astronomy 117A or 117B, and may not be counted on the major in astronomy if either of those courses is taken.

A review of modern stellar astronomy, with special emphasis on the results of recent researches.

104. Positional Astronomy. (3) I.

Mr. Popper

Lecture, two hours; observing period, three hours. Prerequisite: course 4 and Mathematics 3B.

Fundamental and differential stellar coordinates; time and latitude; star catalogs. Use of the astronomical transit-instrument and the equatorial telescope.

105. Instrumental Astronomy. (3) II.

Mr. Popper

Lecture, two hours; observing period, three hours. Prerequisite: Physics 1D; or Physics 2B and Mathematics 4A.

Astronomical optics, photography, spectroscopy, and photometry. Use of the equatorial telescope.

***107. Reduction of Observations. (3) II.**

Mr. Baker

Prerequisite: Mathematics 3B, 4A.

Astronomical photogrammetry and other techniques employed in the handling of observational data. The theory of errors and least squares.

112. Astrodynamics and Rocket Navigation. (3) I.

Mr. Baker

Prerequisite: Mathematics 3B, 4A.

The astronomical aspects of the rocket problem; celestial mechanics.

115. Determination of Orbits. (3) II.

Mr. Baker

Prerequisite: course 112 or consent of the instructor.

The theory and calculation of preliminary orbits and ephemerides of comets, minor planets, satellites, and rockets.

117A. Astrophysics and Stellar Astronomy. (3) I.

Mr. Brownlee

Prerequisite: Mathematics through 4A and Physics 1A, 1B, 1C, 1D or their equivalents. Recommended: Physics 121.

Fundamental properties of the stars, atmospheres of the sun and stars, solar phenomena, and interstellar matter.

117B. Astrophysics and Stellar Astronomy. (3) II.

Mr. Abell

Prerequisite: course 117A or Physics 121 or consent of the instructor.

Stellar structure and evolution, the Galaxy, stellar systems, and cosmology.

199. Special Studies. (1-5) I, II.

The Staff

Prerequisite: senior standing and consent of the instructor.

GRADUATE COURSES

***215. Advanced Orbit Theory. (3) II.**

Mr. Herrick

Prerequisite: course 115.

217A. Advanced Astrophysics and Stellar Astronomy. (3) I.

Mr. Abell

Prerequisite: consent of the instructor.

The structure and evolution of the stars.

* Not to be given, 1961-1962.

- 217B. **Advanced Astrophysics and Stellar Astronomy.** (3) II. Mr. Popper
Prerequisite: consent of the instructor.
Stellar photospheres; radiative transfer.
- 225A-225B. **Celestial Mechanics.** (3-3) Yr. Mr. Herrick
Prerequisite: course 112.
297. **Individual Studies for Graduate Students.** (1 to 6) I, II. The Staff
299. **Research on Thesis or Dissertation.** (2 to 6) I, II. The Staff

BACTERIOLOGY

Department Office, 5205 Life Sciences Building)

- M. J. Pickett, Ph.D., *Professor of Bacteriology.*
Anthony J. Salle, Ph.D., *Professor of Bacteriology.*
———, *Professor of Bacteriology.*
Meridian Ruth Ball, Sc.D., *Associate Professor of Bacteriology.*
Gregory J. Jann, Ph.D., *Associate Professor of Bacteriology.*
William K. Romig, Ph.D., *Assistant Professor of Bacteriology.*



- Benjamin G. Fishkin, M.D., *Lecturer in Bacteriology.*
———, *Lecturer in Bacteriology.*
Gordon H. Ball, Ph.D., *Professor of Zoology*
Orda A. Plunkett, Ph.D., *Professor of Botany.*

Letters and Science List.—All undergraduate courses in bacteriology are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

Preparation for the Major.—Bacteriology 1; Chemistry 1A, 1B, 5A, 8, 9; Physics 2A, 2B; Zoology 1A, 1B; a modern foreign language. Recommended: Bacteriology 11, Zoology 4.

The Major.—Bacteriology 103, 105, 106, 120; Chemistry 108A and 108B, or 135; together with enough upper division units in related subjects to total 24 units, these to be selected from the following lists: Bacteriology 106C, 107, 108, 109, 112, 114, 120C, 125, 130, 195, 199; Botany 119, 126; Chemistry 106, 107, 109, 136; Public Health 160A; Zoology 101A, 101B, 111, 111C, 111H, 119, 132A, 151. Courses are to be chosen with the approval of the department.

Bacteriology majors who plan a career in public health microbiology or clinical laboratory technology are required to take the following additional courses: Bacteriology 107, 108, 109; Botany 126; Chemistry 108A, 108B, and Chemistry 106 instead of 9; Zoology 111, 111C, 111H.

Subsequent to graduation, an apprenticeship in an approved laboratory is required for eligibility to take the State examination for a license in either of the above fields.

Graduate Study.—The Department of Bacteriology offers a program of study and research leading to the M.A. and Ph.D. degrees in microbiology. More detailed information may be found on page 69 and under Microbiology, page 307.

LOWER DIVISION COURSES

1. **Introductory Bacteriology and Microbiology.** (4) I, II. Mr. Salle
Lecture, two hours; laboratory, six hours. Prerequisite: Chemistry 1A or 2A. Designed for students majoring in bacteriology and related fields. Students who have credit for course 6 will receive only 3 units for course 1.
A general introduction to microbiology.

6. General Bacteriology. (2) I, II.

Mr. Pickett, Mr. Salle

Lecture, two hours. Not open to students who have had course 1. No prerequisites.

A cultural course for nontechnical students, with emphasis on the significance of bacteria in our daily environment and as agents of disease.

***11. History of Microbiology. (2) I.**

Mr. Romig

Lecture and discussion, two hours. Recommended as an introductory course for all microbiology majors, and as a cultural course for other majors. Does not satisfy Letters and Science requirement E2.

Early concepts dealing with the origin of life and the etiology of infectious diseases in relation to prevailing scientific thought, and the development of modern microbiological methods and theories.

UPPER DIVISION COURSES

103. Advanced Bacteriology. (5) I.

Mr. Pickett

Lecture and discussion, three hours; laboratory, six hours. Prerequisite: course 1; recommended: course 106.

The more advanced principles of the life activities, growth, and morphology of bacteria. The etiology of disease.

105. Serology. (4) II.

Mrs. Ball

Lecture, one hour; laboratory, nine hours. Prerequisite: course 103 and consent of the instructor.

The theory and practice of serological methods.

106. Metabolism of Bacteria. (2) I.

Mr. Jann

Lecture and discussion. Prerequisite: course 1 and Chemistry 8.

Chemical activities of microorganisms.

***106C. Metabolism of Bacteria Laboratory. (2) I.**

Mr. Jann

Concurrent or prerequisite: course 106.

107. Public Health Bacteriology. (4) I.

Mrs. Ball

Lecture, one hour; laboratory, nine hours. Prerequisite: course 103. Designed for students who plan careers in the fields of public health and clinical bacteriology.

A study of diagnostic procedures.

108. Hematology. (2) II.

Mr. Fishkin

Lecture, one hour; laboratory, two hours. Prerequisite: senior standing and consent of the instructor.

Diagnostic procedures used for the study of normal and pathological blood cells.

109. General Virology. (2) II.

Prerequisite: course 103.

An introduction to the plant and animal viruses including the bacteriophages and the rickettsiae. Considerations of techniques, inclusion bodies, pathogenesis, immunity, and virus-host relationships.

112. Advanced Microbiology. (1) II.

Mr. Pickett

Prerequisite: courses 103, 106 or Chemistry 108A.

Lectures and discussions covering advanced topics in infectious diseases.

114. Industrial Microbiology. (4) II.

Mr. Jann

Lecture and laboratory. Prerequisite: course 106.

The study of microorganisms of industrial importance, including methods of growth, isolation, identification, and conditions affecting their efficiencies.

* Not to be given, 1961-1962.

- 120. Bacterial Genetics.** (2) II. Mr. Romig
Prerequisite: course 106, Chemistry 108A and 108B, or consent of the instructor.
- A study of the occurrence, induction, and modification of mutations; the cytological basis of bacterial genetics; nature and action of the genetic material; and the modes for transfer of hereditary traits in microorganisms.
- *120C. Bacterial Genetics Laboratory.** (2) II. Mr. Romig
Concurrent or prerequisite: course 120.
- 125. Determinative Bacteriology.** (3) I. Mr. Romig
Lecture, one hour; laboratory, six hours. Prerequisite: course 103.
The basic biological characteristics and taxonomic relationships of the Schizomycetes.
- 130. Immunochemistry.** (4) II. _____
Lecture, two hours; laboratory, six hours. Prerequisite: course 103; recommended: Chemistry 108A and 108B.
Advanced studies in microbial parasitism, including factors affecting host resistance.
- 195. Proseminar.** (2) I, II. _____
Prerequisite: course 103. Course 195, or equivalent, is a prerequisite for graduate research in microbiology (Microbiology 299).
Oral and written reports on current research in microbiology.
- 199. Special Studies in Bacteriology.** (2-5) I, II. The Staff
Prerequisite: senior standing and consent of the department prior to registration.

MICROBIOLOGY**GRADUATE COURSES**

- 210. Advanced Bacterial Physiology.** (3-3) Yr. Mr. Salle
Prerequisite: Bacteriology 106.
Physiological activities of microorganisms in the light of more advanced principles.
- *212. Bacterial Viruses.** (2) II. _____
Lecture, one hour; laboratory five hours. Prerequisites: course 120; college mathematics, one year; or consent of the instructor.
Laboratory and lectures on the nature of bacterial viruses. The course will include a study of methods of assay and purification, growth, kinetics, radiobiology, and will stress genetics.
- 251A-251B. Seminar in Microbiology.** (1-1) Yr. Mr. Ball, Mr. Plunkett
- *252. Seminar in Medical Microbiology.** (1) II. Mr. Pickett
- *253. Seminar in Immunology.** (1) I. Mrs. Ball
- 254. Seminar in Microbial Physiology.** (1) I. Mr. Jann
- *255. Seminar in General Virology.** (1) II. _____
- 256. Seminar in Microbial Genetics.** (1) II. Mr. Romig
- 299. Research on Thesis or Dissertation.** (2-6) I, II. The Staff

* Not to be given, 1961-1962.

RELATED COURSE (see page 465)

Life Sciences 370. Methods and Materials for Teaching Life Science.

(3) II.

_____, Mr. Herbst

BERBER LANGUAGES

For courses in the Berber languages, see under the Department of Near Eastern and African Languages.

BIOPHYSICS AND NUCLEAR MEDICINE

(Department Office, B1-153 Medical Center)

Joseph F. Ross, M.D., *Professor of Biophysics and Nuclear Medicine (Chairman of the Department) and Professor of Medicine.*

Wilbur A. Selle, M.D., Ph.D., *Professor of Biophysics.*

Stafford L. Warren, M.D., *Professor of Biophysics and Dean of the School of Medicine.*

Albert W. Bellamy, Ph.D., *Professor of Biophysics, Emeritus.*

Benedict Casses, Ph.D., *Clinical Professor of Biophysics and Nuclear Medicine.*

Thomas G. Hennessy, M.D., Ph.D., *Associate Professor of Biophysics in Residence and Associate Professor of Radiology in Residence.*

Alexander Kolin, Ph.D., *Associate Professor of Biophysics.*

Norman S. MacDonald, Ph.D., *Associate Professor of Biophysics in Residence and Associate Professor of Radiology in Residence.*

Ralph E. Nusbaum, Ph.D., *Associate Professor of Biophysics in Residence.*

Marcel Verzeano, M.D., *Associate Professor of Biophysics.*

Kathryn F. Fink, Ph.D., *Associate Clinical Professor of Biophysics and Nuclear Medicine.*

Jean D. Bath, Ph.D., *Assistant Professor of Biophysics.*

Lawrence S. Myers, Ph.D., *Assistant Professor of Biophysics and Nuclear Medicine in Residence and Assistant Professor of Radiology in Residence.*

Ole A. Schjeide, Ph.D., *Assistant Professor of Biophysics and Nuclear Medicine in Residence and Assistant Professor of Radiology in Residence.*

Kermit H. Larson, M.S., *Associate Biophysicist in Residence.*

Admission to Graduate Status

In addition to fulfillment of the requirements of the Graduate Division, applicants for admission to graduate status in biophysics and nuclear medicine should have adequate training and experience in biology, physics, chemistry, and mathematics. Completion of the following course of study will provide satisfactory preparation for the advanced degree:

a. Mathematics:

Analytic Geometry, 3 units

Differential and Integral Calculus, 9 units

Differential Equations or equivalent, 3 units

Working understanding of statistics, such as obtained in a 3-unit course.

b. Chemistry:

General Chemistry, 10 units

Quantitative, 3 units

Organic, 3 units

Physical Chemistry, 6 units

Biochemistry (108A-108B and 136, 9 units; or 135 and 136, 6 units); or

Physiological Chemistry in the School of Medicine.

c. Physics: 23 units of upper division work, including the following courses or their equivalents:

Analytic Mechanics (105), 3 units

Electrical Theory and Measurement (107, 107C), 4 units

Physical Optics (108B), 3 units

Electronics (116A, 116C), 5 units

Atomic Physics (120), 3 units

Nuclear Physics (124A), 3 units

Atomic and Nuclear Physics Laboratory (124C), 1 unit; or Physical Optics Laboratory (108C), 1 unit.

d. *Biology*: 20 units of upper division and graduate work, including courses in morphology and physiology.

Requirements for the Degree of Master of Science

1. For the general requirements, see pages 69-71.

2. A foreign language is not required for the master's degree.

Requirements for the Doctor's Degree

1. For the general requirements, see pages 71-74.

2. Departmental requirements: A program of study will be recommended by the departmental committee on graduate study on the basis of the students' completion of and record of achievement in the basic course of study noted above. When indicated additional upper division or graduate courses necessary to fulfill his specific needs will be required.

UPPER DIVISION COURSES

101. **Elements of Medical Biophysics.** (2) II. Mr. Ross and the Staff

While designed for medical students, a limited number of qualified graduate students will be permitted to take the course with the consent of the instructor.

Lectures on the principles of physics in relation to normal physiology and to the diagnosis and treatment of disease.

199. **Special Studies.** (1-3) I, II.

The Staff

Prerequisite: consent of the instructor.

GRADUATE COURSES

202A-202B. **Radiobiology.** (3-3) Yr. Mr. Ross and the Staff

An advanced, comprehensive course in radiation biology covering the physical, chemical, and biological aspects of radiation effects on simple and complex biological systems and on man.

240. **Electrodiagnostic Techniques.** (1) I. Mr. Selle

The principles of electrocardiography, electromyography, electroencephalography, electroplethysmography, and other electronic methods involving a consideration of electrophysics, action potentials, and techniques and procedures of taking records, together with a systematic description of mechanisms. Certain periods will be devoted to experimental work and to taking of records on hospital patients.

241A-241B. **Molecular Aspects of Protoplasm.** (2-2) Yr. Miss Bath

An adaptation of our knowledge of molecular structure to biological concepts of protoplasm and extraneous cell parts. Molecular level considerations are related to the atomic level below and the micellar level above. Electrical aspects as well as structural are included.

242A-242B. **Advanced General Biophysics.** (2-2) Yr.

Mr. Kolin and the Staff

Biophysical principles and methods applied to the study of biological phenomena and medical research.

251A-251B. Seminar in Biophysics. (1) I, II.

The Staff

Prerequisite: consent of the instructor in charge.

A review and discussion of current literature on the use of biophysical methods in research, diagnosis, and therapy.

260. Seminar on the Physics of Viruses. (1-2) I.

Miss Bath

A review of the results of the application of physical concepts and physical methods to the study of viruses.

262. Seminar on Molecular and Colloidal Aspects of Neurobiophysics.

(1-2) II.

Miss Bath

A study of the application of new concepts and methods in molecular and colloidal biophysics to the understanding of the ultrastructure and electrical properties of neurons.

265A-265B. Seminar in Cellular and Molecular Biophysics. (1-2) I, II.

Miss Bath

A survey of living material on subcellular levels of organization, with emphasis on physical concepts. General topics covering the area of cellular and molecular biophysics, differing each semester for three consecutive years.

270A-270B. Seminar in Biomedical Aspects of Nuclear Radiation.

(1-1) I, II.

Mr. Ross and the Staff

A seminar covering current topics of interest in the biomedical aspects of nuclear radiation, with emphasis on student participation in the consideration of these topics.

297. Special Problems for Graduate Students. (1-4) I, II.

The Staff

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.

299. Research in Biophysics. (2-8) I, II.

The Staff

401. Instrumentation for Research in Biology and Medicine. (1) II.

Prerequisite: consent of the instructor.

The Staff

Instruction in the theory and practice of modern instrumentation for research.

BOTANY

(Department Office, 320 Botany Building)

Karl C. Hamner, Ph.D., *Professor of Botany.*

Arthur W. Haupt, Ph.D., *Professor of Botany.*

F. Harlan Lewis, Ph.D., *Professor of Botany (Chairman of the Department).*

Orda A. Plunkett, Ph.D., *Professor of Botany.*

Charles A. Schroeder, Ph.D., *Professor of Botany.*

Samuel G. Wildman, Ph.D., *Professor of Botany.*

Carl C. Epling, Ph.D., *Professor of Botany, Emeritus.*

Flora Murray Scott, Ph.D., *Professor of Botany, Emeritus.*

Mildred E. Mathias (Mildred Mathias Hassler), Ph.D., *Associate Professor of Botany and Director of the Botanical Garden.*

Bernard O. Phinney, Ph.D., *Associate Professor of Botany.*

Henry J. Thompson, Ph.D., *Associate Professor of Botany (Life Sciences).*

Wilbur T. Ebersold, Ph.D., *Assistant Professor of Botany.*

Donald E. Foard, Ph.D., *Assistant Professor of Botany.*

———, *Assistant Professor of Botany.*

Harold A. Mooney, Ph.D., *Instructor in Botany.*



David Appleman, Ph.D., *Professor of Plant Physiology.*

Jacob B. Biale, Ph.D., *Professor of Plant Physiology.*

George G. Laties, Ph.D., *Associate Professor of Plant Physiology.*

Roy M. Sachs, Ph.D., *Assistant Professor of Plant Physiology.*

College of Agriculture

Preparation for the Major.—The lower division course requirements of the plant science curriculum (see page 28).

The Major.—Twelve units of approved upper division courses in botany.

Required and Recommended Courses.—Required: Chemistry 1A, 1B and 8; Botany 1, 2, 3, 6 and 107. Recommended: Bacteriology 1; Floriculture and Ornamental Horticulture 136A, 136B; Geology 101; Horticultural Science 110; Irrigation and Soil Science 108; Physics 2B; Zoology 1A and 1B.

College of Letters and Science

Letters and Science List.—All undergraduate courses in Botany are included in the Letters and Science List of Courses.

Preparation for the Major.—Botany 1 or Life Sciences 1A–1B; Chemistry 1A–1B or the equivalent; and one or more of the following courses which are prerequisite to certain upper division courses in botany: Botany 2, 3, 6; Chemistry 8.

The Major.—Twenty-four units of upper division botany, of which 2 units may be replaced by upper division courses in related fields with the approval of the department. Upper division credit will be allowed for lower division botany courses taken in the upper division after completion of 13 units of lower division botany courses.

Graduate Division

Advanced Degrees.—Admission to the graduate program requires an undergraduate major in botany, biology, or plant science. Students with good academic records in other related majors will also be considered for admission. The department offers work leading to the Master of Arts and the Doctor of Philosophy degrees with opportunities for specialization in: anatomy, ecology, evolution, genetics, morphology, mycology, physiology, systematics, and virology. For details see under Plant Science, Botanical Science, page 391.

Students with a botany major may work toward a general secondary credential with the field major of plant science or life science and general science.

LOWER DIVISION COURSES

1. **General Botany.** (5) I, II. Miss Mathias, Mr. Hamner
Lecture, three hours; laboratory, six hours.
An introduction to the various fields of plant science, including anatomy, morphology, physiology, and genetics.
2. **The Plant Kingdom.** (4) II. _____
Lecture, two hours; laboratory, six hours.
An introductory course dealing with the structure, development, and life history of representative members of all the major plant groups, with emphasis on their relationships and evolution.
3. **Field Botany.** (4) II. Mr. Lewis
Lecture, two hours; laboratory or field, six hours.
An introduction to the life habits, interrelationships, and classification of native and ornamental plants.

6. Plant Anatomy. (4) I.

Mr. Foard

Lecture, two hours; laboratory, six hours. Prerequisite: course 1 or Life Sciences 1A-1B or equivalent.

The microscopic study of the structure and development of higher plants in relation to the functions of the tissues.

UPPER DIVISION COURSES

103. Botany of Economic Plants. (2) II.

Mr. Schroeder

Designed for students of economics, geography, agriculture, and botany. The general morphology, classification, ecology, and geographic distribution, origin, and uses of economic plants.

105A. Algae and Bryophytes. (4) I.

Lecture, two hours; laboratory, six hours. Prerequisite: course 2 or equivalent.

A study of the structure, development, and phylogenetic relationships of the principal orders of fresh-water and marine algae, and of liverworts and mosses.

105B. Morphology of Vascular Plants. (4) II.

Mr. Foard

Lecture, two hours; laboratory, six hours. Prerequisite: course 2 or equivalent.

Structure, development, and phylogenetic relationships of the principal groups of ferns, fern-allies, and seed plants.

107. Introduction to Plant Physiology. (4) I.

Mr. Wildman

Lecture, two hours; laboratory, six hours. Prerequisite: course 1 or Life Sciences 1A-1B and Chemistry 1A-1B and 8, or equivalent. Course 6 desirable.

The fundamental aspects of water relations, mineral nutrition, photosynthesis, respiration, metabolism, and growth, development and reproduction of higher plants, including biochemical mechanisms.

***113. Physiological Plant Anatomy. (3) II.**

Mr. Foard

Lecture, one hour; laboratory, six hours. Prerequisite: courses 6, 107. Offered in alternate years.

A survey of the tissues of the higher plants in relation to function.

119. Mycology. (3) I.

Mr. Plunkett

Lecture, one hour; laboratory, six hours. Prerequisite: course 2, or equivalent. For students in botany, bacteriology, agriculture, and forestry.

Structure, development, and classification of the important genera and species of fungi.

126. Medical Mycology. (4) II.

Mr. Plunkett

Lecture, two hours; laboratory, six hours. Prerequisite: course 119 or Bacteriology 1. This course is designed for students in bacteriology, parasitology, and medicine.

An introduction to the morphology, physiology, and taxonomy of the pathogenic fungi which cause disease in man and the domestic animals.

131. Physiology of Fungi. (3) I.

Mr. Plunkett

Lecture, one hour; laboratory, six hours. Prerequisite: courses 119 to 126 and Chemistry 8.

A survey of the interrelation of fungi to their environment, including factors influencing growth, nutrition, metabolism, and reproduction.

140. Plant Genetics. (4) II.

Mr. Phinney

Lecture, three hours; laboratory, three hours. Prerequisite: course 1 or

* Not to be given, 1961-1962

Life Sciences 1A-1B or Zoology 1A-1B or Bacteriology 1 or equivalent.

Principles of heredity, with special reference to plants. Laboratory work involving breeding experiments with plant and animal materials.

***141. Plant Cytogenetics.** (2) I. Mr. Lewis

Lecture, two hours. Prerequisite: course 140 or Zoology 130A. Offered in alternate years.

The fundamentals of cytogenetics. Heredity as related to cytogenetical phenomena, with special reference to plants.

***141C. Plant Cytogenetics Laboratory.** (1) I. Mr. Lewis

Laboratory, three hours. Prerequisite or concurrent: course 141. Offered in alternate years.

Laboratory in plant cytogenetics.

142. Biochemical Genetics. (2) I. Mr. Phinney

Lecture, two hours. Prerequisite: introductory course in genetics, and Chemistry 8.

Aspects of gene action determined through the study of metabolic pathways in fungi and chemical systems in higher plants. The evaluation of the gene as a reduplicating unit at the chemical level.

151. Taxonomy of Seed Plants. (3) I. Miss Mathias

Lecture, one hour; laboratory, six hours. Prerequisite: course 3 or equivalent.

The fundamentals of systematic botany. A survey of the orders and families commonly met with in the native and cultivated floras.

***152. Advanced Systematic Botany.** (3) II. Mr. Lewis

Lecture, one hour; laboratory or field, six hours. Prerequisite: course 151, elementary genetics, and consent of the instructor. Offered in alternate years.

Field and laboratory study of natural variation in relation to systematics.

153. Determinants of Evolution. (2) I. Mr. Lewis

Lecture and discussion, two consecutive hours. Prerequisite: consent of the instructor.

The processes of evolutionary change in natural populations. A student may concurrently initiate an experimental project as Botany 199.

***155. Distribution and History of Angiosperms.** (2) I. _____

Lecture, two hours. Prerequisite: course 151.

A comparative study of the distributional patterns of angiosperm families and their historical development.

160. Plant Physiology. (3) II. Mr. Biale, Mr. Sachs, Mr. Wildman

Lecture and discussion, three hours. Prerequisite: consent of the instructor. Recommended: course 107, Chemistry 108A.

A critical analysis of selected topics pertaining to metabolism and growth of plants, with emphasis on the experimental approach.

161. Experiments in Plant Physiology. (2) II.

Mr. Biale, Mr. Sachs, Mr. Wildman

Laboratory, six hours. Prerequisite: course 160 to be taken concurrently, and consent of instructor. Designed primarily for students expecting to do research in the botanical or horticultural sciences, or other research involving plant physiology and plant biochemistry.

An advanced course illustrating the experimental study of topics considered in Botany 160.

170. Introduction to Plant Ecology. (3) I. Mr. Mooney
Lecture, two hours; laboratory, three hours. Prerequisite: course 1 or 3, or Life Sciences 1A-1B, and Chemistry 1A-1B, or consent of the instructor.
An analysis of the environmental factors affecting the distribution and functional processes of plants and plant communities.

171. Advanced Plant Ecology. (3) II. Mr. Mooney
Lecture, two hours; laboratory, three hours. Prerequisite: introductory course in plant ecology or consent of instructor.

A detailed consideration of the principles involved in the quantitative description and analysis of environments, plant responses, and community structure.

***190. Research Methods in Morphology.** (4) I. Mr. Foard, Mr. Schroeder
Lecture, one hour; laboratory, nine hours. Prerequisite: consent of the instructor. Offered in alternate years.

The theory and methods of preparing plant tissues and materials for microscopic study.

195A-195B. Proseminar in Botany. (2-2) Yr. Mr. Ebersold
Lecture, two hours. Prerequisite: senior standing and consent of the instructor.

Oral reports and discussions on research topics of interest to biologists.

199. Special Studies. (2-4) I, II. The Staff
Prerequisite: senior standing and consent of the instructor.

GRADUATE COURSES

201A-201B. Principles and Theories of Botany. (2-2) Yr. _____
Lecture, two hours. Prerequisite: major in botanical science.
A point of orientation for advanced graduate research.

211A-B-C*-D*-E*-F*. Advanced Plant Physiology. (2) I, II.
Mr. Appleman, Mr. Biale, Mr. Hamner,
Mr. Laties, Mr. Sachs, Mr. Wildman
Lectures, two hours. Open to all students interested in plant physiology; may be entered any semester.

A survey of the entire field of plant physiology, covering a period of three years. A. Structure of cells, water relations, absorption; B. Translocation, mineral nutrition; C. Photosynthesis, respiration; D. Respiration (concluded), nitrogen metabolism, other metabolisms unique to plants; E. Growth and growth regulators; F. Development and reproduction, environmental factors and plant growth.

221. Orientation in Taxonomic Research. (1) II. Miss Mathias
Laboratory, three hours. Prerequisite: consent of instructor.

A course for graduate students in taxonomic botany designed to acquaint them with the bibliography of taxonomy, herbarium methods, problems in nomenclature, and preparation of monographs, revisions, and floras, including interpretation and construction of descriptions and keys and their illustration.

253A-253B. Seminar in Plant Anatomy. (1-1) Yr. Mr. Foard

254A-254B. Seminar in Plant Physiology. (1-1) Yr.
Mr. Hamner, Mr. Wildman

255A-255B. Seminar in Systematics. (1-1) Yr.
Miss Mathias, Mr. Lewis, Mr. Thompson

* Not to be given, 1961-1962.

- 256A-256B. Seminar in Plant Morphology. (1-1) Yr. Mr. Schroeder
- 257A-257B. Seminar in Mycology. (1-1) Yr. Mr. Plunkett
- 258A-258B. Seminar in Genetics. (1-1) Yr. Mr. Ebersold, Mr. Phinney
Students may enter in any semester.
Special topics covering all aspects of genetics, differing each semester for three years.
- 259A-259B. Seminar in Evolutionary Genetics. (1-1) Yr. Mr. Lewis
- 277A-277B. Directed Studies. (2-4) I, II. The Staff
- 278A-278B. Research in Botany. (2-6; 2-6) Yr. The Staff

Life Sciences

- 1A-1B. Fundamentals of the Life Sciences. (3-3) Yr.
Mr. Furgason, Mr. Thompson
This course satisfies the same prerequisites as Botany 1.

RELATED COURSES IN OTHER DEPARTMENTS OR DIVISIONS

- Art 149A-B-C-D. Biological Illustration.
- Bacteriology 1. Introductory Bacteriology and Microbiology.
- Bacteriology 120. Bacterial Genetics.
- Biology 12. Natural History.
- Floriculture and Ornamental Horticulture 146A-B. Plant Breeding.
- Floriculture and Ornamental Horticulture 148. Design and Analysis of Horticultural Experiments.
- Geography 118. Plant Geography.
- Horticultural Science 111. Plant Metabolism.
- Irrigation and Soil Science 110A. The Soil as a Medium of Plant Growth.
- Paleontology 120. Paleobotany.
- Zoology 119. Isotopic Tracers in Biology.
- Zoology 129. Application of Optical Instruments to Biological Problems.
- Zoology 139. Biological Effects of Radiation.
- Zoology 140. Development of Biological Ideas.
- Zoology 219. Radiation Biology.
- These and other courses in the departments listed, as well as in chemistry, meteorology, oceanography, physics, and plant pathology, may be of particular interest to botany majors.

Herbarium

The University maintains a teaching herbarium of specimens representative of the floras of the world. The collection includes the Bonati Herbarium, noteworthy for the specimens of old world Scrophulariaceae, an extensive and comprehensive collection of American Labiatae, and research collections of certain California genera. Special emphasis is placed on an herbarium of sub-tropical ornamental plants.

Botanical Garden, Glasshouses, and Field Areas

The Botany Building is situated in the Botanical Garden, permitting ready access to the garden for all classes. The experimental field, lathhouse, and pollinating house are also in the garden. Adjoining is the Plant Physiology Building, with glasshouses and controlled-growth rooms for instructional and research materials.

BUSINESS ADMINISTRATION

(Department Office, 3250 Graduate School of Business Administration)

Ralph M. Barnes, Ph.D., *Professor of Production Management and Professor of Engineering.*

Alexander Boldyreff, Ph.D., *Professor of Engineering.*

George W. Brown, Ph.D., *Professor of Business Administration, Professor of Engineering.*

William F. Brown, Ph.D., *Professor of Marketing.*

Albert B. Carson, Ph.D., C.P.A., *Professor of Accounting.*

Ralph Cassady, Jr., Ph.D., *Professor of Marketing.*

John C. Clendenin, Ph.D., *Professor of Finance.*

Benjamin Graham, B.S., *Visiting Professor of Finance.*

Leo Grebler, Ph.D., *Professor of Real Estate and Urban Land Economics.*

Neil H. Jacoby, Ph.D., LL.D., *Professor of Business Economics and Policy.*

Edward G. Koch, Ph.D., *Visiting Professor of Business Administration.*

Harold Koontz, Ph.D., *Professor of Business Policy and Transportation.*

Jacob Marschak, Ph.D., *Professor of Business Administration.*

Wayne L. McNaughton, Ph.D., *Professor of Business Administration.*

Frederic Meyers, Ph.D., *Professor of Personnel Management and Industrial Relations.*

Cyril J. O'Donnell, Ph.D., *Professor of Business Organization and Policy.*

George W. Robbins, M.B.A., *Professor of Marketing (Chairman of the Department).*

George A. Steiner, Ph.D., *Professor of Business Administration.*

Robert Tannenbaum, Ph.D., *Professor of Personnel Management and Industrial Management.*

J. Frederick Weston, Ph.D., *Professor of Business Economics and Finance.*

Ira N. Frisbee, M.B.A., C.P.A., *Professor of Accounting, Emeritus.*

Howard S. Noble, M.B.A., C.P.A., LL.D., *Professor of Accounting, Emeritus.*

Theodore A. Andersen, Ph.D., *Associate Professor of Business Economics and Finance.*

Elwood S. Buffa, Ph.D., *Associate Professor of Production Management.*

Joseph D. Carrabino, Ph.D., *Associate Professor of Production Management.*

Fred E. Case, D.C.S., *Associate Professor of Real Estate and Urban Land Economics.*

James Gillies, Ph.D., *Associate Professor of Real Estate and Urban Land Economics.*

Ralph C. Hoerber, J.D., Ph.D., *Associate Professor of Business Law.*

James R. Jackson, Ph.D., *Associate Professor of Business Administration.*

Wilbert E. Karrenbrock, Ph.D., *Associate Professor of Accounting.*

Erwin M. Keithley, Ed.D., *Associate Professor of Business Administration.*

Paul Kircher, Ph.D., C.P.A., *Associate Professor of Accounting.*

Philip Neff, Ph.D., *Associate Professor of Business Economics.*

Alfred Nicols, Ph.D., *Associate Professor of Business Economics.*

Frank E. Norton, Ph.D., *Associate Professor of Business Economics.*

Irving Pfeffer, Ph.D., *Associate Professor of Insurance.*

Reed M. Powell, Ph.D., *Visiting Associate Professor of Management Theory.*

- John Shelton, Ph.D., *Visiting Associate Professor of Finance.*
 Harry Simons, M.A., C.P.A., *Associate Professor of Accounting.*
 R. Clay Sprowls, Ph.D., *Associate Professor of Business Statistics.*
 Jacob Stockfisch, Ph.D., *Associate Professor of Business Administration.*
 John E. Van de Water, J.D., *Associate Professor of Industrial Relations and Management Theory.*
 Irving R. Weechler, Ph.D., *Associate Professor of Personnel Management and Industrial Relations.*
 Robert M. Williams, Ph.D., *Associate Professor of Business Economics and Statistics.*
 James V. Clark, D.B.A., *Assistant Professor of Business Administration.*
 David K. Eiteman, Ph.D., *Assistant Professor of Finance.*
 David B. Houston, Ph.D., *Assistant Professor of Insurance.*
 David Huff, Ph.D., *Assistant Professor of Business Administration.*
 Fred Massarik, Ph.D., *Assistant Professor of Personnel Management and Assistant Research Psychologist and Sociologist.*
 G. Edward Phillips, Ph.D., *Assistant Professor of Accounting.*
 David A. Snell, Ph.D., *Assistant Professor of Finance.*
 H. Robert Bartell, M.B.A., *Acting Assistant Professor of Finance.*
 Leland S. Burns, M.B.A., *Acting Assistant Professor of Real Estate and Urban Land Economics.*
 Allan Drebin, M.B.A., *Acting Assistant Professor of Accounting.*
 Robert C. Goshay, B.S., *Acting Assistant Professor of Business Administration.*
 Leland L. Howell, A.B., *Acting Assistant Professor of Business Administration.*
 Clarence Huizenga, M.S., *Acting Assistant Professor of Business Economics.*
 John M. Lishan, Ph.D., *Acting Assistant Professor of Business Economics.*
 Charles G. Louie, M.B.A., *Acting Assistant Professor of Accounting.*
 James MacQueen, Ph.D., *Acting Assistant Professor of Business Administration.*
 Peter McLoughlin, A.B., *Acting Assistant Professor of Personnel Management and Industrial Relations.*
 Jerome Reisel, M.A., *Acting Assistant Professor of Business Administration.*
 William Rosevear, Ph.D., *Acting Assistant Professor of Business Administration.*
 Max Astrachan, Ph.D., *Lecturer in Business Administration.*
 Robert W. Buttrey, LL.B., C.P.A., *Lecturer in Accounting.*
 Francis M. Fillerup, M.B.A., *Lecturer in Business Administration and Head, Business Administration Extension.*
 Malcolm F. Heslip, Ph.D., *Lecturer in Business Administration.*
 Frank Jasinski, Ph.D., *Lecturer in Business Administration.*
 Raymond J. Jessen, Ph.D., *Lecturer in Business Administration.*
 Warren H. Schmidt, Ph.D., *Lecturer in Personnel Management.*
 Arthur J. Shedlin, M.A., *Lecturer in Business Administration.*
 David Stoller, Ph.D., *Lecturer in Business Administration.*

School of Business Administration

Curricula requirements for Bachelor of Science degree, Master of Business Administration degree, and Doctor of Philosophy degree are described on pages 46-52.

College of Letters and Science

Letters and Science List.—Courses 100, 118, 133, 135, 140, 152, 160, 170, 180, 190. For regulations governing this list, see page 2.

LOWER DIVISION COURSES

1A-1B. Elementary Accounting. (3-3) Beginning either semester.

Mr. Louie in charge

Lecture, two hours; laboratory, two hours. Prerequisite: sophomore standing. 1A is prerequisite to 1B.

An introduction to accounting theory and practice. The first semester presents the recording, analyzing and summarizing procedures used in preparing balance sheets and income statements. The second semester includes payroll and tax accounting, partnership and corporation accounts, manufacturing and cost accounting and supplementary statements.

UPPER DIVISION COURSES

Unless otherwise indicated in the course description, an upper division Business Administration course is open only to students registered in the School of Business Administration or the Graduate School of Business Administration, to students in other colleges or schools the curricula of which officially prescribe the course, and to students who secure the written approval of the Dean of the School of Business Administration. Business Administration 1A-1B and Economics 1A-1B or their equivalent are prerequisite to all upper division courses unless specifically waived.

I. Business Economics

100. Business Economics. (3) I, II.

Mr. Neff, Mr. Nicols, Mr. Norton, Mr. Stockfish, Mr. Williams

Prerequisite: course 115 (May be taken concurrently). Required of all business administration students in their first semester of residence.

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.

101. Business Fluctuations and Forecasting. (3) I, II.

Mr. Andersen, Mr. Neff, Mr. Nicols, Mr. Norton,
Mr. Stockfish, Mr. Williams

Prerequisite: courses 100, 115; and Economics 135 (may be taken concurrently). Required of all business administration students in their second semester of residence immediately following course 100.

How the enterprise reacts to general economic fluctuations and how its decisions, in turn, affect them. Important forces in past fluctuations. Behavior of indices of business activity. Appraisal of forecasting techniques. Entrepreneurial and public policies to mitigate business fluctuations.

II. Business Law

105B. Business Law. (3) I, II.

Mr. Hoerber

Prerequisite: course 18 (Berkeley) or equivalent. Not open to students who have credit for course 108.

Significance and growth of the law; law in its relationship to business, with special emphasis on current problems and on the law of sales, property, negotiable instruments, business organizations, and trade regulations.

108. Legal Analysis for Business Managers. (4) I, II. Mr. Hoerber

Not open to students who have credit for course 18 (Berkeley) or 105B or equivalents. Must be completed in the first or second semester in residence.

Significance and growth of the law; 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.

III. Statistics and Information Processing**115. Business Statistics. (3) I, II. Mr. Sprowls, Mr. Williams**

Lecture, three hours; laboratory, two hours. Prerequisite: Mathematics 32B or the equivalent. Students who have credit for Economics 140 will receive no credit for this course. Required of all business administration students in their first semester of residence.

Sources of statistical data; construction of tables, charts, and graphs; statistical distributions and their measurement; introduction to probability theory, market analysis, consumer sampling, and quality control; index numbers; correlation; time-series analysis: trend, seasonal, business cycles; business forecasting; statistics of national income.

116A-116B. Statistical Inference in Business. (3-3) Yr. Mr. Sprowls

Prerequisite: course 115 or the equivalent.

An intermediate course in the principles of statistical inference, with emphasis upon applications to problems of a business and economic nature.

117. Business Index and Time Series. (3) II. Mr. Williams

Prerequisite: course 115 or the equivalent.

Analysis of the business indexes in current use. Index number construction. Methods of measuring business trends and fluctuations, with applications to business forecasting. The use of electronic computers in the analysis of business series.

118. Introduction to Operations Analysis. (3) I, II. Mr. Jackson

Prerequisite: course 115.

Techniques and applications of operations analysis as a management tool.

119. Electronic Computers in Business. (3) I, II. Mr. Sprowls

Electronic computers in business; the logic of computers; elements of programming and operation; costs; case studies and inspection of computer installations.

IV. Accounting**120. Intermediate Accounting. (4) I, II.**

Mr. Drebin, Mr. Karrenbrock, Mr. Simons

Prerequisite: courses 1A-1B. Not open to students who have credit for 120M. Required of all students whose field of concentration is accounting in their first semester in residence. Students with a field of concentration other than accounting must take either course 120 or 120M.

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.

120M. Managerial Accounting. (3) I, II.

Mr. Kircher, Mr. Louie, Mr. Phillips

Prerequisite: courses 1A-1B. May be elected by students in fields of con-

centration other than accounting to meet core course requirements in accounting. Not open to students who have credit for 120.

Basic concepts of accounting; systems and internation control; uses of accounting data in decision-making; budgets; interpretation of administrative reports.

122. Cost Accounting. (3) I, II.

Mr. Carson, Mr. Phillips

Prerequisite: course 120.

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.

124. Advanced Accounting. (5) I, II.

Mr. Karrenbrock, Mr. Simons

Prerequisite: courses 120, 122.

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.

127. Federal Tax Accounting. (3) I, II.

Mr. Buttrey

Prerequisite: course 121, 124, or consent of the instructor.

A study of the fundamentals of federal income taxation, with emphasis on the taxation of individuals.

128. Advanced Accounting Problems. (5) I.

Mr. Simons

Three hours lecture and two practice sessions of two hours each weekly. Prerequisite: courses 122, 123, 127; 125. Not open to students who started their upper division study after September 1, 1960.

Review of contemporary accounting theory, with emphasis upon pronouncements of the American Institute of Certified Public Accountants, American Accounting Association, and Securities and Exchange Commission. Applications of such theory to advanced problems of the kind contained in examinations for C.P.A. certification.

V. Finance

Economics 135 is required of all students in the School of Business Administration.

131. Business Finance. (3) I, II.

Mr. Andersen, Mr. Snell, Mr. Weston

A study of the forms and sources of financing business firms large and small, corporate and non-corporate. The emphasis is on financial planning and development judgment in formulating decisions on financial problems. Financial problems are also considered in their social, legal, and economic effects.

132. Credit Management. (3) I, II.

Mr. Snell, Mr. Weston

Prerequisite: course 131.

Development of credit policies in relation to enterprise policy. The place of credit management within the organization. Consideration of factors influencing internal financial management and the formulation of credit extension policy.

133. Investment Principles and Policies. (3) I, II.

Mr. Clendenin, Mr. Eiteman, Mr. Shelton

Problems 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.

134. Investment Analysis. (3) I, II. Mr. Clendenin, Mr. Eiteman
Prerequisite: courses 120 or 120M or 120G, and 133.

Examination of specific industries, companies, and securities from an investment point of view; sources of information; techniques of analysis; measurement of risks, returns, and investment values; evaluation of corporate credit; preparation of reports. Annual reports of business corporations and current cases are studied.

VI. Risk-Bearing and Insurance

135. Principles of Insurance. (3) I, II. Mr. Pfeffer
Basic principles of risk and insurance and their applications to business management and personal affairs. Analyses of concepts and methods of handling risks; insurance carriers, contracts, and underwriting; loss prevention and settlement; government insurance programs; economic functions of insurance.

136. Life Insurance. (3) I. Mr. Houston
Prerequisite: course 135.

Studies of the nature, and of the business and personal uses of life insurance and annuities; contracts; policy conditions; selection of risks; types of carriers; mathematical bases; group, wholesale, and industrial insurance; organization, management, regulation, taxation, and investment policy of legal reserve companies.

137. Multiple Lines Insurance. (3) II. Mr. Houston
Prerequisite: course 135.

Studies of the principles and practices of property and casualty insurance. Analysis of insurance functions, including marketing, rate-making, underwriting, claims, and loss prevention. Fire and allied lines, workmen's compensation, liability, automobile, fidelity, and surety bonding are explored.

VII. Production Management

140. Elements of Production Management. (3) I, II. Mr. Buffa, Mr. Carrabino
Lecture, two hours; laboratory, two hours.

Principles and decision analyses related to the 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.

141. Design of Production Systems. (3) I, II. Mr. Buffa
Lecture, two hours; laboratory, three hours. Prerequisite: course 140 or consent of the instructor.

Analytical methods effective in the design of plant layout and materials-handling systems; process analysis, operation sequence analysis, economic analysis; location and layout of production departments, maintenance facilities, employee service facilities, offices. Laboratory work involves the design of a complete production system.

142. Production Planning and Control. (3) II. Mr. Carrabino
Prerequisite: course 140 or consent of the instructor.

A study of inventory theories, production models and programming; scheduling and allocation of the factors of production; quality and cost control; and the design of production information and control systems.

- 143. Motion and Time Study.** (4) I, II. Mr. Barnes
Lecture, two hours; laboratory, four hours. Prerequisite: course 140 or consent of the instructor.

Motion and time study as a management tool. Job simplification and motion economy; motion picture film analysis; analyzing operations; time standards and their determination; performance rating and allowances; measuring work by statistical methods; labor cost control.

- 144. Analysis of Line Production Systems.** (3) I, II. Mr. Buffa
Prerequisite: course 140 and consent of the instructor.

A study of continuous production systems. The design and operation of manual, mechanized, and automatic production lines; material movement, balancing operations, in-process storage, physiological and psychological factors in task design, support activities, and line flexibility.

- 147. Job Evaluation and Wage Incentives.** (3) I, II. Mr. Carrabino
Lecture, two hours; laboratory, two hours. Prerequisite: course 140 or consent of the instructor.

Theory, design, evaluation, and administration of wage incentive plans and their interrelationships with job evaluation, methods standardization, and work measurement programs; study of the specialization, enlargement, and optimum design of jobs.

VIII. Personnel Management and Industrial Relations

- 150. Elements of Personnel Management.** (3) I, II.
Mr. Massarik, Mr. Meyers, Mr. Tannenbaum,
Mr. Van de Water, Mr. Weschler

Required of all business administration students.

Principles and methods of utilizing human resources in organizations.

- 152. Leadership Principles and Practice.** (3) I, II.
Mr. Massarik, Mr. Reisel, Mr. Schmidt,
Mr. Tannebaum, Mr. Weschler

Prerequisite: senior standing.

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.

IX. Marketing

- 160. Elements of Marketing.** (3) I, II. Mr. W. Brown, Mr. Howell

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.

- 162. Retail Store Management.** (3) I, II. Mr. Howell
Prerequisite: course 160.

A study of retailing from the standpoint of management. Includes the case-method treatment of such problems as buying, sales promotion, inventory planning and control, pricing, style merchandising, and general management problems.

- 163. Advertising Principles and Policies.** (3) I, II. Mr. W. Brown
Lecture, two hours; laboratory, two hours. 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.

165. Sales Management. (3) I, II.

Prerequisite: course 160 or consent of the instructor.

A case-method study of sales strategy from the managerial viewpoint. Includes merchandising policies, distribution policies, forecasting and planning, sales method and campaigns, pricing, sales department organization, management of the sales force, and budgetary control of sales.

169. Marketing Policies. (4) I, II.

Mr. W. Brown, Mr. Cassady

Lecture, two hours; laboratory, two hours. Prerequisite: course 160 and senior standing.

Marketing management and research methods, including product and promotional policies, distribution channel decisions, the theory of pricing and price policies, and restrictive legislation. Business cases constitute the basis for class discussion. Laboratory periods provide practice in the application of principles.

X. Transportation and Traffic Management**170. Transportation and Traffic Management. (3) I, II.**

Prerequisite: Economics 173 or consent of the instructor.

Emphasizes principles governing the use by business managers of the services of air, surface (rail, truck, bus, pipeline), and water transportation. Treats problems of selection of transportation alternatives, traffic organization and management, and features of transportation services affecting business policies.

171. Motor Carrier Management. (3) II.

Prerequisite: Economics 173 or consent of the instructor.

The specific operational environment of motor transportation and the principles and problems involved in the management of firms in this industry; includes impact of public highway policy, facilities, industry structure, costs, operations, rates, regulatory problems, and intercompany relationships.

172. Rail Transport Management. (3) I, II.

Prerequisite: Economics 173 or consent of the instructor.

Application of management principles and techniques to such problems faced by railroad managements as traffic analysis, organization, service, operations, costs, rates, labor, financing, and intercarrier relationships.

173. Air Transport Management. (3) II.

Prerequisite: Economics 173 or consent of the instructor.

Application of management principles and techniques to such problems faced by air-line managements as traffic analysis, organization, facilities, acquisition, scheduling, operations, costs, rates, labor, financing, intercarrier relationships, and airport terminal management.

174. Water Transport Management. (3) I.

Prerequisite: course 173 or consent of the instructor.

Analysis of management principles and problems involved in ocean, intercoastal, coastwise, and inland waterways ship operation including, among other topics, equipment acquisitions, documentation, regulation, competition, rate policy, and organization.

XI. Real Estate and Urban Land Economics**180. Elements of Real Estate and Urban Land Economics. (3) I, II.**

Mr. Case, Mr. Gillies, Mr. Grebler

An examination of business decision-making as related to the economic, political, geographical, and sociological forces shaping cities and influenc-

ing 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.

181. Real Property, Evaluation. (3) I. Mr. Case, Mr. Gillies, Mr. Grebler

Prerequisite: course 180 or consent of the instructor.

Methods of developing criteria for establishing land values and selecting alternative uses and locations. Ability to reason and choose effectively is cultivated through attention to the theoretical framework underlying property valuation.

182. Urban Economics and Business Policy. (3) II.

Mr. Case, Mr. Gillies, Mr. Grebler

Prerequisite: course 180 or consent of the instructor.

Business policies involved in converting raw land to urban uses. Private, local governmental, and federal programs for housing and construction as related to economic stability and progress as well as the efficient use of urban space.

XII. Management Theory and Policy

190. Organization and Management Theory. (3) I, II.

Mr. Heslip, Mr. Koch, Mr. Koontz, Mr. O'Donnell, Mr. Steiner

Prerequisite: senior standing. Required of all business administration students.

A study of the principles of business management. Emphasis is placed upon the application of these principles to the general, as distinguished from the functional, management of enterprise by means of readings and case studies.

XIII. Advanced Study in Business Administration

199. Special Studies in Business Administration. (1-4) I, II. The Staff

Prerequisite: senior standing and consent of the instructor and the Dean by special petition available in the Office of the Dean.

GRADUATE CORE COURSES†

120G. Business Economics. (3) I, II.

Mr. Neff, Mr. Nicols, Mr. Norton, Mr. Stockfish, Mr. Williams

Open only to graduate students. May be substituted for Economics 1A-1B and courses 100 and 101. Not open to students who have credit for course 100 or 101.

Analysis of decision-making in the firm, competitive policies and market structure, revenue and cost behavior, and expansion through investment. Sales, cost, and profit forecasting. General business forecasting and cyclical mechanisms. The role of policies enterprise under political democracy and public policy.

108G. Law for Business Managers. (3) I, II.

Mr. Hoerber

Open only to graduate students who do not have credit for course 18 (Berkeley), 105B or 108, or the equivalent.

Significance and growth of the law; modern trends in settling business controversies; summary of law of contracts, property, negotiable instruments, agency, partnerships, corporations; regulation of business by the administrative process, with special reference to trade practices and labor relations.

† 102G and 120G are prerequisite to all other core courses. Courses 108G, 115G, 185G, 140G, 150G, and 160G may be taken concurrently.

115G. Business Statistics. (3) I, II.

Open only to graduate students.

An introduction to statistics for graduate students who have had no previous course in which the emphasis is upon applications to business problems.

120G. Survey of Accounting Principles. (3) I, II.

Mr. Louie

Open only to graduate students. May be substituted for courses 1A-1B and 120M. May be elected by students in fields of concentration other than accounting to meet core course requirement in accounting. Not open to students who have credit for courses 1B or 120 or 120M.

The nature, fundamental mechanisms, and central problems of business accounting, with particular emphasis on the problems of periodic income measurement. Basic principles of cost and profit-volume analysis. Preparation and interpretation of the major accounting reports.

131G. Fundamentals of Finance. (3) I, II.

Mr. Eiteman

Prerequisites: course 120 or 120M or 120G. Open only to graduate students who do not have credit for 131 and 133.

Content includes business, financial planning, financial management, securities, and other financial instruments, securities markets, and securities valuation.

135G. Principles of Insurance. (3) I, II.

Mr. Houston

Open only to graduate students who do not have credit for a basic course in 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 issue programs; economic functions of insurance.

140G. Elements of Production Management. (3) I, II.

Mr. Buffa, Mr. Carrabino

Open only to graduate students who do not have credit for a basic course in production management.

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.

150G. Elements of Personnel Management. (3) I, II.

Mr. McLoughlin, Mr. McNaughton

Open only to graduate students who do not have credit for a basic course in personnel management.

Principles and methods of utilizing human resources in organizations.

160G. Marketing. (3) I, II.

Mr. Robbins

Open only to graduate students who do not have credit for a basic course in 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.

190G. Basic Management Theory and Policy. (3) I, II.

Mr. Heslip, Mr. Koontz

Prerequisites: course 120, 120M, or 120G. Open only to graduate students who do not have credit for an advanced course in management theory and policy at the undergraduate level.

An analysis of the functions of managers, emphasizing underlying principles applicable to general, rather than functional, management.

GRADUATE COURSES†**200. Managerial Economics. (3) I, II.**

Mr. Neff, Mr. Nicols, Mr. Norton, Mr. Stockfish
Prerequisite: courses 100, 101, or 102G and 115 or 115G.

Analysis of decision-making in the enterprise. The market environment, measurement of the influence of policy and nonpolicy variables on sales and costs. Sales, cost, and profit forecasting. Capital budgeting and criteria for investment decisions. Inventory, depreciation, dividend and financial policies.

201. Business Forecasting. (3) I, II.

Mr. Andersen, Mr. Neff, Mr. Weston, Mr. Williams

Prerequisite: courses 100, 101 or 102G, and 115 or 115G.

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.

***202. Economic Policy and the Business Environment. (3) I, II.**

Prerequisite: consent of the instructor.

Mr. Norton, Mr. Jacoby

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.

203A. Theory of Decision. (3) I.

Mr. Marschak

Prerequisite: rudiments of economic theory, calculus, and probabilities or statistics.

Norms and facts of decision-making in household, business, government. Consistent behavior in terms of personal utilities and probabilities. Departures from consistency: stochastic theories of behavior and resulting econometric models.

203B. Theory of Information and Organization. (3) II.

Mr. Marschak

Prerequisite: rudiments of economic theory of the firm, and of calculus and probabilities or statistics; 203A or consent of the instructor.

Optimal decision and information rules. Amount, cost, and value of information. Rational models of teams. Relation to the theory of games.

205. Behavioral Science Applied to Management. (3) I, II.

Mr. Massarik, Mr. Tannenbaum, Mr. Weschler

Management as viewed from the standpoint of behavioral science. An examination of the forces shaping individual, group, organizational, sub-cultural, and cultural dynamics, as they affect the management of the business enterprise.

210. Seminar in Operations Analysis. (3) I, II.

Mr. Jackson

Prerequisite: course 118 and consent of instructor.

Selected advanced topics, with emphasis on the theory and practice of specialized techniques, and on the philosophy of quantitative approaches to management decision-making.

* Not to be given, 1961-1962.

† Graduate students who have had little or no previous preparation in business administration should consult the Graduate School of Business Administration for a condensed program of prerequisite courses restricted to graduate students.

- 213. Problems in Integrated Business Systems.** (3) I, II. Mr. Kircher
Prerequisite: course 118 or consent of the instructor.
Need for integrated systems for the collection, transmission, processing, and recording of information; development of models for integrated systems; evaluation of procedures; general purpose and special purpose equipment; case studies of operating systems
- 214. Selected Topics in Data Processing.** (3) I, II. The Staff
Special topics in data processing. Current developments in data processing principles and practice. Analysis of recent literature.
- 216. Sampling Survey in Business.** (3) II. Mr. Jessen
The planning of sampling surveys. Estimation of population characteristics and their precision in simple random samples, stratified samples, systematic samples, and multi-stage samples.
- 217. Quantitative Methods of Business Forecasting.** (3) II. Mr. Williams
Prerequisite: course 117 or consent of the 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; applications to business forecasting.
- 218. Selected Topics in Business Statistics.** (3) II. Mr. G. Brown
Special topics in statistical methods. Current developments in statistical theory and practice. Analysis of recent literature.
- 221A. Seminar in Accounting Problems I.** (3) I. _____
Prerequisite: course 123.
Consideration of basic problems in presenting balance sheets and income and surplus statements, particularly from the standpoint of the public accountant; studies in the accounting methods and problems of specific industries.
- 221B. Seminar in Accounting Problems II.** (3) II. Mr. Buttrey
Prerequisite: course 127.
Advanced study of problems in federal and state income, franchise, gift, and estate taxes; aims to convey an understanding of source materials and research methods for ascertaining current rulings and trends in laws and regulations.
- 222. Seminar in Industrial Accounting.** (3) II. Mr. Carson
Prerequisite: course 122.
A study of industrial and cost accounting problems, theories of cost allocation and absorption; problems of cost budgeting and control. Current cost accounting literature is examined in connection with case studies.
- 224. Accounting Data for Management Purposes.** (3) I. Mr. Kircher
A study of accounting procedures to provide management with data to make decisions; types of data required for planning and control; availability and reliability of such data in accounting systems; provision of special-purpose data; conditions of good internal reporting.
- 229. Seminar in Accounting Theory.** (3) I, II. Mr. Carson
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.

230. Seminar in Money Rates and Money Markets. (3) I.

Mr. Clendenin, Mr. Snell

Prerequisite: Economics 135 and course 133 or 131 or 131G, and course 120 or 120M or 120G, or consent of the instructor.

A study of American money markets. Source of funds for bond investment, mortgage loans, stock financing, and small business financing; the demand for such funds; the interest rates and yields from investments which result from supply-demand relationships.

231. Business Financial Policy. (3) I.

Mr. Shelton, Mr. Weston

Prerequisite: course 120 or 120M or 120G or 131 or 131G and 133, or consent of the instructor.

The social and economic consequences of business financial policies. Projections of aggregate sources and uses of business funds, dividend policy and business saving, possible financing gaps, business and social aspects of mergers and reorganization.

232. Problems of Business Finance. (3) II.

Mr. Andersen, Mr. Snell, Mr. Weston

Prerequisite: course 131 or 131G or 133, or consent of the instructor.

Application of principles of finance to the financial management of business enterprises. The program includes reading assignments on principles and methods of finance, and individual student reports of financial problems of particular importance.

233. Seminar in Investments. (3) II.

Mr. Clendenin, Mr. Graham

Prerequisite: course 120 or 120M or 120G, and 133 or 131G, or consent of the instructor.

Discussion of current problems faced by individual and institutional investors; critical review of special studies made by members of the class on topics relating to investment.

235. Problems in Insurance Management. (3) I.

Mr. Pfeffer

Prerequisite: course 135 or consent of the instructor.

Advanced consideration of the problems of insurance management. Treats the actuarial, underwriting, investment, marketing, and regulatory problems relating to insurance activities.

***236. Life Insurance in Business and Estate Management. (3) I.**

Mr. Pfeffer

Prerequisite: courses 135 or 135G, 136, 108, or 108G; or consent of the instructor.

An advanced study of business life insurance and estate programming with emphasis on the analysis, conservation, management and disposition of the individual or business estate.

***237. Property and Casualty Insurance in Business Management. (3) II.**

Prerequisite: Courses 135 or 135G, 136, 108, or 108G or consent of instructor.

An advanced treatment of the property and liability risks found in business enterprise, with emphasis on the role of the risk manager in the firm.

239. Risk and Risk Bearing. (3) I.

Mr. Pfeffer

Prerequisite: course 135 or consent of the 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.

240A-240B. Seminar in Industrial Plant Management. (3-3) Yr. Mr. Buffa

Course 240B may be taken before course 240A.

Policy decisions encountered at the coordinative, or plant management level. Production policies and organization; determination of production methods; coordinating production activities; industrial risk and forecasting; social aspects of production; case studies.

241A-241B. Seminar in the Management of Industrial Research. (3-3) Yr.

Course 241B may be taken before course 241A.

Mr. Carrabino

Managerial problems and policy decisions concerning technological research; budgeting for research; contributions of engineering and market research; management of research and development; research and industrial progress; social aspects of technological change; product diversification and standardization; case studies.

242. Seminar in Advanced Methods in Production Control (3) I, II.

Prerequisite: course 142.

Mr. Boldyreff

The application of techniques to production planning and scheduling; probability models in inventory control; linear programming in planning and scheduling; priority function scheduling; the use of high-speed computers in production management; design and simulation of production models; case studies.

249A-249B. Seminar in the Scientific Approach to Management. (3-3) Yr.

Mr. Barnes

The historical development of the scientific approach to management; analysis of the contributions of the pioneers, Taylor, Gilbreth, Gantt, Fayol, and others; evaluation of current trends; case studies.

250. Seminar in Personnel Administration (Individual Emphasis). (3) I, II.

Mr. McNaughton, Mr. Weschler

Consideration, at an advanced level, of factors underlying the formation and execution of managerial policies relating to the selection, development, adjustment, and motivation of individual employees. Emphasis on independent investigation and presentations by students.

251. Seminar in Personnel Administration (Group Emphasis). (3) I, II.

Mr. McNaughton, Mr. Weschler

Consideration, at an advanced level, of factors underlying the formation and execution of managerial policies relating to employee participative programs, administration of benefits and services, effects of work environment, and evaluation of the personnel program. Emphasis on independent investigations and presentations by students.

252. Seminar in the Management of Industrial Relations. (3) I.

Mr. McNaughton, Mr. Van de Water

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.

253. Settlement of Industrial Disputes. (3) I, II.

Mr. McNaughton, Mr. Meyers

Prerequisite: course 150 or 150G or Economics 158.

Principles that underlie adjustments of labor controversies. The character and procedures of arbitration, mediation, fact-finding, and conciliation. Policies of existing agencies dealing with industrial disputes.

254. Analysis of Labor Markets. (3) I, II.

Mr. Meyers

Prerequisite: consent of the instructor.

Problems of verifying hypothesis concerning labor market behavior and the application of data to managerial problems. Problems operationally defining labor market concepts. Critical evaluation of available labor market data. Case studies applying these data to managerial problems.

260. Seminar in Product Planning and Distribution Channeling. (3) I, II.

Mr. W. Brown

A study of the influence of technique and marketing variables on the adaptation of product design to market requirements and on the selection of channels of distribution.

261. Seminar in Marketing Institutions. (3) I.

Mr. Cassady

Investigative procedures in solving marketing problems. Legal environment in which marketing institutions operate. Types of competitive factors (dealer relations, self-service operations, store location, etc.) in relation to rivalry.

262. Seminar in Price Policies. (3) II.

Mr. Cassady

Consideration of such concepts as demand, theory of competition, market classification, price leadership, geographical pricing schemes, and price discrimination; analysis of the price policies of individual firms in which these concepts are utilized.

263. Theory and Management of Market Stimulation. (3) I, II.

Mr. W. Brown

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.

270. Transportation Management. (3) I, II.

Prerequisite: Economics 173 or consent of the instructor.

Exploration, through individual research and analysis and group discussion, of the basic managerial problems and policies of transport firms. External relationships which strongly condition internal policy are considered. A functional approach to transportation, dealing with all agencies.

280. Management of Real Estate Enterprises. (3) I.

Mr. Case, Mr. Gillies, Mr. Grebler

Prerequisite: course 180, 181 and 182; or consent of the instructor.

A case-study approach to the use of urban land by business enterprises, including the theory, principles, and policies necessary for locations and site selection, property improvement, marketing and financing urban space. Particular attention is given to federal housing programs and agencies.

282. Seminar in Urban Land Utilization. (3) II.

Mr. Case, Mr. Gillies, Mr. Grebler

Prerequisite: course 180, 181, and 182; or consent of the instructor.

Study of forces affecting land uses, with emphasis on city growth and structure, locational theory, and the conversion of urban facilities to economic uses. Field research in urban development and redevelopment, central business districts, housing problems, and specialized real estate business activities. Extensive reading in current literature.

290. Seminar in Organization Theory. (3) I, II.

Mr. Koontz, Mr. O'Donnell, Mr. Powell

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.

291. Seminar in Planning and Control. (3) I, II.

Mr. Koch, Mr. Koontz, Mr. Steiner

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.

292. Seminar in Direction and Leadership. (3) I, II.

Mr. Massarik, Mr. Tannenbaum

The management function of direction and its implementation through leadership. Emphasis on research and theories dealing with the key variables underlying the manager's interpersonal effectiveness in an organizational context.

293. Seminar in the Philosophy of Enterprise Control. (3) II.

Mr. O'Donnell

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.

294. Seminar in Business Policies. (3) I, II.

Mr. Koch, Mr. O'Donnell

Analysis of business cases; the identification of salient problems encountered by managers at all levels, and the application of management principles to their identification and solution.

299. Research in Business Administration. (1 to 4) I, II.

The Staff

Prerequisite: consent of the instructor and the Dean by special petition available in the office of the Assistant Dean of Student Affairs.

299R. Research Methods in Business Administration. (3) I, II.

The Staff

The scientific method in management research, variations in research methodology and design, methods of data collection and analysis, the application of research findings. Individual and/or group projects will be required.

BUSINESS EDUCATION

(Department Office, 3320 Graduate Business Administration Building)

†Samuel J. Wanous, Ph.D., *Professor of Education and Assistant Dean of the School of Education.*

Lawrence W. Erickson, Ed.D., *Associate Professor of Education.*

Erwin M. Keithley, Ed.D., *Associate Professor of Business Administration.*

Margaret H. Thompson, M.Ed., *Associate in Education.*

Evelyn Chin, M.Ed., *Assistant in Business Administration.*

Students wishing to prepare for teaching in the field of business education should plan to obtain the bachelor's degree with a major in business administration. § The bachelor's degree with a major in business education is being discontinued, and will not be awarded after September, 1962. Lower division courses in business education have been discontinued. Reentering students with a major in the field will be admitted during 1961-1962 only if degree requirements can be met by September, 1962.

NOTE: Students majoring in business education may not elect business administration as a minor.

Preparation for the Major.—Courses 3A-3B, 5, Business Administration

† Absent on leave, 1961-1962.

§ For further information see Professor S. J. Wanous or Professor E. M. Keithley.

1A-1B, Economics 1A-1B, Psychology 1A, 1B or 33, English 1A, Speech 1, Geography 1, 5B. In addition, students not completing Psychology 1B must take 3 units of science.

Business Education 4A-4B, or equivalent, is required for the teaching specialization in office administration.

The Major.—The major comprises 36 upper division units, distributed as follows:

I. General requirements: Business Education 110, 112, 113, 114, 115; Business Administration 108, 160.

II. Specialization requirements:

1. Office Administration.

Business Education 111, 116, 370A; and electives chosen from the following list to bring the total to 36 units: Business Education 370B, 370C, Business Administration 115, 120, 121, 127, 135, 152, 180, Economics 140, Education 100A, 100B, 110A, 137.

2. Accounting.

Business Education 370B and two units chosen from 370A, 370C; Business Administration 120 and one additional upper division accounting course; one course chosen from Business Administration 135, 152, 180, Business Education 111, 116; Education 137; and, if necessary, electives chosen from the optional courses listed in this specialization to bring the total units to at least 36.

3. General Business.

Business Education 111 and 116 (or Business Administration 120 and one additional upper division accounting course); 370C and two units chosen from 370A, 370B; one course chosen from Business Administration 135, 152, 180, Economics 150, 195; Education 137; and, if necessary, electives chosen from the optional courses listed in this specialization to bring the total units to at least 36.

4. Merchandising.

Business Education 111 and one course chosen from Business Education 116, Business Administration 135, 152, 180 (or Business Administration 120 and one additional upper division accounting course); 370C and two units chosen from 370A, 370B; Business Administration 162, 163, 165; Education 137; and, if necessary, electives chosen from the optional courses listed in this specialization to bring the total units to at least 36.

Graduate Division.—Students in business education may earn the following graduate degrees: Master of Business Administration in the School of Business Administration; Master of Education, Master of Arts, or Doctor of Education in the School of Education. For further information see the ANNOUNCEMENTS OF THE SCHOOL OF BUSINESS ADMINISTRATION, THE SCHOOL OF EDUCATION, and THE GRADUATE DIVISION, SOUTHERN SECTION.

Requirements for Teaching Credentials.—Candidates for the general secondary credential with a major or minor in business education should consult the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES.

LOWER DIVISION COURSES

***3A-3B. Secretarial Training.** (2-2) Beginning either semester.

Mr. Erickson, Miss Chin
Designed especially for and limited to students preparing for the teaching credential in business education.

A study of typewriting in which the groundwork is laid for a through understanding of office management and business teaching problems. Prin-

* Not to be given, 1961-1962.

ciples of operating various kinds of typewriters, special adaptations of each, and bases of speed and accuracy development are included.

***4A-4B. Secretarial Training. (3-3) Beginning either semester.**

Mr. Erickson, Miss Chin

Designed especially for and limited to students preparing for the teaching credential in business education.

A study of shorthand in which the groundwork is laid for a thorough understanding of office management and business teaching problems. An analysis of various techniques used in mastery of technical vocabularies and speed in writing and reading shorthand from dication is included.

***5. Introduction to Business Education. (3) I, II.**

Mr. Erickson

(To be discontinued after the fall semester, 1960.)

Open only to lower division students.

Orients students to the field of business and business education. Covers, in survey form, functions, characteristics, organization, and problems of business. Serves as a foundation for later specialized study, and directs the thinking of students to possible careers.

UPPER DIVISION COURSES

110. Business Communications. (3) I, II.

Miss Chin, Mr. Keithley, Mrs. Thompson

Prerequisite: course 3A or its equivalent.

Designed to give students an understanding of the services of written communications to business, training in the writing of communication forms in typical business situations, and a review of correct English usage in business writing.

111. Applied Secretarial Practice. (3) I, II.

Mr. Erickson, Miss Chin

Prerequisite: courses 3A-3B, 4A-4B.

Study of stenographic office problems, including the development of expert skill and ability in transcription. A consideration of the principles underlying the editing of dictated letters and reports and of the requirements and standards of stenographic positions in civil service as well as in various types of private offices.

112. Management of Office Services. (3) I, II.

Prerequisite: course 3A or its equivalent.

A study of procedures, standards, and methods of measurement related to office services. An introductory consideration of human relations problems in the office, and their solutions. The development of an understanding of the uses of various types of office machines.

113. Office Organization and Management. (3) I, II.

Mr. Erickson, Mr. Keithley

Analysis of functions of various office departments, their organization and management. Methods used in selecting and training office personnel; office planning and layout; selection and care of office supplies and equipment; methods and devices used to improve operating efficiency; types and uses of office appliances; techniques for performing office duties.

114. Business Report Writing. (2) I, II.

Mr. Keithley, Mrs. Thompson

Prerequisite: course 3A, or equivalent, and course 110.

A study of the processes of investigation and presentation of business problems and their solutions. Training in methods of collecting, organizing,

* Not to be given, 1961-1962.

and interpreting data, with emphasis upon writing the elements of a final report.

115. Management of Office Personnel. (3) I, II. Mr. Erickson
Prerequisite: course 113.

An analysis of the principles, methods, and procedures of effective utilization of office personnel. Recruiting, selecting, inducting, training, compensating, promoting, and managing employee relations. A study of standardization of procedures, job analyses and job descriptions, production standards, and control methods.

116. Office Systems and Procedures. (3) I, II. Mr. Keithley
Prerequisite: course 113.

Study of principles of good office systems, techniques used in making systems and machine-utilization surveys, motion economy applied to office jobs, and tools used by methods analysts.

199. Special Studies. (1-4) I, II. The Staff
Prerequisite: senior standing and consent of the instructor.

GRADUATE COURSES

210. Case Studies in Office Management. (2) II. Mr. Keithley

299. Independent Study in Business Education. (2-4) I, II. The Staff

PROFESSIONAL COURSES IN METHOD

370A. Methods of Teaching Secretarial Subjects. (2) I. Mr. Erickson

A survey and evaluation of the methods and materials used in teaching typewriting, shorthand, transcription, and office training to secondary school pupils. Also considered are achievement standards, grading plans, measurement devices, and procedures for adapting instruction to various levels of pupil ability.

370B. Methods of Teaching Bookkeeping and Accounting. (2) II. Mr. Erickson

A study of the devices, methods, and materials used in teaching bookkeeping, business arithmetic, and related business subjects. A consideration of course objectives, curricular placement, units of instruction, and testing and teaching methods.

370C. Methods of Teaching General Business and Merchandising. (2) I. Mr. Erickson, Mrs. Thompson

A study of the devices, methods, and materials used in teaching general business and merchandising subjects. Emphasis placed upon study of current practices, objectives, teaching aids, testing, and evaluation of instructional materials.

CHEMISTRY

(Department Office, 3010 Chemistry Building)

Francis E. Blacet, Ph.D., *Professor of Chemistry.*

‡Donald J. Cram, Ph.D., *Professor of Chemistry.*

Max S. Dunn, Ph.D., *Professor of Chemistry.*

Clifford S. Garner, Ph.D., *Professor of Chemistry.*

Theodore A. Geissman, Ph.D., *Professor of Chemistry.*

Wendell H. Griffith, Ph.D., *Professor of Chemistry, and Professor of Physiological Chemistry in the School of Medicine.*

‡ Sabbatical leave in residence, 1961-1962.

Thomas L. Jacobs, Ph.D., *Professor of Chemistry*.
 Willard F. Libby, Ph.D., *Professor of Chemistry*.
 James D. McCullough, Ph.D., *Professor of Chemistry*.
 William G. McMillan, Jr., Ph.D., *Professor of Chemistry (Chairman of the Department)*.

†Robert L. Scott, Ph.D., *Professor of Chemistry*.
 Kenneth N. Trueblood, Ph.D., *Professor of Chemistry*.
 Saul Winstein, Ph.D., *Professor of Chemistry*.
 William G. Young, Ph.D., *Professor of Chemistry*.
 William R. Crowell, Ph.D., *Professor of Chemistry, Emeritus*.
 James B. Ramsey, Ph.D., *Professor of Chemistry, Emeritus*.
 G. Ross Robertson, Ph.D., *Professor of Chemistry, Emeritus*.
 Hosmer W. Stone, Ph.D., *Professor of Chemistry, Emeritus*.
 Daniel E. Atkinson, Ph.D., *Associate Professor of Chemistry*.
 Paul S. Farrington, Ph.D., *Associate Professor of Chemistry*.
 Daniel Kivelson, Ph.D., *Associate Professor of Chemistry*.
 Robert L. Pecsok, Ph.D., *Associate Professor of Chemistry*.
 Kyle D. Bayes, Ph.D., *Assistant Professor of Chemistry*.
 Richard G. Brewer, Ph.D., *Assistant Professor of Chemistry*.
 Eugene R. Hardwick, Ph.D., *Assistant Professor of Chemistry*.
 James B. Hendrickson, Ph.D., *Assistant Professor of Chemistry*.
 Herbert D. Kaesz, Ph.D., *Assistant Professor of Chemistry*.
 Roberts A. Smith, Ph.D., *Assistant Professor of Chemistry*.
 †Charles A. West, Ph.D., *Assistant Professor of Chemistry*.
 ———, *Assistant Professor of Chemistry*.
 Christopher S. Foote, Ph.D., *Instructor in Chemistry*.
 Paul C. Haake, Ph.D., *Instructor in Chemistry*.



George C. Kennedy, Ph.D., *Professor of Geochemistry*.

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.

Letters and Science List.—All undergraduate courses in chemistry are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

Preparation for the Major.—Required: Chemistry 1A–1B, 5A (or Chemistry 3A–3B), Physics 1A, 1C, Mathematics C, 1, 3A, 3B, 4A (or the alternative sequence 5A–5B, 6A), English 1A, and a reading knowledge of German. Recommended: Mathematics 4B or 6B, Physics 1D, and an additional course in chemistry.

Students should note that the lower division curriculum prescribed for the College of Chemistry at Berkeley differs from the lower division curriculum in the College of Letters and Science at Los Angeles.

The Major.—The minimum requirement for the major in chemistry is Chemistry 5B (3), 110A–110B (6), 112A–112B (10), 111 (4) and two additional courses in chemistry, of which one must include laboratory work, selected from the following group: 103, 107, 121, 125, 126A, 126B, 130A, 130B, 131, 132, 133, 135, 136, 137, 198. It is recommended that courses through Chemistry 110B and 112B be completed by the end of the junior year provided this can be accomplished without neglecting broader educational needs. The courses which should be considered for the senior year depend somewhat on

† Absent on leave, 1961–1962.

the student's special interest. If this be physical-inorganic chemistry, courses 121, 125, 130A, 130B, 131, 132 and 133 are recommended for consideration along with certain advanced courses in physics and mathematics; if organic chemistry, courses 103, 126A and 126B; and if biochemistry, courses 107, 135, 136 and 137, along with certain courses in the life sciences.

The following courses outside of chemistry are also required and should be finished as early as possible (some may be taken in the lower division): English 106S, Mathematics 4B or 6B, Physics 1D.

Completion of the major in chemistry automatically meets the minimum requirements for eligibility to full membership in the American Chemical Society in the minimum time of two years after graduation.

Chemistry majors are urged to seek help and advice in the Chemistry Undergraduate Adviser's Office, Room 3326A, Chemistry Building.

Transfer Students.—A student who transfers to the University of California, Los Angeles, with a grade of B or better in both Chemistry 8 and 9 (or their equivalents) may be admitted to Chemistry 112B. It is recommended, however, that he take Chemistry 112A for which he will receive 3 units of credit instead of the usual 5 units. A transfer student who has credit for only Chemistry 8 (or its equivalent), or for Chemistry 8 and Chemistry 9 (or their equivalents) with a grade less than B in either of these courses, must take Chemistry 112A for which he will receive 3 units of credit. To receive credit toward the major for Chemistry 112A and 112B (or their equivalents), which have been taken elsewhere, the consent of the departmental adviser is required.

Upper Division Credit.—Chemistry majors will receive upper division credit for Chemistry 5B if taken while in upper division. Non-chemistry majors will receive upper division credit for any three of the courses 5A, 5B, 8, 9, if taken while in the upper division.

Graduate Study.—The Department of Chemistry offers programs of study and research leading to the M.S. and Ph.D. degrees in chemistry and to the M.S. and Ph.D. degrees in biological chemistry. Prospective candidates for advanced degrees in chemistry may specialize in any of the following fields: analytical, biological, inorganic, organic, or physical chemistry.

The general University requirements for the M.S. degree are given on page 69; the Department of Chemistry makes use of Plan I, the Thesis Plan. The general University requirements for the Ph.D. degree are given on page 71. The 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 the Graduate Adviser, Department of Chemistry, University of California, Los Angeles 24, California.

LOWER DIVISION COURSES

Certain combinations of courses involve limitations of total credit as follows: 2A and 1A, 9 units; 2 and 1A, 7 units; 8 and 112A, 6 units; 8, 9 and 112A, 9 units.

1A. General Chemistry. (5) I, II.

Mr. Kaesz, Mr. McCullough, Mr. Trueblood

Lecture, three hours; laboratory and quiz, six hours. Prerequisite: high school chemistry; for outstanding students high school physics and three years of high school mathematics is an acceptable alternative. All students who intend to take this course must take a preliminary examination, which will normally be given about ten days before instruction begins. Enrollment priority will be given to those students who have taken the examination satisfactorily at that time. Those appearing for the examination must be prepared to identify themselves. This course, or course 3A, is required of majors in chemistry and in various other fields of science and/or technology.

The first half of a basic course in principles of chemistry, with special emphasis on chemical calculations.

1B. General Chemistry. (5) I, II.

Mr. Blacet, Mr. Farrington, Mr. Garner, Mr. Trueblood

Lecture, three hours; laboratory and quiz, six hours. Prerequisite: course 1A or 3A. Required in the same curricula as course 1A or 3A.

A continuation of course 1A, with special applications to the theory and technique of qualitative analysis; periodic system; structure of matter. A brief introduction to organic chemistry is included.

2. Introductory Chemistry. (3) I, II.

Mr. Hardwick

Lecture, three hours. The course may be taken for credit in physical science by students following curricula not requiring laboratory work in such field of study. Not open for credit to students who have credit for course 2A.

An introductory course emphasizing the principles of chemistry and including a brief introduction to elementary organic chemistry.

2A. Introductory Chemistry. (5) I, II.

Mr. Hardwick

Lecture, three hours; laboratory and quiz, four hours. This course satisfies the chemistry requirements for nurses as prescribed by the California State Board of Nursing Examiners; it is required of certain home economics majors. Not open for full credit to students who have credit for course 2.

An introductory course emphasizing the principles of chemistry and including a brief introduction to elementary organic chemistry.

3A-3B. Introductory Chemical Principles. (5-5) Yr.

Mr. Farrington, Mr. Libby, Mr. Trueblood

Lecture, three hours; laboratory and quiz, six hours. Prerequisite: an outstanding record in high school chemistry or physics and in at least three years of high school mathematics. Admission will be on basis of special examination to be given approximately ten days before instruction begins. Enrollment to be limited. Not open to students who have credit for Chemistry 1A.

An introduction to the principles and techniques of chemistry for the unusually well-qualified student. The sequence Chemistry 3A-3B covers essentially the same material as does the sequence Chemistry 1A-1B-5A.

5A. Quantitative Analysis. (3) I, II.

Mr. Farrington, Mr. Pecsok

Lecture, discussion, and quiz, two hours; laboratory, six hours. Prerequisite: courses 1A-1B, or 3A and 1B. Required of majors in chemistry and in various other fields of science and/or technology.

Principles and technique involved in fundamental gravimetric and volumetric analyses.

5B. Quantitative Analysis. (3) I, II.

Mr. Bayes, Mr. Farrington, Mr. Pecsok, Mr. Scott

Lecture, discussion, and quiz, two hours; laboratory, six hours. Prerequisite: course 5A or 3B. Required of chemistry majors.

A continuation of course 5A but with greater emphasis on theory, analytical problems in acidimetry and alkalimetry, oxidimetry, electrolytic deposition, and semiquantitative procedures.

8. Elementary Organic Chemistry. (3) I, II.

Mr. Cram, Mr. Geissman, Mr. Haake, Mr. Jacobs

Prerequisite: courses 1A and 1B. Course 2A will be accepted for nonscience majors only. Concurrent enrollment in course 9 is advisable.

An introductory study of the compounds of carbon, including both aliphatic and aromatic derivatives.

- 9. Methods of Organic Chemistry.** (3) I, II. Mr. Foote, Mr. Hendrickson
Lecture and quiz on principles of laboratory manipulation, two hours;
laboratory, six hours. Prerequisite or concurrent: course 8.
Laboratory work devoted principally to synthesis, partly to analysis.

UPPER DIVISION COURSES

Certain combinations of courses carry limitations of total credit, as follows:
108A, 108B and 135, 6 units; 109 and 110A, 5 units; 8 and 112A, 6 units;
8, 9 and 112A, 9 units.

- 103. Qualitative Organic Analysis.** (3) I, II. Mr. Hendrickson

Lecture, discussion, and quiz, two hours; laboratory, six hours. Prerequisite: courses 5A or 3B and 112B.

Identification of unknown organic compounds with emphasis on use of microtechniques; discussion of modern quantitative and instrumental methods, with special regard to the identification of natural products.

- 106. Clinical Chemistry.** (3) I. Mr. Smith, Mr. West

Lecture, one hour; laboratory and quiz, six hours. Prerequisite: Chemistry 5A or 3B and 108B. Required in the medical technology curriculum. May not be offered as part of the major in chemistry.

Qualitative and quantitative methods in clinical chemistry.

- *107. Amino Acids and Proteins.** (3) I. Mr. Dunn

Lecture, three hours. Prerequisite: courses 5A or 3B and 9 or 112B.

A detailed treatment of the chemistry and metabolism of amino acids, polypeptides, and proteins.

- 108A-108B. General Biochemistry.** (3-3) Yr.

Mr. Atkinson, Mr. Smith, Mr. West

Lecture, three hours. Prerequisite: course 8 or 112B.

This course may not be offered as part of the major requirements in chemistry. Chemistry majors may take Chemistry 135.

Discussion of the basic principles of the biochemistry of plants, animals, and microorganisms with emphasis on metabolism.

- 109. General Physical Chemistry.** (4) I. Mr. Bayes, Mr. McCullough

Lecture and demonstration, four hours. Prerequisite: course 5A or 3B, Physics 2A-2B, Mathematics 1; recommended preparation, course 8, Mathematics 37. May not be offered as part of the major in chemistry.

Chemical principles of particular importance in the life sciences and geology.

- 110A. Physical Chemistry.** (3) I, II.

Mr. Kivelson, Mr. Libby, Mr. McCullough, Mr. McMillan

Prerequisite: course 3B or 5A, Physics 1A, and Mathematics 4A or 6A (with a minimum grade of C in each), and course 5B (may be taken concurrently). Non-chemistry majors may be admitted without course 3B or 5A or 5B.

Certain fundamental principles relating to matter and energy, including first, second and third laws of thermodynamics with applications to thermochemistry and the mass-action law of chemical equilibrium; gas laws and molecular-kinetic theory.

- 110B. Physical Chemistry.** (3) I, II.

Mr. Garner, Mr. Kivelson, Mr. Libby, Mr. McMillan

Prerequisite: course 110A and Physics 1C; Mathematics 4B or 6B (may be taken concurrently).

Colligative properties of solutions of nonelectrolytes; fugacity, activity

* Not to be given, 1961-1962.

and standard states, phase equilibria, chemical kinetics; electrical properties of solutions and ionic theory; electromotive force of voltaic cells.

110G. Physical Chemistry. (3) I, II.

Mr. Kivelson, Mr. Libby, Mr. McCullough, Mr. McMillan

Prerequisite: same as for course 110A. Open only by permission of the chemistry graduate adviser to graduate students who have not taken course 110A in this institution.

110H. Physical Chemistry. (3) I, II.

Mr. Garner, Mr. Kivelson, Mr. Libby, Mr. McMillan

Prerequisite: course 110A or 110G. Open only by permission of the chemistry graduate adviser to graduate students who have not taken course 110B in this institution.

111. Methods of Physical Chemistry. (4) I, II.

Mr. Brewer, Mr. Scott

Lecture, two hours; laboratory, six hours. Prerequisite: courses 110A, 110B (may be taken concurrently), and Physics 1D (may be taken concurrently).

Physicochemical measurements and laboratory experiments illustrating some of the important principles of physical chemistry.

112A-112B. Organic Chemistry. (5-5) Yr. Beginning either semester.

Mr. Cram, Mr. Foote, Mr. Geissman, Mr. Jacobs

Lecture, three hours; laboratory and quiz, six hours. Prerequisite: courses 1B and 5A, or 3B. A student who has received a grade of B or better in both courses 8 and 9 may be admitted to course 112B without having had course 112A. It is recommended, however, that he take course 112A, for which he will receive 3 units of credit instead of the usual 5 units.

A beginning course designed primarily for chemistry majors, but open to other students who desire a more comprehensive course than Chemistry 8 and 9. Organic chemistry is presented with emphasis upon the application of modern principles to structure, reactivity, methods of synthesis, and physical properties of organic compounds.

***121. Methods of Inorganic Chemistry. (3) I.**

Lecture, discussion, and quiz, two hours; laboratory, six hours. Prerequisite: course 5B.

Equilibrium and reaction rate; periodic classification. Laboratory work principally synthetic and analytic, involving special techniques.

125. Instrumental Methods. (3) II.

Mr. Farrington, Mr. Pecsok, Mr. Trueblood

Lecture, discussion, and quiz, two hours; laboratory, six hours. Prerequisite: courses 5B, 110B, 111, and Physics 1D. In the event that it is necessary to limit enrollment, admission will be based upon performance in the prerequisite courses, particularly 5B and 111.

Theory and application of instrumental methods in chemical problems. The laboratory work will include experiments in spectrophotometry, chemical microscopy, polarography, radioactivity, and various other modern techniques.

126A-126B. Advanced Organic Chemistry. (3-3) Yr.

Lecture, three hours. Mr. Cram, Mr. Geissman, Mr. Jacobs, Mr. Winstein

Prerequisite: Chemistry 112A-112B or its equivalent. Primarily for seniors and first-year graduate students. With the consent of the instructor, course 126B may be taken without 126A by capable students who have done well in the prerequisite, but this is not encouraged.

* Not to be given, 1961-1962.

A comprehensive course based upon modern concepts. Substitution, elimination, and addition reactions, condensations, rearrangements, stereochemistry and free-radical chemistry.

130A. Advanced Physical Chemistry. (3) I.

Mr. Garner, Mr. Kivelson, Mr. McMillan

Lecture, three hours. Prerequisite: Chemistry 110B; Mathematics 4B or 6B; Physics 1C, 1D. Primarily for seniors and first-year graduate students.

Selected topics in modern physical chemistry, including quantum effects, nucleonics, interaction of matter with fields, intermolecular forces, chemical bond, molecular structure and the solid state.

130B. Advanced Physical Chemistry. (3) II. Mr. McMillan, Mr. Scott

Lecture, three hours. Prerequisite: Chemistry 110B; Mathematics 4B or 6B; Physics 1C, 1D. Chemistry 130A is prerequisite except with the permission of the instructor.

A continuation of Chemistry 130A. Selected topics in modern physical chemistry, including probability and statistical methods, partition functions and statistical thermodynamics, heat capacities, electric and magnetic effects, statistical theory of reaction rates, imperfect gases and condensation, liquids and solutions, phase transitions.

131. Absorption Spectra and Photochemical Reactions. (2) II. Mr. Blacet

Prerequisite or concurrent: course 110A. Normally offered only in alternate years.

The chemical interpretation of spectra and the study of chemical processes which are initiated by the absorption of visible and ultraviolet radiation.

***132. X Rays and Crystal Structure. (2) II.** Mr. McCullough, Mr. Trueblood

Prerequisite: course 110A. Normally offered only in alternate years.

Symmetry of crystals; use of X rays in the investigation of crystal structure.

133. Inorganic Chemistry. (3) II.

Mr. Kaesz

Lecture, three hours. Prerequisite: courses 110B and the equivalent of 112A.

Theory of bonding in inorganic chemistry; stereochemistry; uncommon oxidation states; the periodic generalization with emphasis on relationship to electronic structure; acid-base theory and related topics.

135. Biochemistry. (3) I.

Mr. Atkinson, Mr. West

Lecture, three hours. Prerequisite: courses 112B and either 109 or 110A (110A may be taken concurrently).

A course in the principles of biochemistry designed for chemistry majors and others with equivalent preparation. Students lacking such preparation may take courses 108A and 108B which are not counted toward the fulfillment of the chemistry major requirements.

136. Methods of Biochemistry. (3) II. Mr. Atkinson, Mr. Smith, Mr. West

Lecture, discussion, and quiz, two hours; laboratory, six hours. Prerequisite: courses 5A or 3B and 108B or 135 (108B may be taken concurrently).

The preparation, analysis, and reactions of metabolites in animals, plants, and microorganisms.

***137. Chemistry of Bacterial Nutrition. (2) II.**

Mr. Dunn

Lecture, two hours. Prerequisite: approved courses in bacteriology and biochemistry.

Detailed studies of bacterial nutrition and metabolic products. Microbiological assays of vitamins and amino acids.

198. **Special Courses in Chemistry.** (2-3) I, II. The Staff

199. **Special Studies in Chemistry.** (3) I, II. The Staff
Prerequisite: senior standing and consent of the Chemistry Undergraduate Adviser.

GRADUATE COURSES

202. **Chemical Kinetics.** (3) II. Mr. Bayes, Mr. Kivelson
Normally offered only in alternate years.

A critical consideration of all important classes of chemical reactions in gaseous and condensed phases and at interfaces between phases. Experimental methods, and application of theory. Recent advances in the theory of reaction rates.

*203. **Chemical Thermodynamics.** (3) I. Mr. McMillan, Mr. Scott
Normally offered only in alternate years.

Derivation and application of thermodynamic relations of particular importance in chemistry; partial molar quantities and thermodynamic properties of solutions; the concepts of standard states, fugacity, activity, and activity coefficient and their uses; phase equilibria; electrochemical changes; special topics in thermodynamics.

221. **Physical Organic Chemistry.** (3) II. Mr. Winstein

A course stressing the quantitative approach to kinetics and mechanism of organic reactions. Criteria of mechanism. Correlations of reactivity and equilibrium.

222A-B-C-D-E-F. **Advanced Topics in Organic Chemistry.** (2) I, II.
A Staff Member in Organic Chemistry

The subject matter of this course will be in a recognized field of organic chemistry in which the staff member giving the course has developed special proficiency owing to his research interests.

231. **Nuclear Chemistry.** (3) I. Mr. Garner, Mr. Libby

Radioactivity; nuclear reactions; interaction of nuclear radiations with matter; detection and measurement of nuclear radiations; methods of preparation, isolation and identification of radionuclides; chemical effects of nuclear transformations; isotope effects; applications of stable and radioactive tracers to chemical problems.

232A-B-C-D-E-F. **Advanced Topics in Physical and Inorganic Chemistry.**
(2) I, II. A Staff Member in Physical or Inorganic Chemistry

The subject matter of this course will be in a recognized field of physical or inorganic chemistry in which the staff member giving the course has developed special proficiency owing to his research interests.

*233. **Statistical Mechanics.** (3) I. Mr. McMillan

Prerequisite: course 130B; Mathematics 4B. Recommended: course 203; Physics 105; Mathematics 119A, 122A-122B. Normally offered only in alternate years.

Derivation of the laws of molecular assemblies from the properties of the individual molecules, including: elementary kinetic theory of gases; thermodynamic functions for monatomic, diatomic, and polyatomic gases; chemical equilibrium; the crystalline state; theory of the general imperfect gas; condensation; and related topics.

234. **Quantum Chemistry.** (3) II. Mr. Kivelson, Mr. McMillan

Prerequisite: course 130A; Physics 121; Mathematics 119B or 110B; or

* Not to be given, 1961-1962.

consent of the instructor. Recommended: course 131, Physics 105. Normally offered only in alternate years.

Elementary quantum mechanics, with particular emphasis on chemical applications. Includes: classical mechanics; early quantum theory; wave-particle dualism; statistical interpretation; Schrödinger formulation; particle in a potential well, harmonic oscillator, and rigid rotator; hydrogen atom; periodic system; approximation methods, molecules; chemical bond types; and more advanced topics as time permits.

***238. Chemistry of Intermediary Metabolism.** (3) II. Mr. West
Prerequisite: course 108A-108B or 135. Normally offered only in alternate years.

Detailed consideration of metabolic transformations and the experimental methods employed in this field.

240. Chemistry of Enzyme Action. (3) II. Mr. Atkinson
Prerequisite: courses 108A-108B or 135 and 109 or 110A, or consent of the instructor. Normally offered only in alternate years.

Physical and chemical characteristics of enzymes; kinetics and mechanisms of enzyme-catalyzed reactions.

242A-B-C-D-E-F. Advanced Topics in Biochemistry. (2) I, II.

The Staff in Biochemistry

The subject matter of this course will be in a field of biochemistry in which the staff member giving the course has developed special proficiency owing to his research interests.

260. Seminar in Chemistry. (1) I, II. The Staff

Oral reports by graduate students on important topics from the current literature in their field of chemistry. Each student taking this course must consult the instructor in charge before enrolling, and is expected to present a report.

261. Seminar in Biochemistry. (1) I, II. The Staff in Biochemistry

299. Research in Chemistry. (3 to 6), I, II. The Staff

Research in analytical chemistry, biological chemistry, inorganic chemistry, organic chemistry, and physical chemistry.

CHINESE

For courses in Chinese, see under Department of Oriental Languages.

CLASSICS

(Department Office, 340 Royce Hall)

Paul Augustus Clement, Ph.D., *Professor of Classics and Classical Archaeology.*

²Albert Hartman Travis, Ph.D., *Professor of Classics (Chairman of the Department).*

Frederick Mason Carey, Ph.D., *Professor of Classics, Emeritus.*

Paul Friedlander, Ph.D., *Professor of Latin and Greek, Emeritus.*

Herbert Benno Hoffleit, Ph.D., *Associate Professor of Classics.*

_____, *Assistant Professor of Classics.*

¹Jaan Puhvel, Ph.D., *Assistant Professor of Classics and Indo-European Linguistics.*

Helen Florence Caldwell, M.A., *Lecturer in Classics.*

Evelyn Venable Mohr, M.A., *Associate in Classics.*

* Not to be given, 1961-1962.

¹ In residence fall semester only, 1961-1962.

² In residence spring semester only, 1962.

Letters and Science List.—All undergraduate courses in the department are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

Major Fields

The student may take the major in Latin, in Greek, or in Latin and Greek (i.e., in the Classics). 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

A. Latin. Required: courses 1, 2, 3, 4, or four years of high school Latin and course 4, or three years of high school Latin and courses 3 and 4, or two years of high school Latin and courses 2, 3, and 4; course 9A-9B (which may be taken concurrently with upper division courses). Recommended: English, French, German, Greek, Italian, Spanish.

B. Greek. Required: courses 1 and 2, or two years of high school Greek and course 100A-100B (which may be taken concurrently with upper division courses). Recommended: English, French, German, Italian, Latin, Spanish.

C. Latin and Greek (the Classics). Required: the courses listed above as required in preparation for the major in Latin (A.) and for the major in Greek (B.). Recommended: English, French, and German.

The Major

A. Latin. (1) courses 101, 102, 103, 104, 105, 106, 180; (2) at least four units of upper division courses in Classics, English, French, German, Greek, Italian, Latin, Linguistics, Sanskrit, Spanish, ancient or medieval history or philosophy, to be chosen with the approval of the department (especially recommended are Classics 102, 151A-B-C-D; Greek 100 through 106, and 180A-180B; History 111A-111B and 113A-113B).

B. Greek. (1) courses 100A-100B, 100C-100D, 101, 102, 103, 104, 105, 106, 180A-180B; (2) at least four units of upper division courses in Classics, English, French, German, Greek, Italian, Latin, Sanskrit, Spanish, ancient or medieval history or philosophy, to be chosen with the approval of the department (especially recommended are Classics 102, 151A-B-C-D, Latin 101 through 180, History 111A-111B and 112A-112B).

C. Latin and Greek (the Classics). Required: (1) Latin 101, 102, 103 or 105, 104 or 106, and 180; (2) and Greek 101, 102, 103 or 105, 104 or 106, and 180A-180B. Recommended: Classics 102, 151A-B-C-D, History 111A-111B, 112A-112B, 113A-113B; English, French, German, Sanskrit.

Requirements for Admission to Graduate Status

A candidate for admission to graduate status in the department must meet, in addition to the general University requirements, the minimum requirements for an undergraduate major in Latin, in Greek, or in the Classics (Latin and Greek). If the student is deficient in this prerequisite, he must fulfill it by undergraduate work which is not counted toward his advanced degree program.

Special Requirement for the Teaching Credential in Latin

Latin 165A-B-C-D is required of students preparing for this credential.

The Master's Degree

The degree is offered in Latin, in Greek, and in the Classics (Latin and Greek). In order to qualify, the candidate must satisfy (1) the general University requirements, (2) the general departmental requirements, and (3) the special departmental requirements for the degree in one of the three

fields. For the outline of departmental requirements, see below; for complete data, students must consult the departmental graduate adviser.

General University Requirements for the Master's Degree

See pages 69-71. The department follows the comprehensive examination plan. For inclusion in electives outside the 12 units "in strictly graduate courses in the major subject," the department especially recommends Classics 151A-B-C-D, 251A-B-C-D, History 111A-111B, 112A-112B, 113A-113B, 251A-251B, Linguistics 210, and Sanskrit 190, 191.

General Departmental Requirements for the Master's Degree

In addition to fulfilling the general University requirements, the candidate must meet the following general departmental requirements:

1. A reading knowledge of French or German. Students must satisfy this requirement during the course of the first semester of their residence.
2. Completion of Classics 200. This course will normally be taken in the first semester of the candidate's graduate status.

Special Departmental Requirements for the Master's Degree in Latin

In addition to the general University requirements and the general departmental requirements, the following must be met for the degree in Latin:

1. Completion of Greek 102.
2. A comprehensive examination, to consist of the following:
 - a) The translation of Latin prose and verse into English.
 - b) Latin literature. The student will be expected to show a sound general knowledge of the history of Latin literature, to be derived from reading recommended by the department. Students who have received a grade of B or better in Latin 180 will normally be excused from this phase of the examination.
 - c) Roman history. The student must display a satisfactory knowledge of the history of the Roman world from the beginnings to the fall of the Western Empire, to be derived from reading recommended by the department. This requirement may be satisfied by passing History 111B or 113A-B with a grade of B or better, and students are strongly advised to fulfill it in this way.
 - d) Latin composition. The student will be expected to translate passages of English prose into Latin of the Ciceronian period. This requirement may be satisfied by passing Latin 165A-B-C-D with a grade of B or better.

Special Departmental Requirements for the Master's Degree in Greek

In addition to the general University requirements and the general departmental requirements, the following must be met for the degree in Greek.

1. Completion of Latin 4.
2. A comprehensive examination, to consist of the following:
 - a) The translation of Greek prose and verse into English.
 - b) Greek literature. The student will be expected to show a sound general knowledge of the history of Greek literature, to be derived from reading recommended by the department. Students who have received a grade of B or better in Greek 180A-180B will normally be excused from this phase of the examination.
 - c) Greek history. The student must display a satisfactory knowledge of the history of the Greek world from the beginnings to the Roman Conquest, to be derived from reading recommended by the department. This requirement may be satisfied by passing History 111A or 112A-B with a grade of B or better, and students are strongly advised to fulfill it in this way.
 - d) Greek composition. The student will be expected to translate passages of English prose into Attic Greek. This requirement may be satisfied by passing Greek 100A-B-C-D with a grade of B or better.

Special Departmental Requirements for the Master's Degree in the Classics (Latin and Greek)

In addition to the general University requirements and the general departmental requirements, the following must be met for the degree in the Classics (Latin and Greek).

1. Completion of one course from Latin 103, 104, 105, 106, and one course from Greek 103, 104, 105, 106, not taken in fulfillment of the requirements for the undergraduate major in the Classics.

2. A comprehensive examination to consist of the following:

a) The translation of Greek and Latin prose and verse into English.
 b) Greek and Latin literature. The student will be expected to show a sound general knowledge of the chief authors and movements of Greek and Latin literature, to be derived from reading recommended by the department. Students who have received a grade of B or better in Latin 180 will normally be excused from the Latin section of this phase of the examination, and those who have had a similar standing in Greek 180A-180B will normally be excused from the Greek section.

c) Greek and Roman history. The student must display a satisfactory knowledge of the main development of Greek and Roman history, to be derived from reading recommended by the department. This requirement may be satisfied by passing History 111A-B (or 112A-B and 113A-B) with a grade of B or better, and students are strongly advised to fulfill it in this way.

d) Greek and Latin composition. The student will be expected to translate passages of English prose into Attic Greek and Ciceronian Latin. This requirement may be satisfied by passing Greek 100A-B-C-D and any 2 units of Latin 165A-B-C-D with a grade of B or better.

In satisfying the general University requirement of twelve units in strictly graduate courses in the major subject, a candidate for the degree in the Classics (Latin and Greek) will be required by the department to effect a reasonably even distribution between the two languages.

COURSES WHICH DO NOT REQUIRE A KNOWLEDGE OF GREEK OR LATIN

Classics 102, 113, 151A-B-C-D, 178, 251A-B-C-D, 260.

Latin 40, 180.

Greek 40, 180A-180B.

CLASSICS

UPPER DIVISION COURSES

102. Introduction to Classical Art. (2) I.

Mr. Clement

A knowledge of Latin and Greek is not required.

A general introduction to the study of Greek and Roman architecture, sculpture, and painting.

113. Ancient Drama. (2) I.

Mr. Travis

A knowledge of Latin and Greek is not required.

The major Greek and Latin dramas in translation, with a history of the theater and dramatic productions.

151A, B, C, D. Classical Art.

Mr. Clement

(Former number 102A, B, C, D.)

Any phase of this course (A, B, C, or D) may be taken independently for credit. A knowledge of Latin and Greek is not required.

*A. The Art of the Aegean Bronze Age. (2) I.

*B. Greek and Roman Architecture. (2) II.

C. Greek and Roman Sculpture. (2) I.

D. Greek and Roman Painting. (2) II.

* Not to be given, 1961-1962.

- 178. Greek and Roman Mythology.** (3) I. Mr. Puhvel
 A knowledge of Greek and Latin is not required.
 Origin and development of the myths and legends; their place in the religion, literature and art of Greece and Rome; modern approaches to the understanding of mythology.

GRADUATE COURSES

- 200. History of Classical Scholarship, Bibliography, and Methodology.**
 (3) I. Mr. Hoffleit
 Required of all candidates for the master's degree.
- 251A, B, C, D. Seminar in Classical Art.** Mr. Clement
 Prerequisite: Classics 102, or consent of the instructor. A knowledge of Latin and Greek is not required.
 Each year, the seminar is concerned with specific problems in one of the following fields:
 *251A. The Aegean Bronze Age. (2) II.
 *251B. Greek and Roman Architecture. (2) II.
 *251C. Greek and Roman Sculpture. (2) II.
 251D. Greek and Roman Painting. (2) II.

- 260. Seminar in Indo-European Mythology.** (3) I. Mr. Puhvel
 Prerequisite: Classics 178 or consent of the instructor. A knowledge of Latin and Greek is not required. A reading knowledge of French or German is desirable.
 Studies in ancient Indo-European mythological and religious traditions and their relationship to the myths of the Eastern Mediterranean, the Near East, and the Finno-Ugrian area.

LATIN

LOWER DIVISION COURSES

- 1. Beginning Latin.** (4) I, II. _____
 Sections meet five hours weekly.
- *†1G. **Elementary Latin for Graduate Students.** (No credit)
- 2. Readings in Latin Prose.** (4) I, II. Miss Caldwell, Mrs. Mohr
 Sections meet five hours weekly.
 Prerequisite: for undergraduates, course 1, or two years of high school Latin. Graduate students may take this course without prerequisite to satisfy the requirement of the preliminary screening examination in Latin.
- 3. Readings in Latin Poetry: Ovid and Vergil's Aeneid.** (4) I, II.
 Miss Caldwell, Mrs. Mohr
 Prerequisite: course 2, or three years of high school Latin.
- 4. Catullus: Selections; Horace: Odes and Epodes.** (4) I, II.
 Miss Caldwell, Mrs. Mohr
 Prerequisite: course 3, or four years of high school Latin.
- 9A-9B. Latin Prose Composition.** (2-2) Yr. _____
 Prerequisite: course 2, or three years of high school Latin; 9A is prerequisite to 9B.
 A systematic survey of Latin syntax and idiom through translation of English into Latin.

* Not to be given, 1961-1962.

† See Latin 2.

40. The Latin Element in English. (2) I.

Mrs. Mohr

A knowledge of Latin is not required.

A course in vocabulary building based on a study of the many groups of English words which are derived from the Latin.

UPPER DIVISION COURSES

Important: certain upper division courses are given every other year only, for example, 103, 104, 105, 106, 165A-B, 165C-D, and 180 (see below). All courses required for the major may readily be taken within the usual four years of undergraduate study, but adequate planning is essential.

101. *Plautus and Terence.* (3) I.

Miss Caldwell

(Former number, 102.)

Prerequisite: course 4.

102. *Lucretius; Vergil: Eclogues and Georgics.* (3) II.

Miss Caldwell

(Former number, 146.)

Prerequisite: course 4.

103. *Satire: Horace, Juvenal, and Martial.* (3) I.

(Former number, 157.)

Prerequisite: course 101 or 102 (in special cases, course 103 may be taken concurrently with 101). This course is normally given every other year in alternation with course 105.

104. *Cicero and Seneca: The Philosophical Works.* (3) II.

Mr. Hoffleit

(Former number, 191.)

Prerequisite: course 101 or 102 (in special cases, course 104 may be taken concurrently with 102). This course is normally given every other year in alternation with course 106.

***105. *Roman Elegy.* (3) I.**

(Former number, 115.)

Prerequisite: course 101 or 102 (in special cases, course 105 may be taken concurrently with 101). This course is normally given every other year in alternation with course 103.

***106. *Livy; Tacitus: Annals.* (3) II.**

Mr. Hoffleit

(Former number, 154.)

Prerequisite: course 101 or 102 (in special cases, course 106 may be taken concurrently with 102). This course is normally given every other year in alternation with course 104.

120. *Introduction to Medieval Latin.* (2) II.

Prerequisite: one year of college Latin or the equivalent.

A study of the forms, syntax, and vocabulary of medieval Latin and the reading of illustrative texts.

165A-165B. *Latin Composition.* (1-1) Yr.

Mr. Hoffleit, Mr. Travis

Prerequisite: course 9A-9B. 165A is prerequisite to 165B. This course is normally given every other year in alternation with course 165C-165D.

Ciceronian prose.

***165C-165D. *Latin Composition.* (1-1) Yr.**

Mr. Hoffleit

Prerequisite: course 165A-165B. 165C is prerequisite to 165D. This course is normally given every other year in alternation with course 165A-165B.

Ciceronian prose.

* Not to be given, 1961-1962.

- *180. **A Survey of Latin Literature in English.** (3) II. Mr. Travis
A knowledge of Latin is not required. This course is normally given every other year in alternation with Greek 180A-180B.
199. **Special Studies in Latin.** (1-5) I, II. The Staff
Prerequisite: senior standing and consent of the instructor.

GRADUATE COURSES

- *202. **Cicero's Philosophical Works.** (3) I. Mr. Hoffleit
- *203. **Roman Historians.** (3) II. Mr. Hoffleit
- *204. **Roman Prose Writers.** (3) II. Mr. Hoffleit
Cicero's letters.
- *206. **The Roman Epic.** (3) II. Mr. Hoffleit
The Roman epic from Ennius to Silius Italicus.
- *210. **Vergil's Aeneid.** (3) I. Mr. Clement
- *211. **Cicero's Rhetorical Works.** (3) I. Mr. Travis
- *220. **Vulgar Latin.** (3) I. Mr. Puhvel
253. **Seminar in Latin Studies.** (3) II. _____
Palaeography.
- *254. **Seminar in Latin Studies.** (3) II. _____
Latin Comedy.
255. **Seminar in Latin Studies.** (3) I. _____
Roman Elegy.
- *256. **Seminar: Ovid.** (3) II. _____
290. **Research in Latin.** (1-4) I, II. The Staff

GREEK

LOWER DIVISION COURSES

- 1-2. **Elementary Greek.** (4-4) Yr. Miss Caldwell, Mrs. Mohr
Sections meet five hours weekly. Upon completing Greek 2, students may enroll directly in course 101.
The elements of Greek grammar and readings from Attic prose.
40. **The Greek Element in English.** (2) II. Mrs. Mohr
A knowledge of Greek is not required.
A course in vocabulary building based on a study of the many groups of English words which are derived from the Greek.

UPPER DIVISION COURSES

Important: certain upper division courses are given every other year only, for example, 100A-100B, 100C-100D, 103, 104, 105, 106, and 180A-180B (see below). All courses required for the major may readily be taken within the usual four years of undergraduate study, but adequate planning is essential.

- 100A-100B. **Prose Composition.** (1-1) Yr. Mrs. Mohr
Prerequisite: course 1-2; 100A is prerequisite to 100B. This course is normally given every other year in alternation with course 100C-100D.

* Not to be given, 1961-1962.

- *100C-100D. Prose Composition.** (1-1) Yr. Miss Caldwell
Prerequisite: course 100A-100B; 100C is prerequisite to 100D. This course is normally given every other year in alternation with course 100A-100B.
- 101. Plato: Apology and Crito; Herodotus: Selections.** (3) I. _____
(Former number, 102.)
Prerequisite: course 1-2.
- 102. Lyric Poets; Homer: Odyssey.** (3) II. _____
(Former number, 101.)
Prerequisite: course 101.
- 103. Plato: Republic.** (3) I. Mr. Hoffleit
(Former number, 114.)
Prerequisite: courses 101, 102. This course is normally given every other year in alternation with course 105.
- 104. Euripides and Aristophanes.** (3) II. Mr. Clement
(Former number, 103.)
Prerequisite: courses 101, 102. This course is normally given every other year in alternation with course 106.
- *105. Thucydides and Demosthenes.** (3) I. Mr. Hoffleit
(Former number, 104.)
Prerequisite: courses 101, 102. This course is normally given every other year in alternation with course 103.
- *106. Aeschylus and Sophocles.** (3) II. _____
(Former number, 105.)
Prerequisite: courses 101, 102. This course is normally given every other year in alternation with course 104.
- 180A-180B. A Survey of Greek Literature in English.** (2-2) Yr. Mr. Puhvel, Mr. Travis
This course is normally given every other year in alternation with Latin 180. A knowledge of Greek is not required. 180A and 180B may be taken independently for credit.
A study of the literature of Greece from Homer to Lucian with reading in English.
- 199. Special Studies in Greek.** (1-5) I, II. The Staff
Prerequisite: senior standing and consent of the instructor.

GRADUATE COURSES

- *201A. Homer: The Iliad.** (3) I. Mr. Clement
- 201B. Homer: The Odyssey.** (3) I. Mr. Clement
- *202. Sophocles.** (3) I. Mr. Hoffleit
- 203. Thucydides.** (3) II. Mr. Hoffleit
- *204. Aristophanes.** (3) I. Mr. Travis
- *205. Euripides.** (3) II. Mr. Travis
- 290. Research in Greek.** (1-4) I, II. The Staff

SANSKRIT

UPPER DIVISION COURSES

- *190. The Elements of Sanskrit.** (3) I. Mr. Puhvel
Prerequisite: consent of the instructor.
Introduction to script and grammar, with reading exercises and attention

* Not to be given, 1961-1962.

to the significance of Sanskrit for the understanding of other Indo-European languages.

*191. **Advanced Sanskrit.** (3) II. Mr. Puhvel

Prerequisite: Sanskrit 190 or equivalent preparation.

Advanced aspects of grammar and the reading of literary texts.

199. **Special Studies in Sanskrit.** (1-5) I. Mr. Puhvel

Prerequisite: senior standing and consent of the instructor.

RELATED COURSES IN OTHER DEPARTMENTS

History 111A-111B. History of the Ancient Mediterranean World.

(3-3) Yr.

Mr. Brown, Mr. Chambers

History 112A-112B. History of Ancient Greece. (3-3) Yr. Mr. Brown

History 113A-113B. History of Rome. (3-3) Yr. Mr. Brown, Mr. Chambers

History 251A-251B. Seminar in Ancient History (3-3) Yr. Mr. Brown

***Linguistics 210. Indo-European Linguistics.** (3) II. Mr. Puhvel

ECONOMICS

(Department Office, 270 Business Administration-Economics Building)

Armen A. Alehian, Ph.D., *Professor of Economics.*

Wytze Gorter, Ph.D., *Professor of Economics.*

Dudley F. Pegrum, Ph.D., *Professor of Economics.*

Warren C. Scoville, Ph.D., *Professor of Economics.*

Harold M. Somers, Ph.D., *Professor of Economics.*

Paul A. Dodd, Ph.D., LL.D., *Professor of Economics, Emeritus.*

Paul T. Homan, Ph.D., *Professor of Economics, Emeritus.*

Earl J. Miller, Ph.D., LL.D., *Professor of Economics, Emeritus.*

William R. Allen, Ph.D., *Associate Professor of Economics.*

Robert E. Baldwin, Ph.D., *Associate Professor of Economics.*

Karl Brunner, Dr. Rer. Pol., *Associate Professor of Economics.*

†Jack Hirshleifer, Ph.D., *Associate Professor of Economics.*

†Charles M. Tiebout, Ph.D., *Associate Professor of Economics.*

John F. Barron, Ph.D., *Assistant Professor of Economics.*

Harold Demsetz, Ph.D., *Assistant Professor of Economics.*

†W. Lee Hansen, Ph.D., *Assistant Professor of Economics.*

H. Laurence Miller, Jr., Ph.D., *Assistant Professor of Economics.*

Melvin Rothbaum, Ph.D., *Assistant Professor of Economics.*

Letters and Science List.—All undergraduate courses in economics are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

Objective of the Major in Economics.—The program for the student majoring in the field of economics is designed to provide a well-balanced and carefully integrated curriculum in liberal arts leading to the A.B. degree. The requirements for and offerings in the major are intended not only to provide a well-rounded education based on a broad foundation of economics and related subjects, but also to supply basic training for students who plan to enter the professional fields of high school and junior college teaching in the social sciences or business education, law, social work, or government service. Majors who envisage a business career can arrange a plan of study which provides the basic training for such a career and the foundation for graduate work in

* Not to be given, 1961-1962.

† Absent on leave, 1961-1962.

schools of business administration. The major also provides the basic training for professional graduate studies in economics.

Upper division programs are worked out for each student in consultation with a departmental adviser.

Preparation for the Major.—Required: Economics 1A–1B. Under special circumstances and by petition, a student may be permitted to substitute Economics 101 for Economics 1A–1B. This may be done only when the student is in upper division standing.

Requirements for the Major.

- 1) Economics 100A and either 100B or 140;
- 2) One course in each of three fields in economics listed below other than the field of economic theory or Economics 140;
- 3) Twenty-four upper division units in courses offered by the Department of Economics, including (1) and (2). Upon petition to the department, not more than 6 units of those upper division courses in business administration that appear on the Letters and Science course list may be accepted toward the satisfaction of this requirement.

Recommended Courses.—Lower division students preparing for the major in economics are strongly recommended to include in their programs Economics 13 and Business Administration 1A. Majors in economics should endeavor to include courses selected from the following departments in completing their upper division programs: Anthropology and Sociology, Business Administration, Geography, History, Philosophy, Political Science, Psychology. The selection should be made on the basis of the student's proposed career and on the recommendation of his major adviser. Students who intend to pursue economics to the graduate level are encouraged to take work in mathematics at least through the first course in calculus. This applies especially to those who are interested in economic theory and statistics.

Fields:

- Economic Theory (courses 100A, 100B, 103, 104, 105).
- Economic Institutions (courses 107, 108, 112).
- Economic Development (courses 109, 110, 111).
- Regional Economics (courses 120, 121).
- Public Finance (courses 131, 132, 133).
- Money and Banking (courses 135, 136).
- Statistics, Mathematical Economics, and Econometrics (courses 140, 141, 142, 143, 144, 145).
- Labor Economics (courses 150, 152, 155, 156, 158).
- Government and Industry (courses 170, 171, 173, 174).
- International Economics (courses 195, 196, 197).

Requirements for the M.A. Degree

Candidates for the degree of Master of Arts in economics are required to have completed the equivalent of an undergraduate major in economics, including Economics 140 or its equivalent. In addition to the general University requirements (see pages 69–71), the departmental requirements are as follows: Economics 103 or the equivalent; Economics 100A–100B (or their equivalent), passed with a grade of at least C; and at least 12 units of strictly graduate courses in economics. These graduate courses must be spread over three of the "subject" fields in economics (see above). In addition, each student will have to specialize in one of these fields offered by the department. If he elects to follow the examination plan rather than the thesis plan, he will be given a single four-hour written examination in his field of

|| Effective for all new majors.

§ Not more than 42 units of upper division courses in economics and business administration may be counted toward the bachelor's degree.

concentration. This examination will be given, normally, on a Saturday morning within the ninth to the eleventh week of the semester.

With the consent of the graduate adviser, candidates may offer 3 units of graduate courses in other departments or 6 units of acceptable upper division or graduate courses in any other social science, in business administration, in mathematics, in psychology, in education, or in philosophy in partial satisfaction of the requirements for the degree. For acceptable courses in business administration, consult graduate adviser.

Requirements for the Ph.D. Degree

(1) *Basic Requirements.* See general University regulations, pages 71-74.

(2) *Accounting, Statistics, and Economic History.* A semester course in (a) accounting, (b) statistics, (c) American economic history, (d) European economic history and (e) History of Economic Thought at the lower division, upper division, or graduate level—or the equivalent thereof as interpreted by the graduate committee of the department—must be completed at the earliest possible date and prior to admission to candidacy, if not in candidate's prior record.

(3) *Minor.* Every candidate for the Ph.D. degree in economics must offer a minor field of concentration outside the department, to be selected from history, political science, geography, philosophy, psychology, anthropology, sociology, or mathematics. Any other field will be acceptable only by special approval of the department. A minimum of four upper division courses (excluding the basic introductory course)—or the equivalent thereof as interpreted by the graduate committee of the department—will be required.

(4) *General Qualifying Examinations.* In order to gain admission to candidacy, graduate students shall pass written and oral examinations. The written examinations will cover the fields of general economic theory, and three additional fields to be selected from those listed in the field offerings of the department. A student, upon petition, may be allowed to substitute a field in the School of Business Administration for one of his three elective fields in economics.

A student may take his written qualifying examinations in general economic theory and in one other field in one semester and his other two written examinations in a subsequent semester. Each of the four written examinations will be three hours in length. The oral examination will cover the student's preparation in economics in general and can be taken only after all the written examinations have been passed.

The qualifying examinations for the Ph.D. degree will be given during the ninth, tenth, and eleventh weeks of each semester.

LOWER DIVISION COURSES

1A-1B. Principles of Economics. (3-3) Yr. Beginning either semester.

Mr. Allen, Mr. Gorter, Mr. Hansen, Mr. H. L. Miller,

Lecture, two hours; discussion, one hour.

Mr. Scoville, Mr. Tiebout

An introduction to principles of economic analysis, economic institutions, and issues of economic policy. The first semester emphasizes allocation of resources and distribution of income through the price system. The second semester concentrates on aggregative economics, including money and banking, national income, and international trade.

13. Evolution of Economic Institutions in America. (3) I, II.

Rise of large-scale capitalistic methods of production, influence of technology, prices, politics, ideologies, and wars.

UPPER DIVISION COURSES

Courses 1A-1B or 101 are prerequisite to all upper division courses in economics.

100A. General Economic Theory. (3) I, II.

Mr. Allen, Mr. Hansen, Mr. Hirshleifer, Mr. H. L. Miller

The laws of demand, supply, returns, and costs; price and output determination in different market situations. The implications of the pricing process for the optimum allocation of resources.

100B. General Economic Theory. (3) I, II.

Mr. Hansen, Mr. H. L. Miller

Theory of employment and income; theory of factor pricing and income distribution; present state and prospects of capitalism in relation to welfare and economic progress.

101. Economic Principles and Problems. (3) I, II.

Mr. Alchian, Mr. Barron, Mr. Demsetz, Mr. H. L. Miller,

Mr. Rothbaum, Mr. Tiebout

Designed for non-economics majors. A one-semester course presenting the principles of economics with applications to current economic problems. Satisfies the prerequisite to all upper division courses in economics. Not open to students with credit for 1A-1B.

103. History of Economic Theory. (3) I.

Mr. Allen

A survey of economic analysis from Grecian antiquity to the early twentieth century, concentrating on the 18th and 19th centuries; special attention to selected writers, including Aristotle, the Mercantilists, the Physiocrats, Hume, Smith, Malthus, Ricardo, Marx, the Marginalists, and Marshall.

104. Industrial Organization. (3) II.

Mr. Demsetz

A study of the structure and operation of American industry. Particular attention will be given to the nature and economic effects of the corporation, concentration of output and control, characteristics of products and production processes, and price policies.

105. Economic Fluctuations. (3) I.

Mr. Hansen

Prerequisite: course 135.

Identification, measurement, and analysis of economic fluctuations; methods of forecasting. Appraisal of alternative countercyclical policies, public and private, and their use in recent cyclical experience.

107. Comparative Economic Systems. (3) I, II.

Mr. Scoville

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.

108. Development of Economic Institutions. (3) II.

Mr. Scoville

Rise of capitalism, especially 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.

109. Economic Development. (3) I.

Mr. Baldwin

A brief survey of development theories from Adam Smith to the post-Keynesians is followed by an examination of the problems both of accelerated development in poor countries and of maintaining development in rich countries.

110. Problems of Underdeveloped Areas. (3) II.

Mr. Baldwin

Prerequisite: course 109.

An analysis of the obstacles to economic development confronting poor

countries and of the policies designed to overcome these barriers to growth. Special problems of different areas as well as development plans of selected countries are examined.

***111. Population Analysis. (3) II.**

Mr. Hansen

An economic analysis of the causes and consequences of population growth and change, particularly as related to income levels and patterns of resource allocation. Analysis of investment in human capital.

112. Economic Problems of the U.S.S.R. (3) II.

An introduction to the organization and policies of the economy of the U.S.S.R.

***120. Regional Economic Analysis. (3) I.**

Mr. Tiebout

The analysis of intranational regions including discussion of: income determination, regional growth, and interregional flows. Special attention to the problems of the Los Angeles region.

***121. The Economics of Location. (3) II.**

Mr. Tiebout

The principles of location of firms in terms of general and partial equilibrium analysis. Includes empirical evidence on actual location practices.

131. Public Finance. (3) I.

Mr. Somers

A survey of the development and economic effects of public expenditures, revenues, and indebtedness, with reference to selected tax and budgetary problems.

132. State and Local Finance. (3) II.

Mr. Tiebout

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.

133. Federal Finance. (3) II.

Mr. Somers

Prerequisite: course 135.

An analysis of the federal tax structure, federal expenditures, and the federal debt structure, and their relationship to the level of employment and income, resource allocation, and the distribution of income.

135. Money and Banking. (3) I, II.

Mr. Barron, Mr. Brunner, Mr. H. L. Miller, Mr. Somers

The principles and history of money and banking, with principal reference to the experience and problems of the United States.

136. Techniques of Monetary Control. (3) II.

Mr. Brunner

Prerequisite: course 135.

The nature of monetary controls; monetary developments as related to prices, production, and national income; monetary policies in the interwar and postwar periods; monetary policy and domestic economic stabilization.

140. Introduction to Statistical Methods. (3) I, II.

Mr. Alchian, Mr. Hirshleifer, Mr. L. Miller

The 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. Not open for credit to students who have completed Business Administration 115.

***141. Principles of Statistical Decision. (3) I.**

Mr. Hirshleifer

Prerequisite: course 140.

Errors of the first and second kind; economic loss functions; prior proba-

* Not to be given, 1961-1962.

bilities and Bayes' Theorem. Analysis of classical and Bayesian approaches. Application to inventory and production problems. The value of information, and implications for sampling design.

142. Quantitative Economic Analysis. (3) II. Mr. Hansen

Prerequisite: course 140 or the equivalent.

Advanced regression and correlation analysis, and analysis of variance; study of time series and index numbers. Emphasis on applications of statistical tools in quantitative economic analysis and on implications of quantitative knowledge on the validity of economic theory.

143. Introduction to Mathematical Economics. (3) I. Mr. Brunner

Basic concepts and operations of mathematical logic and their application to economic analysis. Differentiation of functions, maximum and minimum problems in economics. Linear systems in economics, matrices, vectors and determinants and their elementary properties.

144. Economic Models and Econometric Methods. (3) II. Mr. Demsetz

Prerequisite: course 140.

An introductory course designed to acquaint the student with basic concepts in model building, different types of economic models, problems and techniques of quantifying models, and the use of such models for public policy.

145. Logic and Scientific Method in Economics. (3) II. Mr. Brunner

Prerequisite: Philosophy 31 and Economics 140.

Application of the sentential and predicate calculus to the analysis of the logical structure of hypotheses and theories in economics. The assignment of meaning to the formal constructions will be investigated and the nature of confirmation, prediction and explanation considered.

150. Labor Economics. (3) I, II. Mr. Rothbaum

Economic analysis of trade union philosophies and practices; theoretical exploration of basic influences affecting real wages and employment, with examination of the relevant statistical record; internal wage policies of the firm; union-management relations and the public economy.

152. Social Insurance. (3) II.

Basis of the social security program; unemployment insurance, workmen's compensation, old age pensions, insurance against sickness.

155. History and Problems of the Labor Movement. (3) II. Mr. Rothbaum

The origin and development of trade-unionism in the United States; theory of collective bargaining, methods and practices of contemporary unionism; the legal status of unionism.

156. Labor Law and Legislation. (3) I.

Prerequisite: course 150.

The social and economic basis of the law regulating employer-employee relationships. Analysis of the implications of federal and state legislation for collective bargaining; economic effects of laws regulating wages, hours of work, and other labor standards.

158. Collective Bargaining. (3) I, II. Mr. Rothbaum

Prerequisite: course 150.

Theory and practice of collective bargaining; mediation and arbitration of industrial disputes; grievance procedures and administration of labor-management agreements; government intervention in collective bargaining.

170. Economics of Industrial Control. (3) I, II.

Mr. Barron, Mr. Demsetz, Mr. Pegrum

Economic and institutional foundations of public regulation; the pricing process and public policy; public control of competition, monopoly, transportation, and public utilities; the rationale of a private enterprise economy.

171. Public Utilities. (3) I.

Mr. Barron

The economics of public service corporations; the economic problems of regulation; state and national problems arising from the development of public utilities; public ownership.

173. Economics of Transportation. (3) I, II.

Mr. Pegrum

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.

174. National Transport Policy. (3) II.

Mr. Pegrum

Prerequisite: Economics 173.

Major economic problems of national transport policy; interagency pricing; interagency integration; investment allocation within and among agencies; traffic allocation among agencies; economic analysis of public aid and regulation; terminal and metropolitan transport problems; coordination of regulatory agencies.

176. Economics of Natural Resources. (3) II.

Mr. Barron

Pricing system and efficiency in the use and conservation of natural resources; private and social cost, and the concept of waste; cost allocation among users. Analysis of policies for petroleum, coal, timber, fisheries, and minerals.

***177. Water and Land Economics. (3) II.**

Economic principles in utilization of water and resources. Legal and institutional factors governing use. Problems in development, reclamation, conservation, and allocation. Project and area studies. One field trip required. Not open for credit to students who have taken Agricultural Economics 177.

195. Principles of International Trade. (3) I, II.

Mr. Allen, Mr. Baldwin, Mr. Gorter

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.

196. International Trade Policies. (3) II.

Mr. Gorter

Prerequisite: course 195 or consent of the instructor.

Analysis of theory, practice and consequences of regulation of international trade as expressed through the policies of nations and of international agencies concerned with obtaining international accord on such matters as import quotas, commodity agreements, and the reduction of trade barriers.

197. International Finance. (3) II.

Mr. Allen

Prerequisite: course 135 or 195.

Emphasis on 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 organizations.

* Not to be given, 1961-1962.

199. **Special Studies in Economics.** (1-3) I, II. The Staff
Prerequisite: senior standing and consent of the instructor.

GRADUATE COURSES

- 201A-201B. **Price and Distribution Theory.** (3-3) Yr.
Mr. Alchian, Mr. Baldwin, Mr. Brunner, Mr. Hirshleifer
202. **Macroeconomics: Theory of Employment, Income and Money.** (3)
203. **Analytical Methods and Concepts. Seminar.** (3) Mr. Brunner
- 242A-242B. **Econometrics.** (3-3) Yr. Mr. Brunner, Mr. Demsetz
250. **History of Economic Thought. Seminar.** (3) II. Mr. Allen
Prerequisite: Economics 103 or consent of the instructor.
- *252. **Recent Trends in Economic Thought. Seminar.** (3) I. _____
253. **Applications of Economic Theory. Seminar.** (3) II. Mr. Alchian
254. **Economic Fluctuations and Growth. Seminar.** (3) _____
- *256. **Statistical Economics. Seminar.** (3) _____
258. **Monetary Policy. Seminar.** (3) Mr. L. Miller
- 260A-260B. **Industrial Organization, Price Policies and Regulation.**
Seminar. (3-3) Mr. Pegrum
Economics 260A is not a prerequisite for 260B.
261. **Public Finance. Seminar.** (3) I, II. Mr. Somers
262. **Evolution of Economic Institutions in the United States. Seminar.** (3)
Mr. Scoville
263. **Evolution of Economic Institutions in Western Europe. Seminar.** (3)
Mr. Scoville
265. **National Transport Policy.** (3) I. Mr. Pegrum
- 266A-266B. **International Economics. Seminar.** (3-3) Yr.
Mr. Allen, Mr. Gorter
267. **Economic Foreign Policy. Seminar.** (3) II. Mr. Gorter
- 268A-268B. **Economic Growth of Underdeveloped Areas. Seminar.**
(3-3) Yr. Mr. Baldwin
270. **History and Problems of the Labor Movement.** (3) II. Mr. Rothbaum
- 271A-271B. **Labor Economics. Seminar.** (3-3) Yr. Mr. Rothbaum
272. **Industrial Relations Seminar.** (3) _____
290. **Special Problems.** (1-6 units each semester) I, II. The Staff

EDUCATION

(Department Office, 325 Moore Hall)

Howard E. Wilson, Ed.D., *Professor of Education and Dean of the School of Education (Chairman of the Department).*

* Not to be given, 1961-1962.

May V. Seagoe, Ph.D., *Professor of Education and Assistant Dean of the School of Education.*

†Samuel J. Wanous, Ph.D., *Professor of Education and Assistant Dean of the School of Education.*



Jesse A. Bond, Ed.D., *Professor of Education and Director of Supervised Teaching.*

William S. Briscoe, Ed.D., *Professor of Education.*

John I. Goodlad, Ph.D., *Professor of Education and Director of the University Elementary School.*

B. Lamar Johnson, Ph.D., *Professor of Education.*

George F. Kneller, M.A. (London) and Ph.D., *Professor of Education.*

Dorothy M. Leahy, Ed.D., *Professor of Education.*

Erick L. Lindman, Ph.D., *Professor of Education.*

Arthur A. Lumsdaine, Ph.D., *Professor of Education.*

Lloyd N. Morrisett, Ph.D., *Professor of Education.*

Paul H. Sheats, Ph.D., *Professor of Education.*

Lawrence E. Vredevoe, Ph.D., *Professor of Education.*

John A. Hockett, Ph.D., *Professor of Education, Emeritus.*

David F. Jackey, Ph.D., *Professor of Education, Emeritus.*

Edwin A. Lee, Ph.D., *Professor of Education, Emeritus.*

Malcolm S. MacLean, Ph.D., *Professor of Education, Emeritus.*

F. Dean McClusky, Ph.D., *Professor of Education, Emeritus.*

Corinne A. Seeds, M.A., *Professor of Education, Emeritus.*

J. Harold Williams, Ph.D., *Professor of Education, Emeritus.*

Fredric P. Woellner, Ph.D., LL.D., *Professor of Education, Emeritus.*

Melvin L. Barlow, Ed.D., *Associate Professor of Education and Director of the Division of Vocational Education.*

Watson Dickerman, Ph.D., *Associate Professor of Education.*

Wilbur H. Dutton, Ed.D., *Associate Professor of Education and Associate Director of Supervised Teaching.*

Lawrence W. Erickson, Ed.D., *Associate Professor of Education.*

Claude W. Fawcett, Ph.D., *Associate Professor of Education.*

Clarence Fielstra, Ph.D., *Associate Professor of Education.*

C. Wayne Gordon, Ph.D., *Associate Professor of Education and Sociology.*

Abbott Kaplan, Ph.D., *Associate Professor of Education and Associate Dean, University Extension.*

Evan R. Keislar, Ph.D., *Associate Professor of Education.*

Frederick C. Kintzer, Ed.D., *Visiting Associate Professor of Education.*

William H. Lucio, Ph.D., *Associate Professor of Education.*

†Lorraine M. Sherer, Ed.D., *Associate Professor of Education.*

A. Garth Sorenson, Ph.D., *Associate Professor of Education.*

———, *Associate Professor of Education.*

Harvey L. Eby, Ph.D., *Associate Professor of Education, Emeritus.*

Ethel I. Salisbury, M.A., *Associate Professor of Education, Emeritus.*

Theodore E. Husek, Ph.D., *Assistant Professor of Education.*

John Jarolimek, Ph.D., *Assistant Professor of Education.*

Wendell P. Jones, Ph.D., *Assistant Professor of Education.*

Olive A. Hall, Ph.D., *Assistant Professor of Education.*

Donald A. Leton, Ph.D., *Assistant Professor of Education.*

John D. McNeil, Ed.D., *Assistant Professor of Education and Associate Director of Supervised Teaching.*

Doyce B. Nunis, Ph.D., *Assistant Professor of Education and History; Director of the Oral History Project.*

Louise L. Tyler, Ph.D., *Assistant Professor of Education.*

Richard H. Vetter, Ed.D., *Assistant Professor of Education.*
 Merlin C. Wittrock, Ph.D., *Assistant Professor of Education.*
 ———, *Assistant Professor of Education.*
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 ———, *Assistant Professor of Education.*
 ———, *Assistant Professor of Education.*
 ———, *Assistant Professor of Education.*
 Jack H. Cooper, Ph.D., *Instructor in Education.*



Howard A. Campion, Ed.D., *Lecturer in Education.*
 Gladys A. Graham, Ed.D., *Lecturer in Education, and Education Librarian.*
 Lyle Herbst, M.A., *Lecturer in Education, Life Sciences.*
 Faith Smitter, Ed.D., *Lecturer in Education.*
 Ernest B. Toon, M.Ed., *Lecturer in Education, Physical Sciences*
 Margaret Thompson, M.Ed., *Associate in Education.*



Leta Alder, Ph.D., *Assistant Research Educationist.*

Supervisors of Training

Vivienne M. Brady, M.A., *Elementary.*
 Mary P. Broderick, A.B., *Elementary.*
 Gayle Knowlden, M.A., *Elementary.*
 Evelyn W. Lindstrom, A.B., *Elementary.*
 Elizabeth M. Schneider, A.B., *Elementary.*
 Genie M. Swinney, M.A., *Elementary.*
 ———, *Elementary.*



Freeman Ambrose, M.A., *Secondary, English.*
 Nora B. Cole, A.B., *Secondary, Physical Education for Women.*
 Gladys W. Harris, M.A., *Secondary, Art.*
 Allen A. Hogle, M.Ed., *Secondary, Social Studies.*
 Oscar M. Jiminez, A.B., *Secondary, Foreign Languages.*
 Edward B. Johns, Ed.D., *Secondary, Health Education.*
 Kenneth Kilday, M.A., *Secondary, Physical Education for Men.*
 Alice H. Lynton, A.B., *Secondary, Communication Skills.*
 Mary C. M. McDonald, M.A., *Secondary, Mathematics and Science.*
 Thelma D. Nicklin, M.Ed., *Secondary, Business Education.*
 Sophia R. Pezel, Ph.D., *Secondary, Social Studies.*
 Virginia Whitfield, M.Mus., *Secondary, Music.*
 ———, *Secondary, Home Economics.*

UNIVERSITY ELEMENTARY SCHOOL

John I. Goodlad, Ph.D., *Director and Professor of Education.*
 Margaret D. Mathews, B.Ed., *Acting Principal.*
 Edith Appleton, A.B., *Supervisor, Kindergarten.*
 Kathryn Argabrite, M.A., *Supervisor, Health Instruction.*
 Mary Maxine Bentzen, M.A., *Supervisor, Nursing Group.*
 Lola C. Binney, B.A., *Supervisor, Third Grade.*
 Cynthia Brown, M.A., *Supervisor, First Grade.*
 Elenore Cornberg, M.A., *Supervisor, Kindergarten.*
 Richard J. L. Covington, M.Ed., *Supervisor, Sixth Grade.*

- Esther Crabtree, A.B., *Supervisor, Sixth Grade.*
 John D. Cunningham, M.A., *Supervisor, Science and Outdoor Education.*
 Janet R. Eeki, A.B., *Supervisor, Second Grade.*
 Emma S. Griffith, M.A., *Supervisor, Fourth Grade.*
 Ann Gutierrez, A.B., *Supervisor, Third Grade.*
 Eunice Jones, A.B., *Supervisor, Fourth Grade.*
 Mee Lee Ling, A.B., *Supervisor, Fifth Grade.*
 Donnarae McCann, *Librarian.*
 Miltons Moore, B.M., *Rhythms Accompanist.*
 Lois Nelson, M.Ed., *Supervisor, Second Grade.*
 June Patterson, M.S., *Supervisor, Nursery Group.*
 Olga Richard, M.A., *Supervisor, Fine and Industrial Art.*
 Mary Rogers, M.S., *Supervisor, Nursery Group.*
 Jane Stare, M.A., *Supervisor, Nursery Group.*
 Sterling S. Stott, M.A., *Supervisor, Guidance.*
 Dorothy Tait, A.B., *Supervisor, Fourth Grade.*
 Margaret F. Tougaw, B.Ed., *Supervisor, First Grade.*
 Edward J. Wright, M.A., *Supervisor, Physical Education.*
 ———, *Supervisor, Music.*

City Training Schools*

- Betty C. Coleman, M.S., *Principal, Westwood Elementary School.*
 George F. Grimes, M.S., *Principal, Nora Sterry Elementary School.*
 Esther McGinnis, M.S., *Principal, Clover Avenue Elementary School.*
 Genevieve L. McMahon, A.B., *Principal, Fairburn Avenue Elementary School.*
 Amber M. Wilson, B.S., *Principal, Brockton Avenue Elementary School.*
 Gertrude G. Woodmansee, M.A., *Principal, Warner Avenue Elementary School.*



- Sheila W. Bauer, M.A., *Vice-Principal, University High School.*
 Alice K. Brees, A.B., *Counselor, University High School.*
 Mabel-Ella Campbell, M.A., *Vice-Principal, Emerson Junior High School.*
 Thomas A. Campbell, M.A., *Principal, Emerson Junior High School.*
 David H. Carter, M.S., *Vice-Principal, Emerson Junior High School.*
 William S. Ferguson, M.A., *Principal, Paul Revere Junior High School.*
 John C. Holt, M.Ed., *Principal, Los Angeles High School.*
 Eugene F. Olson, Ed.D., *Principal, University High School.*
 Donald R. Pelton, M.S., *Vice-Principal, University High School.*
 Allen A. Sebastian, M.S., *Principal, Daniel Webster Junior High School.*
 ———, *Counselor, Emerson Junior High School.*

Letters and Science List.—Courses 100A–100B, 108, and 110A–110B are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

The Major.—An undergraduate major is not offered in the Department of Education at Los Angeles. Students desiring to qualify for certificates of completion leading to teaching and administration credentials should consult the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES.

UPPER DIVISION COURSES

Junior standing is prerequisite to all courses in education except course 100A, which is open to high sophomores. Additional prerequisites for enrollment in 100 and 300 series courses will be found on page 54 of this bulletin.

* The training staff consists of about two hundred public school teachers, chosen for their ability as teachers and as supervisors by the University supervisory staff, and approved for such service by the public school authorities.

Area 1. Theoretical and Social Foundations

†100A-100B. **Fundamentals of Education.** (2-2) I, II. Mr. Kneller and Staff
Prerequisite: course 100A is prerequisite to 100B.

An analytical and critical study of American educational thought and practice, with special emphasis on the ability of the teacher to deal with educational ideas as they relate to philosophic, social, political, and economic factors.

108. **Sociology of Education.** (3) I, II. Mr. Gordon
(Former number, 180. Same as Sociology 180.)

Prerequisite: Sociology 1 or 101.

Studies 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; formal and informal groups; school culture; roles of teachers, students, and administrators.

Area 2. Educational Psychology and Counseling

Psychology 1A and either 1B or 33 are prerequisites to all courses in educational psychology.

110A-110B. **Psychological Foundations of Education.** (3-2) I, II.

Course 110A. Mr. Keislar, Mr. Wittrock
Prerequisite: Psychology 1A and either 1B or 33.

The learning process in school situations and the evaluation of learning; physical, mental, and social development of children in relation to the school.

Course 110B. Mr. Wittrock
Prerequisite: course 110A.

Personality formation and assessment among pupils; principles of guidance as applied to problems of pupil personnel and counseling in schools.

114. **Educational Statistics.** (2) I, II. Mr. Husek
Prerequisite: Psychology 1A and either 1B or 33.

Lecture and laboratory.

Elementary descriptive statistical procedures and sampling error theory through simple analysis of variance and Chi square as applied to educational problems.

116. **The Education of Exceptional Children.** (3) I. Mrs. Seagoe
Prerequisite: course 110A-110B.

The characteristics of and educational provisions for exceptional children, including the mentally and physically handicapped, the gifted, and the delinquent.

118. **Counseling and Guidance for the Handicapped.** (2) II. Mr. Leton, ———
Prerequisite: course 116.

Principles and practices employed in guidance and counseling services for persons who are handicapped, mentally, physically, or socially. Emphasis given to occupational opportunities for the handicapped and to the role of appraisal of individual differences in planning for social, emotional, and vocational adjustments.

119. **Educational Measurement.** (3) I, II. Mr. Husek, Mr. Leton
Lecture and laboratory. Prerequisite: course 114.

Introduction to achievement test construction, elementary theory of measurement, survey of measurement techniques, critical study of typical tests

† Fulfills requirement for the principles of basic elementary and secondary education in the teaching credential program.

and inventories used for estimating aptitude, achievement, attitudes, temperaments, and interests.

Area 3. Curriculum and Instruction

122A. Early Childhood Education. (4) I, II. Mrs. Sherer
(Former number, 128A.)

Prerequisite: courses 100A and 110A.

Theory and practice in nursery schools, kindergartens, and primary grades, with particular emphasis on social studies, science, and mathematics for younger children.

122B. Early Childhood Education. (4) I, II. Mrs. Sherer
(Former number, 128B.)

Prerequisite: course 122A, English 118.

Language development of children from nursery school age through the primary grades; includes oral and written language, prereading, reading, and literature.

***122C. The Arts in Early Childhood Education.** (3) II. Mrs. Sherer
(Former number, 124.)

Prerequisite: course 110A-110B.

The role of the arts (music, art, rhythm, dramatic play and creative language) in the school and out of school experiences of younger children.

***123. Social Backgrounds in the Development of Younger Children.** (3) II.

Prerequisite: course 110A-110B.

Mrs. Sherer

Environmental factors in the family, neighborhood, and community as influences on the mental, emotional, and social development of children from infancy through early childhood. Includes family-school relationships from both parental and school viewpoints.

124A. The Elementary School Curriculum. (4) I, II. Mr. Jarolimek
(Former number, 139B.)

Prerequisite: courses 100A, 110A. Aside from regular class hours, students must reserve three hours each week for participation in assigned schools.

Current conceptions of the elementary school curriculum, with emphasis on the role of social studies and science, and on effective teaching techniques.

124B. The Elementary School Curriculum. (4) I, II. Mr. Jarolimek
(Former number, 139A.)

Prerequisite: courses 100A, 110A. Aside from regular class hours, students must reserve three hours each week for participation in a public elementary school.

Current conceptions of the elementary school curriculum, with emphasis on reading, language, and arithmetic, and on effective teaching techniques.

128. Curriculum for Mentally Retarded Children. (3) II.

(Former number, 135.)

Mr. Leton, Mr. Wittrock

Prerequisite: courses 116, 110A-110B.

Organization, curricula, and procedures in classes for the mentally retarded.

129. Secondary Education. (3) I, II. Mr. Vredevoe
(Former number, 170.)

Prerequisite: Psychology 1A and either 1B or 33.

A study of secondary education in the United States, with reference to the needs and problems of secondary school teachers.

* Not to be given, 1961-1962.

130. Curriculum and Instruction in Secondary Schools. (3) Yr. Mr. Bond
(Former number, 370.)

Prerequisite: course 100A for secondary candidates; course 209A or 234 for junior college candidates. This course is prerequisite to all supervised teaching for the general secondary or junior college credentials.

Current conceptions of the secondary school curriculum, including instructional techniques.

137. Business Education. (3) I, II. Mr. Wanous
(Former number, 165.)

The organization, administration, and teaching of business education in secondary schools.

139A. Audio-visual Media of Instruction. (2) I, II.
(Former number, 147 and 147EC.) Mr. Vetter and The Staff

Prerequisite: this course must be taken concurrently with 122A, 124A, or 130.

Theory and practice in the use of audio-visual instruction media with reference to particular educational levels. Content includes selection, evaluation, and utilization of a wide range of instructional materials.

139B. Self-instructional Materials and Devices. (2) II.
Prerequisite: course 139A or equivalent. Mr. Lumsdaine, Mr. McNeil

Analysis of developments in the design and use of self-instructional materials and teaching machines in the elementary and secondary school curricula, and techniques in the development of self-instructional programs.

149. Field Work. (2-4) I, II. Mr. Dickerman

Section 1. Adult Education.

(Former number 149, Section 3.)

Supervised field work in adult education.

Section 2. General Pupil Personnel Services. Mr. Leton, Mr. Sorenson

Prerequisite: courses 215 and 217 or 213A-213B; approval by the teacher. Limited to candidates for appropriate credentials in General Pupil Personnel Services.

Supervised field work public schools and other community agencies.

199. Special Studies. (1-5) I, II. The Staff

Prerequisite: senior standing and consent of the instructor.

GRADUATE COURSES†

200A-200B. Fundamentals of Educational Research. (2-2) Yr.
Mr. Husek, Mr. Keislar

Lecture and laboratory. Prerequisite: course 114. Education 200A is prerequisite for Education 200B.

Considers research reporting, including bibliographical techniques, presentation of data, the application of the scientific method to educational research, theory of research, experimental design, techniques for gathering data, and interpretation of results.

201A-201B. History of Education. (2-2) Yr. Mr. Nunis
(Former numbers, 201 and 202.)

Development of educational thought and practice in Western civilization. Emphasis in 201A upon the Greek and Roman cultures, the Middle Ages, the Renaissance, the Reformation, and National Systems of Europe. Em-

† Open only to students in graduate status. Consent of the instructor is required for all graduate courses.

phasis in 201B upon Colonial America and significant educational movements in the United States.

204A-204B. Comparative Education. (2-2) Yr. Mr. Wilson, Mr. Jones
(Former number 197A-197B.)

Prerequisite: course 100A-100B.

An analytical and critical study of educational thought and practice in major countries and regions of the world. Particular attention is given to political, economic, social, religious, and other factors which influence education and public enlightenment.

206A-206B. Philosophy of Education. (2-2) Yr. Mr. Kneller

Prerequisite: course 206A is prerequisite to course 206B.

A critical analysis of the philosophic and related forces determining American educational policy and practice.

208A-203B. Advanced Sociology of Education. (2) I, II. Yr. Mr. Gordon

Prerequisite: course 108; Sociology 180; or consent of the instructor.

The application of the concepts of social and cultural systems to the analysis of educational systems and the derivation of general principles of group behavior therefrom; interpretation of organizational behavior according to current principles as observed in various educational groups.

209A. The Junior College. (2) I, II. Mr. Johnson, Mr. Cooper

A study of the history and role of the junior college, and of problems and issues confronting the two-year college.

209B. Higher Education in the United States. (2) I, II. _____

(Former number, 279A.)

Study of functions, trends, practices, and issues in higher education, with emphasis on the role, government, and curriculum of different types and levels of institutions, public and private.

210. Learning and Education. (2) I. Mr. Keislar

(Former number, 210C.)

Prerequisite: course 110A-110B.

A critical review of the theoretical and experimental literature dealing with learning in school.

211. Developmental Processes in Education. (2) I. Mr. Keislar

Prerequisite: course 110A-110B.

A study of growth and function in physical, mental, social, and emotional development from infancy through adolescence.

212. Individual Differences and Education. (2) II. Mr. Keislar

(Former number, 210D.)

Prerequisite: course 110A-110B.

Individual and group differences among students, including a study of the interrelationships of special significance for the school.

213A-213B. Personality Theory in Student Personnel Work. (2-2) Yr.

(Former number, 217A-217B.)

Mr. Sorenson

Prerequisite: courses 110A-110B, 114, 119.

213A. Introduction to selected theories of personality, and consideration of their implications for teachers and counselors.

213B. A review of psychological well-being and mental hygiene, and their implications for teachers and counselors.

214A-214B. Measurement in Education. Advanced. (2-2) Yr.

(Former number, 254C-254D.)

Mr. Keislar, Mr. Husek

Prerequisite: courses 110A-110B, 114, 119.

Theory of educational measurement; the construction and evaluation of aptitude and achievement tests, questionnaires, and rating devices for prediction and assessment in education.

215A-215B. Fundamentals of Student Personnel Work. (2-2) Yr.

(Former numbers, 194, 148C.)

Mr. Sorenson, _____

Prerequisite: courses 110A-110B, 114, 119.

For student personnel workers at all levels.

215A. Considers the functions of the personnel worker and relations to student, teacher, other school officials, parents, and community agencies.

215B. Considers the ethical principles and legal provisions that apply to specific problems.

216A-216B. The Measurement and Guidance of Exceptional Children.

(2-2) Yr.

Mr. Leton

Prerequisite: courses 110A-110B, 116, 218A.

Deals with the techniques for measuring educational characteristics of exceptional children, and the application of data in the educational guidance of exceptional children.

217. Principles of Career Planning. (2) I.

Mr. Barlow

(Former number, 117B.)

Prerequisite: courses 110A-110B, 114, 119, 215A.

The use of psychological tests and occupational information in helping students in educational and vocational planning.

218A-218B. Appraisal of the Individual Student. (2-2) Yr.

Prerequisite: courses 110A-110B, 114, 119, 215A. Mr. Sorenson, Mr. Leton

218A. Introduction to individual testing; includes supervised practice.

218B. Other appraisal techniques, such as systematic observations, the interview, and case studies; and cumulative records and their use in the school.

219A-219B. Experimental Study of Audio-Visual Communication Media.

(2-2) Yr.

Mr. Lumsdaine

Prerequisite: courses 114 and 139 or the equivalent required; 119 and 200A-200B recommended.

For advanced students with an active interest in research. Analysis of methods used and results obtained in experiments on the development of knowledge, skills, and attitudes through audio-visual communication media.

220. Principles of Curriculum and Instruction. (2) I, II.

Mrs. Tyler

(Former number, 276A.)

For graduate students who wish to develop the ability to examine critically the basic concepts underlying the determination of objectives, the selection and organization of learning experience, and the evaluation process.

221. Evaluation of Curriculum and Instruction. (2) I.

Mrs. Tyler

(Former number, 236A-236B.)

Prerequisite: course 220.

Ways of evaluating the effectiveness of curriculum and instruction, including assessment and improvement of teacher behavior and accomplishment.

222A-222B. Early Childhood Education. Advanced. (2-2) Yr. Mrs. Sherer

(Former number, 228A-228B.)

Prerequisite: course 122A-122B.

Critical survey of current literature and research in early childhood education.

* Not to be given, 1961-1962.

- 224A-224B. Curriculum Construction in Elementary Education.** (2-2) Yr.
(Former number, 238A-238B.) Mr. Lucio
Intensive study of research relating to design, evaluative criteria, and staff organization in curriculum improvement.
- 225A-225B. The Social Studies in Elementary Education.** (2-2) Yr.
(Former number, 230A-230B.) Mr. Goodlad
Advanced study and research in social studies teaching and learning, with implications for curriculum development.
- 226A-226B. Mathematics and Science in Elementary Education.** (2-2) Yr.
(Former number, 233A-233B.) Mr. Dutton
Critical analysis of significant research in elementary mathematics and science teaching and learning. Application of findings to improvement of school programs. Evaluative techniques and individual student research.
- 227A-227B. Reading and Language in Elementary Education.** (2-2) Yr.
(Former number, 234A-234B.) Mrs. Sherer
Advanced study and research in reading, spelling, and oral and written language. Application of findings to improvement of school curricula.
- 230A-230B. The Secondary School Curriculum.** (2) Yr. Mr. McNeil
(Former number, 275A.)
Prerequisite: course 220.
For teachers, administrators, guidance personnel, and workers in foundations of education who wish to analyze current curriculum offerings in the light of purposes of secondary education. Consideration will be given to philosophical, psychological, and sociological bases for selection of learning experiences.
- 234. The Junior College Curriculum.** (2) II.
(Former number, 209B.) Mr. Cooper, Mrs. Dunlap, Mr. Johnson
Prerequisite: course 209A.
A study of trends, practices, and issues in the junior college curriculum, viewed in the light of the philosophy and purposes of the two-year college.
- 236A-236B. Adult Education.** (2-2) Yr. Mr. Dickerman
(Former number, 207A-207B.)
For school administrators and teachers, extension and group workers, librarians, and others who are responsible for developing programs of adult education.
A survey of the field of adult education: functions, development, clientele, institutions, and practices.
- *237A-237B. Business Education in Secondary and Higher Education. Advanced.** (2-2) I, II. Mr. Erickson
Prerequisite: course 137 and teaching experience.
Advanced study in business education teaching and learning, with a critical analysis and evaluation of significant research applicable to curriculum and teaching practices.
- 237C. The Organization, Administration, and Supervision of Business Education.** (2) I. Mr. Wanous
(Former number, 226A.)
Prerequisite: teaching experience or consent of the instructor.
A study of principles, practices, and problems related to the organization, administration, and supervision of business education at secondary and higher education levels.

238A-238B. Vocational Education. Advanced. (2-2) Yr. Mr. Barlow
(Former number, 224A-224B.)
Prerequisite: course 100A-100B.

An advanced course in the principles of vocational education, designed especially for supervisory and administrative personnel and candidates for the doctorate in education.

239A-239B. Audio-visual Education. Advanced. (2-2) Yr.
(Former number, 247A-247B.) Mr. Lumsdaine, Mr. Vetter

For supervisors and administrators dealing with problems involved in developing programs of visual education on the various levels in public education.

240A-240B-240C-240D. Backgrounds for Education Administration.

240A. Introduction to Education Administration. (2) I, II. Mr. Fawcett
(Former number, 140.)

Presents principles and theories relating to administration and supervision.

240B. Organization of Education in the United States. (2) I, II.

(Former number, 142.) Mr. Lindman
Considers the respective roles of the federal, state, county, and local governments, and voluntary agencies in American education. Reviews legal bases and administrative relationships.

240C. School Law. (2) I, II. Mr. Briscoe
(Former number, 148.)

For students preparing for administrative positions in education. Considers laws, court decisions, and legal procedures relating to management of schools.

240D. Laws Relating to Minors. (2) I, II.

(Former number, 148C.)
Prerequisite: consent of the instructor.
Considers federal and state statutes, local regulations and ordinances, attorney general and county counsel interpretations, court decisions, and ethical practices applicable to minors.

241A-241B-241C-241D. Supervision of Instruction.

241A. Supervision of Instruction. (2) I, II. Mr. Fielstra
(Former number, 251A.)

Prerequisite: teaching experience and consent of the instructor.
Considers basic principles and procedures applicable to supervision of instruction and in-service education of teachers.

241B. Supervision of Instruction in Elementary Schools. (2) I.

(Former number, 251B.) Mr. Fielstra
Prerequisite: course 241A.

Relates principles and procedures of supervision specifically to the elementary school.

241C. Supervision of Instruction in Secondary Schools. (2) II.

(Former number, 251B.) Mr. Fielstra
Prerequisite: course 241A.

Relates principles and procedures of supervision specifically to the secondary school.

241D. Evaluation and Field Research in Supervision of Instruction.

(2) I, II. Mr. Fielstra
(Former number 149, Section 1.)

Prerequisite: courses 241A and 241B or 241C.

Emphasizes the field study and evaluation of major problems in supervision.

242A. Principles of Educational Finance. (2) I, II. Mr. Lindman
(Former number, 145.)

Reviews historical and theoretical background; considers principles relating to federal and state participation in educational finance; analyzes present expenditures and future requirements.

242B. School Business Administration. (2) I, II. Mr. Briscoe
(Former number, 145.)

For students preparing to be school superintendents or business managers. Principles of financial planning and operational procedures relating to school budgeting, accounting, purchasing, and plant operation.

242C. School Business Administration. Problems. (2) I, II. Mr. Briscoe
Prerequisite: consent of the instructor.

For students preparing for school business management positions. Intensive study of selected problems in school business administration.

244A. Personnel Administration in Education. (2) I. Mr. Fawcett
(Former number, 245.)

Theories and principles of school personnel administration; personnel policies and procedures; selection, appointment, and orientation; salary policies, professional welfare; and in-service growth.

244B. Communication in Education Administration. (2) II. Mr. Fawcett
(Former number, 242.)

Considers communication theory and its application to administrative problems; includes internal communication among board members, superintendent and staff, and external communication with the community.

245A. Research in Education Administration. (2) I, II. Mr. Lindman

Research methodology intrinsic to school administration; includes projection of school population, study of cost-quality relationships, and analysis of services performed by educational research agencies.

245B. School Surveys. (2) I, II. Mr. Morrisett
(Former number, 241A-241B.)

Principles and techniques for appraisal of schools and colleges, with emphasis upon school and college surveys.

246A-246B. Administration of Elementary Education. (2-2) Yr. Mr. Lucio
(Former numbers, 236A and 246.)

Prerequisite: teaching experience and consent of the instructor.

Emphasizes study of major problems and research findings in elementary administration.

246C. Evaluation and Field Research in Elementary School Administration. (2) I, II. Mr. Lucio

(Former numbers, 236B and 149, Section 1.)

For students who have completed basic requirements for the elementary administration and supervision credential. Emphasizes the field study and evaluation of major problems in administration.

247A-247B. Administration of Secondary Education. (2-2) Yr. Mr. Vredevoe
(Former number, 243A-243B.)

For students preparing for administration and supervision of secondary schools. Principles and practices in organization and administration of secondary schools.

247C. Evaluation and Field Research in Secondary School Administration.

(2) I.

Mr. Vredevoe

(Former numbers, 270B and 147.)

An examination and evaluation of secondary schools, including an intensive study and development of evaluative instruments and criteria.

248A. Organization and Administration of City School Systems. (2) I.

(Former numbers, 141 and 240A.)

Mr. Morrisett

Principles of efficient school administration as exemplified in the practices of city school systems; compares organization and management procedures used in public administration, business administration, and school administration.

248B. City School Administration. Problems. (2) II.

Mr. Morrisett

(Former number, 240B.)

Provides for intensive study of selected problems in city school administration.

249. Administration of Junior Colleges. (2) I, II.

Mr. Campion

For students preparing for or now in administrative positions in junior colleges. Reviews administrative problems peculiar to junior colleges.

250A-250B. History of Education. Seminar. (2-2) Yr.

Mr. Nunis

Prerequisite: course 201A-201B. Limited to candidates for advanced degrees.

Specialized studies in the history of education.

251A-251B. Philosophy of Education. Seminar. (2-2) Yr.

Mr. Kneller

(Former number, 256A-256B.)

Prerequisite: courses 110A-110B, 206A-206B.

Limited to candidates for advanced degrees whose major interest is philosophy of education.

252A-252B. Sociology of Education. Seminar. (2-2) Yr. Beginning either semester.

Mr. Gordon

Prerequisite: Education 108; Sociology 180; Education 208A-208B or graduate status in the departments of Sociology or Anthropology.

Admission on consultation with the instructor. Limited to graduate students of advanced standing in the departments of Education, Sociology, and Anthropology.

253A-253B. Comparative Education. Seminar. (2-2) Yr.

Prerequisite: course 204A-204B.

Mr. Wilson, Mr. Jones

Comparative analysis of educational policies and practices in selected cultural regions with special attention to social, political, and economic factors influencing educational development.

254. Higher Education. Seminar. (2) II.

An intensive study of selected problems in higher education, including administration; student personnel.

255A-255B. Educational Psychology. Seminar. (2-2) Yr.

(Former number, 260A-260B.)

Mrs. Seagoe, Mr. Keislar

Prerequisite: courses 210, 211, 212. Limited to candidates for the master's or doctor's degree whose major interest is educational psychology and to students desiring to carry research in this area.

256A-256B. Measurement in Education. Seminar. (2-2) Yr.

Mr. Husek

(Former number, 254A-254B.)

Prerequisite: course 214A-214B.

Special problems in construction and use of achievement examinations, aptitude tests, and other methods of assessment.

- *257A-257B. The Development of Newer Educational Media. Seminar.**
(2-2) Yr. Mr. Lumsdaine
Prerequisite: courses 110A and 139 required; 119 and 210C recommended.
Limited to candidates for advanced degrees.
Experimentation with educational applications of teaching films, television courses, and self-instructional media, including implications of theories of learning and communication for the design and use of these media.
- 257C-257D. Seminar: Programming of Self-Instructional Media.**
(2-2) Yr. Mr. Lumsdaine, Mr. Keislar
Prerequisite: course 257B or consent of instructor.
Theory and research techniques in the development and evaluation of self-instructional programmed learning materials for teaching machines and related devices.
- 258A-258E. Counseling Theory and Practice. Seminar. (2-2) Yr.**
(Former number, 277A-277B.) Mr. Sorenson
Prerequisite: courses 213A-213B, 215A. Limited to candidates for advanced degrees whose major interest is counseling, and to selected high school and college counselors.
- 259. Problems in Educational Psychology. Seminar. (2) II.** Mrs. Seagoe
(Former number, 267.)
Prerequisite: courses 210, 211, and 212. Limited to graduate students whose major interest is in educational research.
Studies the procedures employed in collegiate bureaus of educational research, problems investigated, and methodologies employed in public school research.
- 260. Curriculum and Instruction. Seminar. (2) I, II.** Mrs. Tyler
(Former number, 276B.)
Prerequisite: course 220.
For graduate students who wish to pursue research in the curriculum.
- *261A-261B. Early Childhood Education. Seminar. (2-2) Yr.** Mrs. Sherer
(Former number, 253A-253B.)
For graduate students whose major interest is in the nursery school, kindergarten, or primary education.
- 262A-262B. The Elementary School Curriculum Seminar (2-2) Yr.**
Prerequisite: course 124B. Mr. Lucio
For teachers, curriculum workers, administrators, and graduate students interested in the intensive study of curriculum problems in the elementary school.
- 263. Secondary School Curriculum. Seminar. (2) I, II.** Mr. McNeil
(Former number, 275B.)
Prerequisite: courses 220, 221.
Primarily for doctoral students in supervision and curriculum. Intensive study and research on selected problems.
- 264A-264B. The Junior College. Seminar. (2-2) Yr.**
(Former number, 279A-279B.) Mr. Johnson, Mr. Cooper
Prerequisite: course 209A.
For graduate students whose major interest is higher education. Attention is given to college and university problems; the technical institute; and closely related areas of study.

264C-264D. Technical Education in the Junior College. Seminar. (2) I, II.
(Former number, 278A-278B.) Mr. Barlow

A study of the content, methods, and organization of technical education programs of a vocational-technical nature, with particular reference to junior college problems of teaching and administration.

266A-266B. Adult Education. Seminar. (2-2) Yr. Mr. Dickerman
(Former number, 281A-281B.)

Prerequisite: course 236A-236B.

For professional adult educators. Trends, problems, and recent research.

267A-267B. Research in Business Education. Seminar. (2-2) I, II.

(Former number, 226B.)

Mr. Wanous

Covers the bibliography of and research methods found useful in a study of problems in business education. Analyses, studies, and implications of their findings for the improvement of business education. Design of individual research projects.

268A-268B. Vocational Education and Guidance. Seminar. (2-2) Yr.

(Former number, 266A-266B.)

Mr. Barlow

For graduate students whose major interest is in vocational education, vocational guidance, or closely related problems.

269A-269B. Audio-visual Education. Seminar. (2-2) Yr. Mr. Lumsdaine

(Former number, 257A-257B.)

Prerequisite: course 139. Limited to candidates for advanced degrees whose major interest is audio-visual education and to students desiring to carry on research in this area.

270. Education Administration. Seminar. (2) I, II.

Mr. Lindman

(Former number, 255A-255B.)

For advanced students in educational administration and supervision. Considers major issues and current problems relating to administration of schools and colleges.

271. Advanced Education Administration. Seminar. (2 or 4) I, II.

(Former number, 292A-292B.)

Mr. Morrisett, Mr. Lindman

Directed research for advanced students in education administration.

273. Supervision of Instruction. Seminar. (2) I, II.

Mr. Fielstra

Prerequisite: courses 241A and 241B or 241C.

Provides opportunity for advanced students in supervision to design and to conduct directed research which normally will be related to the preparation of a master's thesis or doctoral dissertation.

280A-280B. Secondary Education. Seminar. (2-2) Yr.

Mr. Vredevoe

(Former number, 221A-221B.)

280A. Critical study of basic issues and problems related to secondary education.

280B. Emphasizes purposes, methods, instruments, and types of evaluative programs for secondary schools.

297. Individual Studies for Graduate Students. (1-6) I, II.

The Staff

Prerequisite: graduate status and consent of the instructor. May be repeated only once for credit.

299A-299B. Research on Dissertation for Doctoral Candidates. (2-6) Yr.

The Staff

Limited to candidates for the Doctor of Education degree who have been advanced to candidacy.

* Not to be given, 1961-1962.

PROFESSIONAL COURSES†

322A-322B. Supervised Teaching: Early Childhood Education. (4-4) I, II.
(Former numbers, EC335A-EC335B.) Mr. Bond and the Staff

Prerequisite: senior standing, Education 122A-122B, Art 330, Music 330, and Physical Education 330.

Required of all candidates for the kindergarten-primary credential. One of the teaching assignments must be in the kindergarten and the other in grades 1, 2, or 3.

322C. Supervised Teaching: Supplementary Teaching in Kindergarten-Primary Grades. (1-4) I, II. Mr. Bond and the Staff

(Former number, EC336.)

Supplementary teaching which may be elected by the student, or, in certain cases, required by the department.

323. Supervised Teaching in the Nursery School. (2-4) I, II.

(Former number, N334.)

Mr. Bond and the Staff

Open to candidates seeking a permit to teach in child-care centers, nursery schools, parent-child observation classes, and parent cooperatives. Does not meet the requirement in supervised teaching for kindergarten-primary or general elementary credentials.

324A-324B. Supervised Teaching: General Elementary. (4-4) I, II.

(Former numbers, E335A-E335B.)

Mr. Bond and the Staff

Prerequisite: for courses A and B: senior standing, Education 124A-124B, Art 330, Music 330, and Physical Education 330. Required of all candidates for the general elementary credential. One of the assignments will be in the upper elementary grades and the other in a lower elementary grade. For course C: supplementary teaching which may be elected by the student, or, in certain cases, required by the department.

323L. Supervised Library Service. (4) II.

Mr. Bond and the Staff

Prerequisite: Education 100A-100B, Library Service 203 and 206.

Under supervision and guidance, 120 hours of planned library service such as is typically performed by a professional librarian in an elementary school, secondary school, or junior college.

323MR. Supervised Teaching: Mentally Retarded. (4) I, II.

(Former number, MR376.)

Mr. Bond and the Staff

Prerequisite: course 128 and at least 8 units of supervised teaching for the general elementary credential or 6 units for the general secondary credential. 323MR does not displace any portion of the required 8 units of student teaching for the general elementary credential or 6 units for the general secondary credential.

323SC. Supervised Teaching: Speech Correction and Lipreading. (4) I, II.

(Former number, SC376.)

Mr. Bond and the Staff

Prerequisite: Speech 142A-142B and at least 8 units of supervised teaching for the general elementary credential or 6 units for the general secondary credential. 323SC does not displace any portion of the required 8 units of student teaching for the general elementary credential or 6 units for the general secondary credential.

† All candidates must (1) secure the approval of the Office of Student Services at least one semester prior to assignment, including formal recommendation of the University Physician and evidence of suitable grade-point averages; and (2) apply to the director of supervised teaching by the middle of the semester preceding the assignment.

329. Supervised Teaching: General Junior High School. (2-6) I, II.
 (Former number, J374.) Mr. Bond and the Staff
 Prerequisite: Education 324A-324B or a minimum of 6 units of teaching in a special field.

†**330A-330B-330C-330D. Supervised Teaching: General Secondary.**
 (3 units each) I, II. Mr. Bond and the Staff
 (Former numbers, G377, G378, 384A-384B.)

General prerequisites: graduate status; Education 100A-100B, 130. Special methods courses in majors and in minors as follows: Art: 370; Business Education: 2 units from Business Education 370A-370B-370C-370D; English and Speech: English 370; French: 370; German: 370; Health Education: 145B; Home Economics: 370; Mathematics: 370; Music: 370; Physical Education (Men): 370, 145B; Physical Education (Women): 326A-326B, 327A-327B; Spanish: 370 (or may be taken concurrently); Speech and Speech-English: Speech 370. Approval of the department of the undergraduate major subject, and consent of the director of supervised teaching.

Prerequisites for E: previous student teaching or regular public school teaching experience, Education 100A-100B, 130, and consent of the director of teaching.

†**330E. Supervised Teaching: Supplementary Teaching in Any Secondary Field. (1-6) I, II.**
 (Former number, 383.) Mr. Bond and the Staff

Prerequisite: previous student teaching or regular public school teaching experience, Education 100A-100B, 130, and consent of the director of supervised teaching.

334. Supervised Teaching: Junior College. (4) I, II. Mr. Bond and the Staff
 (Former number G379.)

Prerequisite: graduate status; Education 209A; Education 234 or 130; approval of the department of the teaching major and the consent of the director of supervised teaching. Restricted to candidates for the junior college credential.

ENGINEERING

(Department Office, 7408 Engineering Building)

- †*Morris Asimow, Ph.D., Professor of Engineering.*
Roy Bainer, M.S., Professor of Engineering and Professor of Agricultural Engineering, Resident at Davis.
John Landes Barnes, Ph.D., Professor of Engineering.
Ralph M. Barnes, Ph.D., Professor of Engineering and Professor of Production Management.
Joseph S. Beggs, D.Eng., Professor of Engineering.
Charles T. Boehnlein, Ph.D., Professor of Engineering.
Alexander E. Boldyreff, Ph.D., Professor of Engineering.
L. M. K. Boelter, M.S., Professor of Engineering.
George W. Brown, Ph.D., Professor of Engineering and Professor of Business Administration.
Albert F. Bush, M.S., Professor of Engineering.
Harry W. Case, Ph.D., Professor of Engineering and Professor of Psychology.

† For students securing the special or general secondary credential, a year sequence of 8 units per semester (total of 6 units) is required, as indicated.

‡ Absent on leave, 1961-1962.

- Reno Cole, M.S., *Professor of Engineering.*
Edward P. Coleman, Ph.D., *Professor of Engineering*
C. Martin Duke, M.S., *Professor of Engineering.*
Robert E. Elliott, Ph.D., *Professor of Engineering.*
J. Morley English, Ph.D., *Professor of Engineering.*
Gerald Estrin, Ph.D., *Professor of Engineering.*
Alan E. Flanigan, Ph.D., *Professor of Engineering.*
H. Kurt Forster, Ph.D., *Professor of Engineering.*
Joseph T. Gier, M.S., *Professor of Engineering.*
Louis L. Grandi, M.S., *Professor of Engineering.*
W. D. Hershberger, Ph.D., *Professor of Engineering.*
Thomas E. Hicks, Ph.D., *Professor of Engineering.*
Walter C. Hurty, M.S., *Professor of Engineering.*
W. Julian King, M.E., *Professor of Engineering.*
William J. Knapp, D.Sc., *Professor of Engineering.*
Tung Hua Lin, D.Sc., *Professor of Engineering.*
Wendell E. Mason, M.S., M.E., *Professor of Engineering.*
John H. Mathewson, M.S., *Professor of Engineering.*
John W. Miles, Ph.D., *Professor of Engineering.*
Herbert B. Nottage, Ph.D., *Professor of Engineering.*
Russell R. O'Neill, Ph.D., *Professor of Engineering.*
Wesley L. Orr, C.E., *Professor of Engineering.*
Russell L. Perry, M.E., *Professor of Engineering and Professor of Agricultural Engineering.*
Arthur F. Pillsbury, Engr., *Professor of Engineering and Professor of Irrigation.*
Louis A. Pipes, Ph.D., *Professor of Engineering.*
Thomas A. Rogers, Ph.D., *Professor of Engineering.*
Daniel Rosenthal, Ph.D., *Professor of Engineering.*
Nicholas Rott, Ph.D., *Professor of Engineering.*
William F. Seyer, Ph.D., *Professor of Engineering.*
Francis R. Shanley, B.S., *Professor of Engineering.*
Edward H. Taylor, M.S., *Professor of Engineering.*
William T. Thomson, Ph.D., *Professor of Engineering.*
A. V. Balakrishnan, Ph.D., *Associate Professor of Engineering.*
Harry Buchberg, M.S., *Associate Professor of Engineering.*
Bonham Campbell, A.B., E.E., *Associate Professor of Engineering and Assistant Director, Relations with Schools.*
Andrew Charwat, Ph.D., *Associate Professor of Engineering.*
Jacob Frankel, Ph.D., *Associate Professor of Engineering.*
Warren A. Hall, Ph.D., *Associate Professor of Engineering and Director, Water Resources Center.*
John C. Harper, D.Sc., *Associate Professor of Engineering and Associate Professor of Agricultural Engineering, Resident at Davis.*
Walter J. Karplus, Ph.D., *Associate Professor of Engineering.*
Ellis F. King, M.S., E.E., *Associate Professor of Engineering.*
Eldon L. Knuth, Ph.D., *Associate Professor of Engineering.*
Cornelius T. Leondes, Ph.D., *Associate Professor of Engineering.*
John Lyman, Ph.D., *Associate Professor of Engineering and Associate Professor of Psychology.*
† Joseph W. McCutchan, M.S., *Associate Professor of Engineering.*
Antony J. A. Morgan, Ph.D., *Associate Professor of Engineering.*
George E. Mount, Ph.D., *Associate Professor of Engineering and Associate Professor of Psychology.*

- Philip F. O'Brien, M.S., *Associate Professor of Engineering.*
 Richard L. Perrine, Ph.D., *Associate Professor of Engineering.*
 *Allan Powell, D.L.C., Ph.D., *Associate Professor of Engineering.*
 Lawrence B. Robinson, Ph.D., *Visiting Associate Professor of Engineering.*
 Allen B. Rosenstein, Ph.D., *Associate Professor of Engineering.*
 Frederick W. Schott, Ph.D., *Associate Professor of Engineering.*
 George Sines, Ph.D., *Associate Professor of Engineering.*
 William D. Van Vorst, Ph.D., *Associate Professor of Engineering.*
 George A. Zizicas, Ph.D., *Associate Professor of Engineering.*
 Harold W. Mansfield, *Associate Professor of Engineering, Emeritus.*
 Masanao Aoki, Ph.D., *Assistant Professor of Engineering.*
 Roy I. Barnett, M.S., *Acting Assistant Professor of Engineering.*
 Harold Davis, Ph.D., *Assistant Professor of Engineering.*
 Donald K. Edwards, Ph.D., *Assistant Professor of Engineering.*
 Myron B. Fiering, Ph.D., *Assistant Professor of Engineering.*
 John Isherwood, Ph.D., *Assistant Professor of Engineering.*
 S. Russell Keim, Ph.D., *Acting Assistant Professor of Engineering.*
 Richard C. Mackey, M.S., *Assistant Professor of Engineering.*
 Ken Nobe, Ph.D., *Assistant Professor of Engineering.*
 Moshe F. Rubinstein, Ph.D., *Assistant Professor of Engineering.*
 John E. Taylor, Ph.D., *Assistant Professor of Engineering.*
 John Arthur Aseltine, Ph.D., *Lecturer in Engineering.*
 Fred H. Blanchard, *Lecturer in Engineering.*
 John C. Dillon, B.S., *Lecturer in Engineering.*
 Henry C. Froula, M.A., M.S., *Lecturer in Engineering.*
 Gam Houston, Ph.D., *Lecturer in Engineering.*
 Milton Lewis, Ph.D., *Lecturer in Engineering.*
 Adin E. Mathews, M.S., *Lecturer in Engineering.*
 William D. McIlvaine, M.S., *Lecturer in Engineering.*
 Bernard Rasof, Ph.D., *Lecturer in Engineering.*
 John Rex, A.B., *Lecturer in Engineering.*
 Johanna E. Tallman, A.B., Cert. in Lib., *Lecturer in Engineering Bibliography (Librarian, Engineering Library).*
 George J. Tauxe, M.S., *Lecturer in Engineering.*
 Willis H. Ware, Ph.D., *Lecturer in Engineering.*
 Jack Willis, B.Sc., *Lecturer in Engineering.*
 Thomas Woodson, M.S., *Lecturer in Engineering.*
 Robert Brenner, M.S., *Associate in Engineering.*
 Albert F. Klinge, M.S., *Associate in Engineering.*
 Levi J. Knight, M.S., *Associate in Engineering.*
 Harry C. Showman, B.S., *Associate in Engineering.*

Letters and Science List.— Courses 2, 111A, 115A, 117A, 120A, 122A, 130A, 145, 150B, 151A, 160A, 163A, 181A, 182D, 182E, 183A, 185B, 186A, 187A.

Enrollment in engineering courses is permitted to students from other colleges who are undertaking curricula in which engineering courses are prescribed or recommended. Such students may be admitted to engineering courses by petition approved by the Dean of the College of Engineering, Room 6426 Engineering Building II.

SERVICES COURSES

Enrollment in the following courses is open to any University student who is qualified. Service courses may not be accepted toward a degree in Engineering.

1A. Surveying. (3) II.

Mr. Dillon

Lecture, two hours; field work, three hours. Prerequisite: trigonometry.

* In residence spring semester only, 1962.

Principles and practices in measurement of distances, directions, and elevations. Construction and use of common surveying instruments, such as tape, compass, level, transit, and plane table. Problems in elementary surveying.

2. Engineering Graphics. (3) II. Mr. McCutchan in charge

Lecture, one hour; laboratory, five hours. Prerequisite: one year of high school drafting, plane geometry, trigonometry.

The principles of descriptive geometry and graphics and their application to the solution of problems in engineering and science.

18. Materials of Production and Construction. (3) I. Mr. Sines in charge

Prerequisite: Chemistry 1A or 2.

A study of the properties of materials and the mass production methods of processing them.

146B. Properties of Art Ceramic Materials. (3) I. Mr. Knapp

(Numbered 108D prior to 1959-1960.)

Prerequisite: Art 190. Occasional field trips will be scheduled. For students in Fine Arts.

Composition of ceramic materials and products. Properties of ceramic bodies and glazes, and calculation methods for compounding.

LOWER DIVISION COURSES

‡1B. Surveying (3) II. Mr. Dillon

Lecture, two hours; field work, three hours; Saturdays. Prerequisite: courses 1A, or 4A, 4B.

Plane and geodetic surveys, triangulation; precise leveling; engineering astronomy; hydrographic surveys; topographic surveys, including application of photogrammetry.

4A. Introduction to Engineering Systems. (3) I, II. Mr. Boehnlein in charge

Demonstration and lecture, two hours; laboratory, four hours. Prerequisite: one year of high school mechanical drawing and regular lower division status in the College of Engineering. Concurrent or prerequisite (should be taken concurrently): Mathematics 5A, Chemistry 1A. Field trips may be scheduled.

Introduction to engineering systems. Measurements of geometrical and performance parameters of such systems as an energy conversion system and a transportation system including both traffic and material flow. Geometrical measurements of the output of a production plant and of land are included. Graphical presentation of results of laboratory measurements. Introduction to the statistical representation of data. Introduction to engineering analysis.

4B. Introduction to Design. (3) I, II. Mr. McCutchan, Mr. Grandi

Demonstration and lecture, two hours; laboratory, four hours. Prerequisite: course 4A; concurrent or prerequisite: Mathematics 5B, Chemistry 1B, Physics 1A.

Introduction to elementary design, including experimental design, of a structure, machine, circuit, or process, for the satisfaction of a given need. Graphical computations and analyses and preparation of working drawings and specifications. Introduction to the general method of engineering design. Case studies of engineering designs, including possible field trips.

4C. Introduction to Engineering Materials. (3) I, II. Mr. Asimow, Mr. Grandi

Lecture, two hours; laboratory, three hours. Prerequisite: course 4B; Chemistry 1B, Physics 1A, Mathematics 5B. Not open for full credit to students who have had course 8.

‡ Given even-numbered years only.

Importance of materials in engineering. Internal structures and general properties of solids, metals, nonmetals (ceramics), natural and synthetic organic materials, fluids. Experimental demonstration of important properties and illustration of their application in engineering, including field trips.

4D. Introduction to Engineering Processes. (3) I, II.

Mr. Asimow, Mr. Grandi

Lecture, one hour; laboratory, seven hours. Prerequisite: course 4C. Concurrent: course 15B, Physics 1C, Mathematics 6B. Field trips may be scheduled.

Manufacturing, construction, chemical and sanitation processes which combine or separate materials, considered as engineering systems. Measurement and control of mechanical and human variables.

†6. Engineering Drawing. (3) I.

Mr. McGutchan in charge

Lecture, one hour; laboratory, five hours. Prerequisite: course 2 or 4B.

An advanced course, based on A.S.A. standards of drawing and drafting room practice, correlating technical sketching and drafting with engineering design and production.

15A-15B. Elementary Mechanics. (3-3) Yr. Beginning either semester.

Lecture, two hours; laboratory, three hours. Mr. E. H. Taylor in charge

This is a unified course covering elementary topics of analytical mechanics and strength of materials.

15A, prerequisite: Physics 1A; prerequisite or concurrent: course 4C, Mathematics 4A or 6A.

Composition and resolution of coplanar force systems, equilibrium of coplanar force systems, simple stress calculations, frames, continuously distributed loads, moments of areas, beam stresses. Algebraic and graphic methods will be employed.

15B, prerequisite: course 15A; prerequisite or concurrent: Mathematics 4B or 6B.

Composition and resolution of noncoplanar force systems, equilibrium of noncoplanar force systems, friction, torsion, states of stress and strain, deflection of beams, statically indeterminate beams, combined axial and bending loads, eccentric loads, columns, cables.

83A. Engineering Probability and Statistics. (3) I, II.

Mr. Coleman

Prerequisite: course 4A, Mathematics 5B; or equivalent. Not open for credit for those who have had Statistics 131A.

Compound statements, connectives, logical relations, sets, partitions, counting; statistical experimentation, sample space, quantitative observations, graphical representation, descriptive statistics, probability measures. Hypergeometric, binomial, Poisson, Gaussian, exponential probability distributions; sampling, statistical estimation, significance tests; least squares, linear regression, correlation; experiments, engineering applications.

96. Engineering and Society. (2) II.

Mr. Campbell in charge

Prerequisite: enrollment in College of Engineering or consent of instructor.

Readings selected from the writings of outstanding engineers, scientists, and architects whose works illustrate the interaction between engineering and human society. Attention also given to the over-all contributions and historical significance of these men and their works.

97. Elementary Analysis of Engineering Practice. (3) I, II.

Mr. Knight in charge

Prerequisite: satisfactory completion of one semester's work in residence in the College of Engineering, Los Angeles, and participation in cooperative work-study program in engineering.

† To be given when there is sufficient demand.

Analysis of the physical operation and plant of representative industries or engineering agencies. Role of the engineer in safety, economy, and use of human and natural resources. Written and oral reports required.

UPPER DIVISION COURSES

Admission to junior status in the College of Engineering is determined on the basis of lower division grades and the score on the *Engineering Examination, Upper Division*. Applicants for junior status from all sources, including applicants from the University's lower division, will be required to meet the same minimum standard. For all students enrolled in the College of Engineering, junior status is prerequisite to all upper division courses.

Students entering junior status with a course in statics should take Engineering 108A. A course in statics is not equivalent to either course 15A or course 15B.

100A. Circuit Analysis (3) I, II. Mr. Schott in charge

Prerequisite: Mathematics 110AB or 110C (may be taken concurrently).

Elements of electrical circuit analysis, with emphasis on solutions of circuit problems; analogues and duals; applications of steady state and transient analysis to linear electrical, mechanical, and thermal systems.

100B. Field Theory and Energy Flow. (3) I, II. Mr. Rosenstein in charge

(Not the same course as the 100B given prior to February, 1958.)

Prerequisite: courses 100A; 104A (may be taken concurrently). Occasional field trips may be scheduled.

A study of electrostatic and electromagnetic fields, of the interaction of field and matter, and of fields in areas other than electrical. Energy in fields will be studied.

102B. Engineering Dynamics. (3) I, II. Mr. Thomson in charge

Prerequisite: course 15B or a course in analytical mechanics—statics (equivalent to Engineering 35, Berkeley campus), Mathematics 110AB or 110C (may be taken concurrently).

Fundamental ideas of dynamics; kinematics and kinetics of particles and rigid bodies; motion relative to moving reference frames; work-energy and impulse-momentum relationships; an introduction to oscillatory motion. Vector analysis methods are introduced in the treatment of most of these subjects.

103A. Elementary Fluid Mechanics. (3) I, II. Mr. E. H. Taylor in charge

Prerequisite: courses 102B, 105A. Recommended to be taken concurrently: course 105B. Occasional field trips may be scheduled.

An introductory course dealing with the application of the principles of mechanics to the flow of compressible and incompressible fluids. Includes hydraulic problems of flow in closed and open conduits.

104A. Experimental Engineering. (3) I, II. Mr. E. F. King, Mr. Grandi

Laboratory, six hours per week. Additional three hours required for preparation, calculations, and reports. Prerequisite: course 100A (may be taken concurrently). Occasional field trips may be scheduled.

Introductory experiments illustrating the properties of engineering materials. Applications of circuit theory to electrical, mechanical, thermal, acoustical, and fluid systems. Measurements and instrumentation. Required and elective experiments.

104B. Experimental Engineering. (3) I, II. Mr. Buchberg in charge

Laboratory, six hours per week. Additional three hours required for preparation, calculations, and reports. Prerequisite: courses 100A, 104A; 108B (may be taken concurrently). Concurrent: courses 100B, 103A. Occasional field trips may be scheduled.

Introductory experiments on the operation and application of machines, and on the behavior of engineering structures. Measurements and instrumentation.

104C-104D. Experimental Engineering. (4-4) Yr. Beginning either semester.

Mr. Gier, Mr. Grandi

Laboratory, eight hours, some of which may be devoted to lecture and/or demonstration. Additional four hours required in preparation of reports. Prerequisite: completion of all required freshman, sophomore, and junior courses. Occasional field trips may be scheduled.

A year laboratory course containing a group of integrated experiments common to all engineering fields, a group of elective experiments particularly applicable to the several fields of engineering, and a senior project.

105A. Thermostatistics and Thermodynamics. (3) I, II.

(Not the same as course 105A given prior to September, 1959.)

Prerequisite: junior standing.

Introduction to energy, information theory, entropy, and states of matter; statistical basis for zeroeth, first, second and third laws of thermostatistics; macroscopic behavior of gases; processes of closed thermodynamic systems; equations of state.

105B. Thermostatistics and Thermodynamics. (3) I, II.

Prerequisite: course 105A.

Properties of solids; processes occurring in flow systems; statistical and macroscopic considerations of open systems, chemical potential, chemical equilibrium, solutions and heterogeneous systems, piston-cylinder devices, electrical and other force fields; irreversible processes.

106A. Principles of Engineering Investment and Economy. (3) I, II.

(Numbered 120 prior to 1959-1960.)

Mr. English in charge

Prerequisite: course 100B, 103A, 105B.

Derivation of formulas used in investment theory; analysis of financial statements and cost accounting methods; analysis of original and alternative investments; equipment replacement problems; influence of personnel factors; quality control; studies in the economy of governmental projects.

106B. Theory and Methods of Engineering Design. (3) I, II.

Mr. Asimow

Prerequisite: senior standing in engineering.

Fundamental ideas of engineering design; methodology and the design process; decision theory as applied to design; the process and technique of optimization; special analytical tools of engineering design.

106A. Strength of Materials. (3) I, II.

Mr. E. H. Taylor in charge

Prerequisite: course 4C; a course in analytical mechanics—statics (equivalent to Engineering 35, Berkeley campus); Mathematics 4B or 6B (may be taken concurrently). Students entering junior status with a course in statics should take Engineering 108A. A course in statics is not equivalent to either course 15A or course 15B.

Stress, strain, and elasticity; thin shells, welded and riveted joints; shafts and helical springs; beams, shear, moment, flexural stress, shearing stress, deflection, unsymmetrical loading; column-theory; combined stresses.

108B. Strength of Materials. (2) I, II.

Mr. Shanley in charge

Prerequisite: course 15B or 108A, or the equivalent.

Review of stress-strain relationships, including inelastic behavior, strain energy, combined stresses; stress concentration and fatigue; bending theory, including curved beams, inelastic behavior, composite beams, unsymmetrical loading; shear flow theory, including shear center, torsion of thin shells, de-

lections; inelastic buckling of columns, plates, and shells; energy methods of deflection analysis; introduction to analysis of statically indeterminate structures and relaxation methods.

†109A-109B. The Engineer and His Professional Duties. (2-2) Yr.

(Numbered 113A-113B prior to 1959-1960.) Mr. Boelter in charge

Prerequisite: senior standing in engineering. Enrollment limited to twenty students per section.

Oral and written reports on various subdivisions of knowledge, with emphasis on the sociohumanistic periphery of engineering. Class meetings will be devoted to the subjects of the history of technology, business organization, personal efficiency, professional codes and ethics, industrial procedures, and engineering-report writing. The course serves as training in the professional duties of the engineer.

110A. Intermediate Circuit Theory I. (3) I, II.

Mr. Karplus

(Numbered 198 prior to 1959-1960.)

Prerequisite: senior standing in engineering; course 181A recommended.

Engineering circuit theory; essentials of circuit analysis and introduction to circuit synthesis; physical applications of complex frequency plane representation.

110B. Intermediate Circuit Theory II. (3) I.

Mr. Karplus

(Numbered 198 prior to 1959-1960.)

Prerequisite: courses 110A and 181A, or equivalent.

Review of driving point impedance synthesis; properties of transfer functions; synthesis of transfer functions; normalization and frequency transformation.

111A. Basic Magnetics. (3) I, II.

Mr. Rosenstein

(Numbered 198 prior to 1959-1960.)

Prerequisite: course 100A, or equivalent.

Fundamentals of modern magnetic theory and materials; magnetic circuit; development of energy, force, and circuit relations; characteristics of magnetic and permanent magnet materials; analysis of static electromagnetic systems such as transformers and magnetic amplifiers, emphasizing the static magnetic amplifier.

113A. Analog Computations. (3) I, II.

Mr. Karplus in charge

(Numbered 181D prior to 1959-1960.)

Prerequisite: Mathematics 110C or equivalent; courses 115A, 181A recommended.

A detailed study of the theory, operation, and application of analog computing devices such as the mechanical differential analyzer, thermal analyzer, network analyzer, and electronic computers and simulators. Engineering problems will be used to illustrate the operation and limits of accuracy of each device.

114A. Introduction to Electronic Digital Computing Systems. (3) I, II.

(Numbered 198 prior to 1959-1960.)

Mr. Estrin

Prerequisite: senior standing in electrical engineering, or equivalent including a knowledge of differential equations and their solution by Laplace transform methods, general circuit design, electronic circuits, nonlinear and pulse electronic circuits. (Mathematics 110AB; courses 100A, 115A, 115B, 181A.)

Orientation including comparison of analog and digital systems; historical background of digital computers; special mathematical topics; introductory programming; specialized digital computing circuits; systems and logical

aspects of the over-all machine and its components; emphasis on reliable and conservative design techniques.

114B. Logical Design of Digital Computing Machinery and Systems.

(3) I, II.

Mr. Estrin

(Numbered 198 prior to 1959-1960.)

Prerequisite: course 114A, or approved equivalent.

Logical design of synchronous digital computers; introduction to Boolean algebra and application to the following topics, among others: decimal and binary arithmetic units; delay-time and fast-access memories; input and output systems; error-detecting and correcting circuits.

114C. Circuit Design of Digital Computers. (3) I, II.

Mr. Estrin

(Numbered 198 prior to 1959-1960.)

Prerequisite: course 114A or equivalent.

Properties of nonlinear elements in two-state circuits, common component characteristics: semiconductors, magnetic materials, vacuum tubes, design of gates, bi-stable units, amplifiers, design of matrix and drum memories, storage and input-output devices and circuits.

114D. Digital Computer Systems Design. (3) I.

Mr. Estrin

Prerequisite: course 114A.

Complete design of digital systems; fundamentals common to most digital systems and consideration of major aspects of several specific systems.

‡115A. Fundamentals of Electron Devices. (3) I, II.

(Numbered 112A prior to 1958-1959.)

Mr. E. F. King in charge

Prerequisite: course 100A (may be taken concurrently). Not open for credit to students who have had course 112A.

A unified fundamental treatment of electron devices including vacuum tubes and transistors. Equivalent circuits. Introduction to small-signal operation.

‡115B. Active Electronic Circuits I. (3) I, II.

Mr. E. F. King in charge

Prerequisite: course 115A.

Amplifiers: untuned voltage, untuned power, direct-coupled, broad-band, tuned voltage and power; feedback. Oscillators; modulation, mixing, detecting; analog computing circuits. Design considerations.

‡115C. Active Electronic Circuits II. (3) I, II.

Mr. E. F. King in charge

Prerequisite: course 115B.

Large-signal and nonlinear situations. Graphical and analytical methods for analysis and design. Introduction to switching-mode operation. Design considerations.

‡115D. Pulse and Digital Methods. (3) I, II.

Mr. E. F. King in charge

Prerequisite: course 115B.

Linear and nonlinear wave shaping; linear pulse amplification; bistable, monostable and astable multivibrators, time-base generators; counting, synchronization and frequency division; digital computer circuits, gates, comparators; pulse and digital systems; design considerations.

‡‡115G. Junction Transistor Electronics II. (3) I, II.

Prerequisite: course 115B or equivalent.

Mr. E. F. King in charge

Bias stabilization; audio and power amplifiers; large-signal behavior switching times; pulse and switching circuits; d-c amplifiers; high-frequency

‡ A maximum of 12 units credit is allowed in the 115 series.

‡‡ Not to be given after summer, 1963.

analysis; oscillators, modulators and high-frequency circuits; other semiconductor devices and circuit applications.

117A. Applied Electromagnetic Theory I. (3) I, II. Mr. Hershberger

Prerequisite: course 100B. Not open for credit to students who have had former course 112C.

Fundamentals of wave propagation, static electric and magnetic fields, Maxwell's equation in integral and differential form, plane electromagnetic waves; transmission line theory.

117B. Applied Electromagnetic Theory II. (3) I, II. Mr. Schott

Prerequisite: course 117A.

Propagation and reflection of plane waves, wave guides, resonant cavities, microwave networks, Hertzian dipole.

118A. Electrical Power Operation and Distribution. (3) I. Mr. Grandi

(Numbered 100C prior to 1959-1960.)

Prerequisite: courses 100B, 104B. Occasional field trips will be scheduled.

Electrical power generation and distribution systems are considered from the viewpoint of equipment, operations, transmission and distribution, and system economics.

120A. Intermediate Fluid Mechanics. (3) I, II. Mr. E. H. Taylor

(Numbered 103B prior to 1959-1960.)

Prerequisite: courses 103A, 105B.

The dynamics of nonviscous and viscous fluids; potential motion, vortex motion, Navier-Stokes equation, boundary layers, turbulence, compressibility. Emphasis is placed on the applications of theory to various practical systems which involve fluid motion.

121A. Engineering Aerodynamics. (3) I, II. Mr. Hurty

(Numbered 121 prior to 1959-1960.)

Prerequisite: course 103A and Mathematics 110AB or 110C.

A course in the fundamentals of aerodynamics dealing with the basic aspects of compressible and incompressible fluid dynamics; theory of potential flow, airfoils, and finite wings; lifting surfaces in supersonic flow.

122A. Viscous Fluid Dynamics. (3) II. Mr. Charwat

Prerequisite: course 103A; course 120A recommended.

Fundamental equations. Flow in pipes and channels; introduction to the study of viscous flows; laminar and turbulent boundary layers; methods of solution; elements of compressible boundary layer theory and heat transfer.

124A. Engineering Acoustics. (3) I. Mr. Powell

Prerequisite: senior standing in engineering, or consent of the instructor.

Acoustics as a fluid motion: elementary interactions, reflection, transmission. Source types; characteristics and association with pulse jet, aeolian tones, jet noise. Noise spectra, measurement. Selected topics such as noise of boundary layers; propellers and fans; structural vibration, fatigue; underwater sound.

130A. Environmental Biotechnology. (3) I, II. Mr. Lyman in charge

Prerequisite: at least junior standing in engineering or equivalent.

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. Occasional field trips may be scheduled.

130B. Machine and Systems Biotechnology. (3) I, II. Mr. Lyman in charge
Prerequisite: junior standing in engineering or equivalent.

Quantitative and qualitative methods for assessing man as a component in engineering design applications. Limits and optima of human psychophysiological capabilities applied to display-control design, decision-making problems, and task definition; problems of man-machine interactions in large-scale systems. Occasional field trips may be scheduled.

131A. Industrial Sanitary Engineering. (3) II. Mr. Bush
Prerequisite: senior standing in engineering.

Quantitative consideration of industrial environment. Evaluation of atmospheric contaminants, sampling methods and analysis, design of ventilation systems (hoods, local exhaust principles, exhausters and collectors), airflow measurements, industrial atmospheric pollution regulations. Consideration of fundamentals of problems of evaluation, disposal of liquid and solid waste involving the design of disposal systems.

†132A. Air Conditioning. (3) I. Mr. Nottage
(Numbered 198 prior to 1959-1960.)

Prerequisite: senior or graduate standing, or equivalent.

Design and performance principles for air-conditioning equipment. Thermodynamic properties of moist air. Psychrometric chart analyses. Component equipment principles. Physiological-environment interactions. Systems load analysis for air-conditioning buildings. Guest lecture and field trip.

135A. Design of Optical Systems I. (3) I, II. Mr. Beggs
(Numbered 198 prior to 1959-1960.)

Prerequisite: senior standing in engineering.

An understanding of principles of image formation, and their application to design of lenses and optical systems in the first order with correction of aberrations. Synthesis of systems by the algebraic third order methods.

†135B. Design of Optical Systems II. (3) II. Mr. Beggs
(Numbered 198 prior to 1959-1960.)

Prerequisite: course 135A.

Preliminary design of optical systems with attention to application; preliminary design of a lens; trigonometric analysis of aberrations; graphical aids; optical image evaluation; tolerances; use of high-speed automatic digital computers; design of aspheric surfaces and condensing systems.

136A. Introduction to Control Systems Theory. (3) I, II. Mr. Leondes
(Numbered 181C prior to 1959-1960.)

Prerequisite: course 181A.

Study of basis for control system specification; synthesis techniques; a.c. and d.c. servocomponents and detailed study of servomechanisms drawn from practice.

136B. Control Systems Theory. (3) I, II. Mr. Leondes
(Numbered 198 prior to 1959-1960.)

Prerequisite: course 136A.

Extended synthesis techniques; multipole control systems; problems in linear systems; analysis and synthesis of nonlinear control systems.

136C. Sampled Data Control Systems Theory. (3) I. Mr. Leondes
(Numbered 198 prior to 1959-1960.)

Prerequisite: course 136A.

Analysis and synthesis of control systems with sampled functions of time variables; techniques for synthesis of sampled data control systems to meet

† Given even-numbered years only.

required specifications; behavior of sampled data system between sampling instances, multirate sampled data systems.

137A. Highway Transportation Systems. (3) I. Mr. Mathewson
(Numbered 174 prior to 1959-1960.)

Prerequisite: senior standing in engineering.

Fundamental aspects of streets and highways as transportation facilities; planning, financing, location, economics, geometric design, and physical characteristics. Traffic surveys and instrumentation; traffic control and related devices; applications of statistical techniques to traffic problems.

137B. Design of Streets and Highways. (2) II. Mr. Mathewson

Lecture, one hour; laboratory, three hours. Prerequisite: course 137A.

Design of street and highway systems and components including tangent sections, curves, interchanges, access facilities, traffic controls, parking facilities; suboptimizations on utility, safety, cost, properties of materials, maintainability, present needs, future needs; individual and group design assignments.

141A. Product Design. (3) II. Mr. Mason in charge
(Numbered 106B prior to 1959-1960.)

Lecture, one hour; laboratory, six hours. Prerequisite: 162A or 167A.

Engineering and economic calculations involved in the design and manufacture of industrial products; design for function, safety, and appearance; sketching and rendering.

142A. Elements of Construction. (3) I. Mr. Duke
(Numbered 148A prior to 1959-1960.)

Lecture, two hours; laboratory and field trips, three hours. Prerequisite: senior standing in engineering.

Anatomy of the industry, contracts, costs and economics, equipment and materials, construction methods, field engineering techniques, observation and engineering analysis of current construction projects in the vicinity, field trips.

143A. Engineering of Underground Reservoirs. (3) II. Mr. Perrine
(Numbered 143B prior to 1959-1960. Not the same as 143A offered prior to 1960-1961.)

Prerequisite: Geology 111 or consent of instructor. Occasional field trips will be scheduled.

Oil and gas production mechanisms, aquifer behavior; thermodynamic relations, reservoir forces, fundamental equations; secondary recovery of oil.

144A. Tool Engineering. (3) II. Mr. Asimow
(Numbered 145 prior to 1959-1960.)

Lecture, two hours; laboratory, two hours. Prerequisite: course 162A (may be taken concurrently). Field trips will be scheduled.

The selection of tooling for production; design of tools, jigs, fixtures, dies, and production-type gages; design of tooling for automatic machines, design of assembly tooling.

145. Introduction to X-Ray Diffraction. (3) II. Mr. Rosenthal

Lecture, two and one-half hours; demonstration, one-half hour. Prerequisite: junior standing; Physics 121 (may be taken concurrently).

Fundamentals of crystallography; stereographic projection; X rays, diffraction of X rays by crystals; determination of a cubic lattice by powder method; determination of crystal orientation by back reflection Laue method; structural and phase changes; electron and neutron diffraction.

146A. Properties of Ceramic Materials. (3) I. Mr. Knapp
(Numbered 108C prior to 1959-1960.)

Prerequisite: senior standing in engineering.

Structure of some ceramic materials in the crystalline and glassy states, and relation to physical and chemical properties. Equilibria of ceramic mixtures and certain thermodynamic applications.

147A. Introduction to Physical Metallurgy. (3) I, II. Mr. Flanigan
(Numbered 108G prior to 1959-1960.)

Lecture, two hours; laboratory, three hours.

A fundamental study of metals and alloys, the dependency of properties on structure, and the influence of mechanical and thermal treatments on structure and properties. Metal crystals. Plastic deformation, work hardening and recrystallization. The role of alloying elements. Alloy diagrams. Precipitation hardening. Transformations in alloys of iron and carbon. Commercial treatments and processes.

147B. Processing of Metals. (3) II. Mr. Asimow
(Numbered 108H prior to 1959-1960.)

Prerequisite: course 147A.

Metal-shaping processes and associated problems involving plastic and fluid flow, heat transfer, metallurgical and chemical reactions, forces and energy. Design of equipment and interrelation of process and product design.

150A. Industrial Heat Transfer. (3) I, II.
(Numbered 151A prior to 1959-1960.)

Prerequisite: course 105B.

The study of the basic principles of heat transfer and their application to the design of industrial equipment. Steady state and transient problems of conduction by analytical and numerical methods. Free and forced convection. Transfer of radiant energy.

150B. Thermal and Luminous Radiation. (3) II. Mr. O'Brien
(Numbered 153 prior to 1959-1960.)

Prerequisite: course 105B or the consent of the instructor.

Introduction to the production, transmission, and reception of radiation; geometry and properties of radiant transfer systems; determination of radiant transfer matrices; intergal and finite-difference representations of radiant transfer; analogue and digital computers applied to thermal radiation and lighting systems.

***150C. Utilization of Solar Energy.** (3) I. Mr. O'Brien
(Numbered 198 prior to 1959-1960.)

Prerequisite: senior standing in engineering and consent of instructor.

Meteorological effects on availability; methods of collection and concentration; methods of conversion to mechanical, chemical and electrical energy; limitations on design; status of application to heating, cooling, high temperature research, distillation of sea water, etc.

151A. Intermediate Thermodynamics. (3) II. Mr. Nobe
(Numbered 105C prior to 1959-1960.)

Prerequisite: course 105B.

General treatment of first and second laws, including systems of variable mass and availability concepts. Mathematical relationships among thermodynamic functions, with applications from the areas of chemistry, physics, and engineering. The phase rule, and chemical and physical equilibrium. The third law. Introduction to the kinetic theory of gases, statistical mechanics, and nonequilibrium thermodynamics.

* Given odd-numbered years only.

- 152A. Mass Transfer. (3) I, II.** Mr. Knuth
Prerequisite: course 105B.
Physical and thermal properties of fluids; molecular and eddy diffusion; mass, heat, and momentum transfer; application to evaporation and psychrometric unit operation, cooling towers, etc.
- 153A. Propulsion I. (3) II.** Mr. W. J. King
(Numbered 156 prior to 1959-1960.)
Prerequisite: courses 103A, 105B.
A survey of theory, practice, limitations, and trends of future developments in the field of aircraft, missiles, and space craft propulsion, including all types of primary and auxiliary power plant, but with particular emphasis upon gas turbines and jet propulsion.
- 153B. Propulsion II. (3) I.** Mr. Charwat
(Numbered 157 prior to 1959-1960.)
Prerequisite: courses 103A, 105B, course 153A recommended.
Aerodynamic and mechanical design of compressors and turbines; synthesis of gas turbine engines; elements of combustion technology in air-breathing and rocket engines; propulsive characteristics of turbojets, ram-jets, rockets and hybrid propulsors (ducted fans, bypass engines, air-turbo-rockets, etc.)
- 155A. Engineering Aspects of Nuclear Processes. (3) I, II.** Mr. Hicks
Prerequisite: senior standing in engineering, physics, or chemistry.
Introduction to the basic engineering principles involved in the design of nuclear reactors. Includes a review of basic physics required for engineering applications, diffusion of neutrons, reactor mechanics, and radiation shielding.
- 156A. Nuclear Reactor Design. (3) II.** Mr. Hicks
(Numbered 155B prior to 1959-1960.)
Prerequisite: course 155A.
Studies of the major element of reactor design and the integration of these elements, including both over-all design and component design.
- 156B. Nuclear Reactor Control. (3) I.** Mr. Hicks
(Numbered 155C prior to 1959-1960.)
Prerequisites: courses 155A, 136A or equivalent.
Reactor kinetics, automatic control and control mechanisms, feedback loops, transient response, long term reactivity changes, effects of power plant control, and reactor start-up and shutdown.
- 157. Engineering Aspects of Chemical Processes. (3) II.** Mr. Nobe
(Numbered 150 prior to 1959-1960.)
Prerequisite: course 105A; Chemistry 110A recommended.
A synthesis of the elements of design of chemical process systems, including the chemical reaction, reaction rates, thermochemistry, energy and mass balances, process equipment. A review of the unit processes and unit operations comprising chemical process systems. A survey of the organic, inorganic, and biochemical processes of principal economic importance in the United States.
- 158A. Principles of Separation Operations. (3) II.** Mr. Hicks
(Numbered 152B prior to 1959-1960.)
Prerequisite: course 152A.
Requirements and limitations in the separation of a mixture into its component parts. Emphasis on repetitive counter-flow operations and on applications common to all fields. Specific examples from fields of chemistry, metallurgy, fossil fuels, atomic energy, etc.

158B. Chemical Reactor Analysis: Combustion. (3) I. Mr. Nobe
(Numbered 152C prior to 1959-1960.)

Prerequisite: course 158A.

Basic principles of reaction kinetics, chemical reactor kinetics, and inter-phase transfer kinetics continuous-flow systems. Steady-state flow systems contrasted with batch systems. The effects of thermodynamic variables on kinetics.

160A. Introduction to Mechanical Vibrations. (3) I, II. Mr. Thomson
(Numbered 102D prior to 1959-1960.)

Prerequisite: course 102B.

Introduction to fundamentals of mechanical vibrations, types of oscillatory motions, Fourier components. Study of free, forced, and transient vibrations, damping, vibration isolation, vibration measuring instruments. Coupled oscillations of lumped systems, use of Lagrange's equations, Rayleigh and matrix-iteration methods.

160B. Flight Mechanics and Performance. (3) I. Mr. Boehnlein in charge
Prerequisite: courses 102B and 103A, or equivalent.

Study of the atmosphere, experimental aerodynamics, trajectory mechanics, basic and special performance problems of aircraft and missiles, static stability and control, and the mechanics of maneuvers.

160C. Aircraft Stability and Control. (3) II. Mr. Boehnlein

Prerequisite: courses 160B, 181A.

Euler's equations of motion and their application to aircraft flight; the nature of external forces and stability of motion; aerodynamic stability derivatives and their bearing on aircraft design; aircraft response to arbitrary control input using Laplace's method.

160D. Aeroelasticity. (3) II. Mr. Miles

Prerequisite: courses 160A, 160B, 181A, or consent of the instructor.

Analysis of the aeroelastic problems of divergence, control reversal, flutter, and transient response including related topics in vibrations, structures, and unsteady aerodynamics. Solutions by both assumed mode and matrix methods will be stressed.

161A. Advanced Kinematics of Mechanisms. (3) I, II. Mr. Beggs in charge
(Numbered 180 prior to 1959-1960.)

Prerequisite: course 102B. A field trip will be scheduled during the spring or fall recess.

Analysis and synthesis of fundamental types of mechanisms, including electric, magnetic, pneumatic, and hydraulic links. Both graphical and analytical methods are used. Applications will be considered to such devices as instruments, servomechanisms, calculating machines, conveyors, and printing presses.

162A. Machine Design. (4) II. Mr. Mason in charge
(Numbered 106A prior to 1959-1960.)

Lecture, two hours; laboratory, six hours. Prerequisite: course 4B, or equivalent introductory design course; 102B.

The design of machine elements on the basis of static and dynamic working stresses; selection of materials and shop processes; economic problems in design; design and use of various machine elements; linkages, fastenings, power transmission equipment; friction and lubrication.

163A. Elasticity and Plasticity. (3) I, II. Mr. Rosenthal
(Numbered 107H prior to 1959-1960.)

Prerequisite: course 108B; Mathematics 110AB or 110C (may be taken concurrently).

Analytical, numerical, and experimental solutions of plane state and torsion problems (stress function, relaxation and analogous methods, photoelasticity.) Criteria of flow and fracture. Homogenous plastic flow, including strain hardening. Elements of heterogeneous plastic flow.

164A. Principles of Soil Mechanics. (3) I, II. Mr. Tauxe
(Numbered 108J prior to 1959-1960.)

Prerequisite: courses 103A, 108B; Geology 2 and 2L recommended.

Soil as a foundation for structures and as a material of construction. Soil formation, properties, classification, tests. Shear failure and earth pressures. Compaction. Consolidation. Bearing capacity. Stresses in earth masses. Field techniques for exploration and design.

165A. Analysis of Framed Structures. (3) I, II. Mr. English in charge
(Numbered 107A prior to 1959-1960.)

Prerequisite: course 108B.

Analysis of beams and plane and space framed structures; applications of superposition and influence lines; deflections of beams and framed structures. Introduction to analysis of indeterminate beams and framed structures.

165B. Advanced Analysis of Framed Structures. (3) I, II.

(Numbered 107B prior to 1959-1960.)

Mr. English in charge

Prerequisite: course 165A.

Extension of principles covered in Engineering 165A to the general solution of more complicated determinate and indeterminate framed structures. Slope deflection and moment distribution methods. Principles of limit analysis of frames and trusses. Analysis of rings and arches including those with variable moment of inertia.

166A. Analysis of Shell Structures. (3) I, II.

Mr. Shanley

(Numbered 107G prior to 1959-1960.)

Prerequisite: course 108B.

Analysis for shear, bending, and torsion; buckling of columns, plates, and shells; properties of aircraft structural materials; brief description of load factors and load distribution for aircraft structures.

166B. Advanced Analysis of Shell Structures. (3) I, II.

Mr. Shanley

(Numbered 107J prior to 1959-1960.)

Prerequisite: course 166A.

Analysis of stiffened and unstiffened shell structures, including frames, bulkheads, cutouts, general instability, pressure loading, allowable stresses, applied buckling theory.

167A. Structural Components. (3) I, II.

Mr. English

(Numbered 106C prior to 1959-1960.)

Lecture, two hours; laboratory, three hours. Prerequisite: course 165A (may be taken concurrently).

Design and analysis of structural members and modes of connections; composite and prestressed members; fabrication and erection techniques; optimization principles.

167B. Design of Stationary Structures. (3) I, II.

Mr. English

Lecture, two hours; laboratory, three hours. Prerequisite: course 167A.

Design of structural systems such as bridges, buildings, waterfront installations and towers. Application of optimization principles to complete structures. An individual or group project to design a comprehensive structural system will constitute approximately one-half the course. Field trips.

- 168A. Optimum Structural Design I. (2) I.** Mr. Shanley
(Numbered 198 prior to 1959-1960.)
Prerequisite: course 108B or equivalent.
Development and application of fundamental principles of structural design for minimum weight; relationships between material properties and corresponding structural design and weight; structural configuration studies applicable to both aeronautical and civil engineering structures.
- 168B. Optimum Structural Design II. (2) II.** Mr. Shanley
(Numbered 198 prior to 1959-1960.)
Prerequisite: course 168A.
Continuation of Optimum Structural Design, Part I, to include more advanced problems, such as optimum distribution of material for minimum weight, use of optimum design principles in predicting weight of structures, effects of elevated temperatures, creep buckling, theory of fatigue.
- 170. Sales Engineering. (3) I.** Mr. Case
Lecture, three hours. Prerequisite: senior standing in engineering. Field trips may be arranged.
The principles of engineering sales will be illustrated by the case method. The selection and assembly of prefabricated components in the solution of a production and construction problem. Presentation of the service function as it is related to sales engineering.
- 171. Engineering Organization and Administration. (3) I, II.** Mr. Case
Prerequisite: senior standing in engineering.
The principles of organization and administration as applied to engineering in industry will be considered. Special problems pertaining to the use of organization charts, the assignment of administrative responsibility, the engineering use of job descriptions, job evaluation, job analysis, and efficiency surveys as well as problems pertaining to the selection, training, and supervision of technical employees will be discussed.
- 172. Principles of Industrial Safety. (3) II.** Mr. Mathewson
Prerequisite: junior standing in engineering.
Delineation of the over-all accident prevention problem, with emphasis on industrial concepts. Analysis and synthesis of all major elements, e.g., statistical methods, plant layout, machine and process control devices and safeguards, applicable laws and codes, nuclear radiation and other occupational health hazards, engineering and medical controls, explosion and fire prevention and protection, industrial traffic and safety organization.
- 181A. Linear System Solutions by Transform Methods. (3) I, II.** Mr. Schott in charge
Prerequisite: courses 100A, 102B, 104A; Mathematics 110C or 110AB.
Formulation and solution of equations of behavior of linear electrical, mechanical, and thermal systems by the Laplace-transformation method. Applications of the transform method to lumped-parameter systems.
- 182A. Mathematics of Engineering. (3) I, II.** Mr. Pipes
Prerequisite: course 181A; Mathematics 110AB or 110C.
Applications of mathematical methods to engineering problems are considered, involving systems whose parameters are "lumped" and whose mathematical formulation leads to the solution of ordinary differential or difference equations. Typical problems in the fields of electrical, mechanical, and civil engineering are discussed and used to introduce and illustrate the mathematical techniques involved.

182B. Mathematics of Engineering. (3) I, II.

Mr. Pipes

Prerequisite: course 182A.

Applications of mathematical methods to engineering problems are considered, involving systems whose parameters are "distributed" and whose mathematical formulation leads to the solution of partial differential equations. The engineering problems are used to introduce and illustrate the mathematical procedures and are chosen from the fields of electrical, mechanical, and civil engineering.

182C. Matrix Methods in Engineering. (3) I, II.

Mr. Pipes

(Numbered 198 prior to 1959-1960.)

Prerequisite: course 181A; Mathematics 110AB or 110C.

Fundamentals of matrix algebra, differential and integral calculus of matrices; solution of linear, polynomial, and systems of differential equations; applications to mechanical vibrations, electric circuit theory, heat conduction, acoustical vibrations, theory of elasticity, electrical, mechanical, and acoustical wave motion.

182D. Variational Methods in Engineering. (3) I, II.

Mr. Pipes

(Numbered 198 prior to 1959-1960.)

Prerequisite: courses 100A, 102B, 181A; Mathematics 110AB or 110C.

Maxima and minima of integrals involving several dependent variables; isoperimetric problems and Lagrange's multipliers; Hamilton's principle and Lagrange's equations; Fermat's principle; energy method; Rayleigh's principle and Rayleigh-Ritz method; Galerkin method; variational methods; applications.

182E. Nonlinear Differential Equations in Engineering. (3) I, II. Mr. Pipes

(Numbered 198 prior to 1959-1960.)

Prerequisite: courses 100A, 102B, 181A.

Practical introduction to nonlinear differential equations; representative applications; presentation of various analytical methods employed in solution of technical problems taken from fields of electrical, mechanical, and civil engineering. Topological, operational, Poincare, van der Pol, and Kryloff-Bogoliuboff methods; technical problems.

183A. Probability and Stochastic Processes for Engineers. (3) I, II.

Mr. Coleman in charge

Prerequisite: Mathematics 6B. (Not the same as course 183A offered prior to fall semester, 1958.)

Combinatorial analysis, sample space, events, probability theory, discrete and continuous random variables, probability distributions, population parameters, stochastic independence, sums of random variables, law of large numbers. Central limit theorem and applications. Statistical inference, stochastic processes and calculus of random function.

183B. Engineering Statistics I. (3) I, II.

Mr. Coleman in charge

(Numbered 183A prior to 1958-1959.)

Lecture, two hours; laboratory, two hours. Prerequisite: course 183A or equivalent.

Fundamental statistical concepts, population (system), sample, parameter, statistics. Significance tests and confidence limits. Efficient computational procedures. Risks of wrong decisions, power functions, operating characteristic curves. Simple and multiple regression and correlation, bivariate normal distribution. Applications in engineering and industry.

183C. Engineering Statistics II. (3) I, II.

Mr. Coleman

(Numbered 183B prior to 1958; not the same as course 183B offered subsequent to June, 1958.)

Prerequisite: course 183B or equivalent.

Statistical design and analysis of engineering and industrial experiments. Analysis of variance and covariance. Designs include randomized blocks, Latin and Graeco-Latin squares, factorial and fractional factorial experiments. Determination of optimum experimental conditions for maximum response. Engineering and industrial applications.

185A. Systems Engineering. (3) I, II. Mr. Boldyreff
(Numbered 198 prior to 1959-1960.)

Prerequisite: Mathematics 110AB or 110C.

Mathematical bases for decision and programming in industry; models, methods, and objectives of systems engineering; specific methods and problems; emphasis placed upon practical validity and use of common-sense and empirical methods.

185B. Dynamic Programming. (3) II. Mr. Hall
(Numbered 198 prior to 1959-1960.)

Prerequisite: Mathematics 110AB or 110C.

Introduction to mathematical analysis of multistage decision processes occurring in mathematical theory of control, in operations research and system analysis, and in mathematical economics; analytic formulation and numerical computation stressed; examples.

186A. Random Processes. (3) I, II. Mr. Davis
(Numbered 198 prior to 1959-1960.)

Prerequisite: course 183A or equivalent.

Analytic representations of random fluctuations occurring in certain engineering systems, especially communication and control systems; spectral analysis of stationary processes; Gaussian processes and their special properties, zero crossings, etc.; linear systems, Wiener filters, and analogs in optics; turbulence.

187A. The Communication of Information. (3) I, II. Mr. Hershberger
(Numbered 112B prior to 1959-1960.)

Prerequisite: course 115A.

Delineation of the fundamental problem of communication between human beings, with emphasis on factors common to all systems. The course includes a study of information theory, signals and their spectra, and the factors that determine system performance as distortion, element variation, and band width; noise, and the characteristics of the human voice and sense organs. Illustrative material is drawn from telephony, radar, television, computers, and automatic control systems.

197. Advanced Analysis of Engineering Practice. (3) I, II.

Mr. Knight in charge

Prerequisite: junior standing and participation in the cooperative work-study program in engineering.

Analysis and synthesis of engineering systems in industry and government, including prediction of performance and costs. Role of the engineer in design, production, and management. Written and oral reports.

198. Special Courses (1-6) I, II. Mr. Boelter in charge

Prerequisite: senior standing in engineering; enrollment subject to approval of instructor in charge.

Group study of selected topics. Study groups may be organized in advanced engineering subjects upon approval of instructor in charge. Occasional field trips may be arranged.

The following study groups will be made available during the fall semester, 1961, and are indicative of the material which may be offered for the spring semester, 1962.

Fall Semester, 1961

Applications of Control Systems Theory. (3) (Enrollment limited)

*Properties of Materials. (3)

Physical Measurements. (3)

Problems in Operations Research. (3)

199. **Special Studies.** (1-5) I, II.

Mr. Boelter in charge

Prerequisite: senior standing and consent of the instructor. Application forms for requesting enrollment may be obtained from the Chairman of the Department.

Occasional field trips may be arranged.

GRADUATE COURSES

Courses in the 200 series are open only to graduate students and in each case the consent of the instructor must be secured. Courses will be offered only if there is sufficient demand.

210A. **Advanced Circuit Theory.** (3) II.

Mr. Karplus

(Numbered 298 prior to 1959-1960.)

Prerequisite: courses 110A, 110B.

General theory of two terminal pair networks; advanced techniques of transfer function synthesis; approximation in frequency domain; potential analog techniques; Fourier series techniques; time domain approximations; introduction to active network synthesis.

213A. **Advanced Analog Computations.** (3) II.

Mr. Karplus

(Numbered 298 prior to 1959-1960.)

Prerequisite: course 113A.

Selected topics in the design and application of analog computers; adjoint techniques, treatment of random variables, limitations on accuracy, applications to network synthesis, combined use of analog and digital facilities.

213B. **Analog Simulation of Field Problems.** (3) I.

Mr. Karplus

(Numbered 298 prior to 1959-1960.)

Prerequisite: courses 113A, 181A.

Comprehensive study of the application of conducting sheet analogs, electrolytic tanks, and network analyzers to the solution of partial differential equations; emphasis on problems in engineering endeavors including such areas as electrostatics, heat transfer, air pollution, and oil reservoir engineering.

214A. **Seminar in Digital Computer Advances.** (3) I, II.

Mr. Estrin

(Numbered 298 prior to 1959-1960.)

Prerequisite: courses 114A, 114B; or introduction to digital computers, logical design and/or consent of instructor.

A survey of the literature in the field of digital computers with emphasis on switching theory and application, digital computer design, and the application of digital computers.

215A. **Solid State Electronics.** (3) I.

Mr. Hershberger

(Numbered 230B prior to 1959-1960.)

Prerequisite: course 117A or consent of instructor.

Energy levels in gases and solids, dielectric materials, paramagnetism and ferromagnetism, ferrites, spin resonance effects, absorption and reradiation effects, masers.

215B. **Solid State Electronics: Semiconductors.** (3) II.

Mr. Hershberger

Prerequisite: courses 117A and 117B or consent of instructor.

Review of quantum mechanics and statistics; band theory of metals;

* Applicable only toward B.S. degree.

properties and physics of semiconductors; Hall effect, electron mobility, effective mass of electron alloy semiconductors; problems in synthesizing semiconductors with required properties.

‡217A. **Electromagnetic Theory: Radiation I.** (3) I. Mr. Elliott
(Numbered 230A prior to 1959-1960.)

Prerequisite: courses 117A and 117B or consent of instructor. Offered in alternate years.

Hallén-Aharoni theory of linear antennas; Schelkunoff array theory. Dolph-Techebyscheff aperture distribution; two-dimensional scanning arrays; effect of mutual coupling; dipole, slot and helix as single radiators and as array elements; frequency-independent antennas.

*217B. **Electromagnetic Theory: Radiation II.** (3) II. Mr. Elliott
(Numbered 298 prior to 1959-1960.)

Prerequisite: course 217A. Offered in alternate years.

Microwave optics. Stratton-Chu formulation. Horn radiators. Reflectors and lenses. Pattern synthesis. Stevenson slot theory. Fast and slow wave antennas. Taylor distribution. Wave-guide-fed arrays. Babinet's principle.

*217C. **Electromagnetic Theory: Microwave Circuits I.** (3) I. Mr. Elliott
Prerequisite: course 117B or equivalent. Offered in alternate years.

Impedance concept for waveguide modes; Schwinger variational technique for obstacles; irises; matching of discontinuities; principal types of junctions; ridges and corrugations; dispersive effects.

*217D. **Electromagnetic Theory: Ion Dynamics.** (3) II. Mr. Elliott
Prerequisite: courses 117A, 117B. Offered in alternate years.

The fundamental force equation; simple ion trajectories; magnetic and electric focusing; conformal transformation solutions; klystron theory and magnetron theory; the electron microscope; frequency limitations; traveling wave interactions; plasma oscillations.

217E. **Electromagnetic Theory: Wave Propagation.** (3) II. Mr. Hershberger
(Numbered 298 prior to 1959-1960.)

Prerequisite: course 117B.

Ground wave radiation from dipoles above flat and spherical earths; equivalent earth radius, height gain and effect of ground; the ionospherically reflected wave, magnetic field effects, absorption and multipath fading; scatter propagation from tropospheric and ionospheric fluctuations.

220A-220B. **Theoretical Hydrodynamics I and II.** (3-3) Yr. Mr. Miles

Prerequisite: course 103A or the equivalent; vector algebra; partial differential equations.

Vector calculus: equations of conservation of mass, momentum, and energy for an inviscid fluid; potential and stream functions; application of complex variable theory to two-dimensional, incompressible flow; airfoil theory; free streamline problems; vortex motion; surface waves; equations of viscous, incompressible flow; very viscous flow; boundary layer theory; gas dynamics of the convergent-divergent nozzle; hodograph method; characteristics method.

221A. **Gas Dynamics.** (3) II. Mr. Charwat

Prerequisite: consent of the instructor.

Review of thermodynamics, wave and shock motion in unsteady one-dimensional and steady two- and three-dimensional flows, small perturbation theory for wings and bodies, similarity rules, characteristics theory, effects of viscosity and conductivity.

* Given odd-numbered years only.

‡ Given even-numbered years only.

***221B. Hypersonic Aerodynamics. (3) I.** Mr. Rott
(Numbered 198 prior to 1959-1960.)

Prerequisite: course 221A.

A comprehensive survey of hypersonic aerodynamics to provide an introduction to the field; application to aircraft, missiles, and space vehicles.

222A. Real Fluids. (3) II. Mr. Charwat

Prerequisite: course 103A, partial differential equations, vector algebra; or consent of instructor; course 122A recommended.

Theoretical treatment of laminar and turbulent, incompressible and compressible viscous flow; approximate solutions and important empirical work; fundamental aspects of several related problems such as heat transfer, statistical theories of turbulence, the analytical framework for treatment of "real" fluid dynamics.

***223A. Kinetic Theory and Molecular Flow. (3) I.** Mr. Charwat
(Numbered 298 prior to 1959-1960.)

Offered in alternate years.

The molecular structure of gases; kinetic foundations of thermodynamics and gas dynamics; physics of the upper atmosphere; aerodynamics in rarefied gases; gas-surface interactions; experimental techniques.

‡224A. Aeroacoustics. (3) II. Mr. Powell
(Numbered 298 prior to 1959-1960.)

Prerequisite: engineering acoustics or consent of the instructor.

Fundamentals of generation, interaction of sound and fluid motion. Detailed development of selected topics such as: noise of turbulent jets, supersonic jets; boundary layers; propellers; shockwave interactions, supersonic boom; propagation in nonhomogeneous moving fluids; jet-, edge-, organ tones; aerothermoacoustics; structural fatigue.

***225A. Aerothermochemistry. (3) I.** Mr. Knuth
(Numbered 298 prior to 1959-1960.)

Prerequisite: courses 103B, 105B; or consent of instructor.

Change equations for multicomponent mixtures; rate equations for momentum, mass and energy transfers, chemical reactions, phase changes; equilibrium criteria; reaction heats; characteristic times and dimensionless parameters of aerothermochemistry; examples, including burning mixed gases, cooling with mass transfer, quenching chemical reactions.

‡225B. Aerothermochemistry. (3) II. Mr. Knuth
Prerequisite: course 225A.

Application of fundamentals presented in Engineering 225A to burning of premixed gases, cooling with mass transfer, quenching of chemical reactions, sound speed in reacting mixtures, channel flows of reacting mixtures, Prandtl-Meyer flows of reacting mixtures, etc.

‡226A. Engineering Magnetohydrodynamics. (3) I. Mr. Bott
Prerequisite: courses 117A and 220A 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.

230A. Advanced Biotechnology. (3) I. Mr. Lyman
(Numbered 298 prior to 1959-1960.)

Prerequisite: consent of instructor.

Review and analysis of contemporary bioscience research which bears on

* Given odd-numbered years only.

‡ Given even-numbered years only.

problems of engineering component and system design. Emphasis is on methodological and scientific factors underlying man-machine-environment interactions.

230B. Advanced Biotechnology. (3) II. Mr. Lyman

(Numbered 298 prior to 1959-1960.)

Prerequisite: consent of 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.

236A. Random Processes in Automatic Control Systems. (3) I. Mr. Leondes

(Numbered 298 prior to 1959-1960.)

Prerequisite: courses 136B and 186A, or equivalent.

Techniques for analysis and synthesis of linear control systems subjected to random processes as inputs, of nonlinear control systems with random processes as inputs, and of multipole control systems with random processes as inputs.

236A. Advanced Control Systems Theory. (3) I, II. Mr. Leondes

(Numbered 298 prior to 1959-1960.)

Prerequisite: courses 136B, 136C, 236A.

Critical review of most recent literature on control systems techniques; topics studied will include random processes in automatic control systems, sampled data theory, nonlinear control system synthesis, multipole servo-synthesis; linear time variable, self-optimizing or adaptive, and hybrid control systems.

243A. Theory of Flow Through Porous Media. (3) I. Mr. Perrine

(Numbered 298 prior to 1959-1960.)

Prerequisite: course 143A or consent of instructor.

Theory of miscible and immiscible fluid displacement processes within porous media; derivation and solution methods for equations describing flow; appropriate linearization of flow equations, representation as a hyperbolic system, numerical solutions, problems in stability or fingering, statistical hydrodynamics, capillarity.

245A. Properties of Engineering Materials. (3) I. Mr. Rosenthal

(Numbered 210A prior to 1959-1960, and 210B prior to 1958-1959.)

Prerequisite: graduate standing in engineering.

Application of solid-state physics to determination of structure and properties (mechanical) of engineering materials. Elements of X-ray structure analysis. Cohesive strength of ionic crystals and simple metals. Lattice imperfections, nonelastic behavior of solids.

245B. Properties of Engineering Materials. (3) II. Mr. Rosenthal

(Numbered 210B prior to 1959-1960, and 210A prior to 1958-1959.)

Prerequisite: graduate standing in engineering, Physics 121 (or equivalent).

Application of solid-state physics to determination of properties (other than mechanical) of engineering materials. Introduction to modern concepts. Specific heat, conductivity (conductors and semiconductors), dielectrics, magnetic properties. Electron theory of alloys.

246A. Equilibria for Materials at Elevated Temperatures. (3) II.

(Numbered 298 prior to 1959-1960.)

Mr. Knapp

Prerequisite: course 146A.

Thermodynamic applications for systems of inorganic materials at elevated

temperatures; lattice energies of ionic crystalline compounds; thermodynamic properties of solid solutions and melts; chemical reactions involving metals and ceramics at elevated temperatures.

‡247A. Reactions of Physical Metallurgy. (3) II. Mr. Flanigan
(Numbered 298 prior to 1959-1960.)

Prerequisite: bachelor's degree in engineering, physics or chemistry and at least one prior course in physical metallurgy, e.g., course 147A; or consent of the instructor.

A study of the mechanisms and rate-controlling factors associated with important reactions of physical metallurgy. Diffusion, solidification, recrystallization after cold work, grain growth, precipitation from supersaturated solid solution, decomposition of austenite.

***247B. Thermodynamics of Metals. (3) II.** Mr. Flanigan
(Numbered 298 prior to 1959-1960.)

Prerequisite: bachelor's degree in engineering, physics, or chemistry and at least one prior course in physical metallurgy such as 147A.

Entropy and free energy; solid and liquid metals; binary and dilute solutions; zinc-tin, zinc-cadmium, and zinc-copper systems; heats of fusion; free energy of liquid alloys; solid solutions with atoms of equal size; imperfect crystals and liquids.

249A. Problems of Materials for Nuclear Reactors. (3) II. Mr. Frankel
(Numbered 198 prior to 1959-1960.)

Prerequisite: courses 147A, 155A, or equivalent; courses 163A, 245A recommended.

Review of reactor characteristics; general materials considerations; problems unique to nuclear reactors; neutron economy; radiation damage; internal heating; properties of special materials; special problems with power reactors; fuels for high burn-up, influence of materials considerations on economics of nuclear power.

250A. Heat and Mass Transfer. (3) I.
(Numbered 251 prior to 1959-1960.)

Prerequisite: course 150A or 152A or consent of the instructor.

Development of equations describing heat, mass, and momentum transfer; general principles of diffusional and mass transfer processes; analogies among transport processes; applications to systems and processes with combined heat and mass transfer such as evaporative cooling.

250B. Seminar in Advanced Heat Transfer. (3) II.
(Numbered 298 prior to 1959-1960.)

Prerequisite: course 150A.

A review of the current literature in the fields of convective heat transfer and boiling heat transfer with special emphasis on analytical methods. Student reports on advanced topics in heat transfer.

251A. Advanced Topics in Thermodynamics. (3) I.
(Numbered 298 prior to 1959-1960.)

Prerequisite: course 151A and consent of instructor.

A review of the fundamental notions of classical and irreversible thermodynamics; applications to chemical equilibria and flow processes. Student reports on current topics in thermodynamics.

255A. Nuclear Reactor Analysis. (3) I. Mr. Hicks

Prerequisite: course 156A, or equivalent.

Derivation of the reactor equations, age theory, reactor kinetics, tempera-

* Given odd-numbered years only.

‡ Given even-numbered years only.

ture effects, etc., and their use with respect to both homogenous and heterogeneous reactors. Development of multigroup, multiregion neutron theory, and neutron transport theory.

256A. Nuclear Reactor Preliminary Design. (3) II. Mr. Hicks
(Numbered 298 prior to 1959-1960.)

Prerequisite: course 255A. Offered in alternate years.

Criteria necessary for nuclear reactor preliminary design will be discussed. Problems considered will be heat transfer, fluid flow, properties of materials, controls, fuel cycles, chemical separations, weight, shielding, etc. Students will prepare a nuclear reactor preliminary design as a report.

260A. Advanced Dynamics of Rigid Bodies. (3) I. Mr. Thomson
(Numbered 298 prior to 1959-1960.)

Prerequisite: course 102B or equivalent.

Kinematics and dynamics of space motion; ellipsoid of inertia; Poincot's geometric interpretation; precession and nutation; stability, perturbation solutions; high speed gyro; influence of gimbals, damping; constrained motion and gyrodynamic forces; gyrocompass, vehicle motion; Lagrangian formulation; impulsive excitation.

260B. Advanced Topics in Dynamics. (3) II. Mr. Thomson
(Numbered 298 prior to 1959-1960.)

Prerequisite: courses 260A, 269A.

Advanced topics relating to current dynamical problems.

260C. Wave Propagation in Solids. (2) I. Mr. Thomson
Prerequisite: course 263A or 263C, and 281A or Mathematics 224A.

Elastic waves in an extended medium, reflection and refraction at boundaries; propagation in bounded media, experimental measurements; stress waves in imperfectly elastic media, visco-elastic solids, internal friction, plastic and shock waves.

261A. Advanced Kinematics. (3) II. Mr. Beggs
Prerequisite: course 161A.

Analysis and synthesis of space mechanisms with special reference to point and line contact members such as gears and cams; complex variable, matrix, tensor dual number methods; deflections, vibrations and stress propagation.

***263A. Mechanics of Deformable Solids I.** (3) I. Mr. Zizicas
(Numbered 298 prior to 1959-1960.)

Prerequisite: course 108B; prerequisite or concurrent: course 281A; or consent of the instructor. Offered in alternate years.

States of stress and strain and their directional dependence, reversible and irreversible isotropic stress-strain relations, local and integral formulation of isotropic problems.

‡263B. Mechanics of Deformable Solids II. (3) II. Mr. Zizicas
(Numbered 298 prior to 1959-1960.)

Prerequisite: course 263A. Offered in alternate years.

Systematic solution of isotropic problems; analysis of anisotropic solids and effects of large strains.

‡263C. Applied Elasticity. (3) I. Mr. Lin
(Numbered 298 prior to 1959-1960.)

Prerequisite: course 108B, Mathematics 110C or equivalent; course 163A, 263C recommended.

* Given odd-numbered years only.

‡ Given even-numbered years only.

Elastic stress-strain relations, plane stress and strain problems in rectangular and cylindrical coordinates, bending of prismatic bars, stress concentration due to circular holes in strained plates, rotating disks and cylinders, torsion of circular and rectangular bars, thermal elastic stresses.

***263D. Applied Plasticity. (3) II.** Mr. Lin

(Numbered 298 prior to 1959-1960.)

Prerequisite: course 263C or consent of instructor.

Deformation theory, flow theory, slip theories of plasticity and their limitations, simple inelastic structures as inelastic beams, shafts, columns, spherical shells, thick cylinders, rotating disks and cylinders, plastic hinges in rigid frames and visco-elastic structures.

‡263E. Theory of Disks, Membranes, and Plates. (3) I. Mr. Zizicas

(Numbered 298 prior to 1959-1960.)

Prerequisite: course 263A or consent of instructor.

Reversible and irreversible deformation of disks; small and large deflections of elastic membranes and plates; thick plates; anisotropic plates; sandwich plates; irreversible deflections of plates; stable and unstable deformations to be considered; typical applications.

***263F. Theory of Shells. (3) II.** Mr. Zizicas

(Numbered 298 prior to 1959-1960.)

Prerequisite: course 263A or consent of the instructor.

Elements of differential geometry of surfaces; membrane and bending theory of shells; application to cylindrical, spherical, conical shells, and other shells with rotational symmetry; large deflections of shells; irreversible deflection of shells; stable and unstable deformations to be considered; typical applications.

264A. Analytical Soil Mechanics. (3) II. Mr. Duke

(Numbered 298 prior to 1959-1960.)

Prerequisite: course 164A.

Stress and plasticity, passive resistance, bearing capacity, piles, stability of slopes, seepage, consolidation, elasticity problems, soil dynamics, earthquake problems, field studies, foundations, earth structures. Emphasis will vary from year to year.

265A. Advanced Structural Analysis. (3) I. Mr. English

(Numbered 298 prior to 1959-1960.)

Prerequisite: courses 165A, 165B; or 166A, 166B.

Plastic or ultimate strength analysis of frames; light metal structural systems; indeterminate space frameworks; safety of structures. Application of modern computer techniques. Emphasis will be on stationary structures and will vary from time to time as indicated by current developments.

***266A. Theory of Elastic and Inelastic Stability. (3) I.** Mr. Lin, Mr. Shanley

(Numbered 298 prior to 1959-1960.)

Columns and beam columns in elastic range, in inelastic range and with creep; bending and buckling of thin rectangular plates under compression and shear; inelastic buckling of plates; bending and buckling of shells.

267A. Advanced Structural Design. (3) II. Mr. English

Prerequisite: courses 165A, 165B, 166A, 167A, 167B.

Design and economics of complex structural systems; various framing systems for concrete, masonry, and metal mill buildings, tall buildings, bridges, and special structures; monolithic structures; development of optimization principles in structural design; comprehensive design project.

* Given odd-numbered years only.

‡ Given even-numbered years only.

269A. Dynamics of Structures. (3) II.

Mr. Hurty

(Numbered 298 prior to 1959-1960.)

Prerequisite: course 160A.

Consideration of properties of structures and advanced principles of dynamics. Determination of normal modes and frequencies by differential and integral equation solutions. Approximation methods and interaction techniques. Transient response to impulsive loads. Structural damping. Emphasis on matrix formulation and solution.

†270A-270B-270C-270D. **Executive Systems Engineering. (1-4; 1-4; 1-4; 1-4) 4 semesters, beginning in the fall.** Mr. Asimow in charge

Prerequisite: acceptance to the Engineering Executive Program.

Development and application of quantitative methods in the analysis and synthesis of engineering executive systems; recently developed mathematical, statistical and machine methods; optimization of outputs with respect to costs-time-material-energy-information-manpower.

†271A-271B-271C. **The Engineer in the General Environment. (1-4; 1-4; 1-4) 3 semesters, beginning in the fall.** Mr. Lyman in charge

Prerequisite: acceptance to the Engineering Executive Program.

Influences of history, literature, and human relations on development and utilization of natural and human resources; role of the engineer in applying both quantitative and historical methods to problems in transportation, water supply, etc., in local, national, and international communities.

†272A-272B-272C. **The Engineer in the Business Environment. (1-4; 1-4; 1-4) 3 semesters, beginning in the spring.** Mr. Asimow in charge

Prerequisite: acceptance to the Engineering Executive Program.

Accounting theory. Analysis of financial statements with special reference to their use in and effect an engineering activity; economy of business enterprise; organization and management of engineering activity; relationship of the engineering function with sales, marketing, production and financing functions.

281A-281B. Analytical Methods of Engineering. (3-3) Yr.

(Numbered 200A-200B prior to 1959-1960.)

Mr. Miles in charge

Prerequisite: course 182A or consent of instructor.

Application of mathematical methods to engineering problems; basic problems in the fields of fluid dynamics, heat conduction, and electromagnetic theory will be discussed.

283B. Advanced Engineering Statistics I. (3) I.

Mr. Brown

(Numbered 298 prior to 1959-1960.)

Prerequisite: courses 183A, 183B.

The application of advanced statistical methods to engineering systems; extensions and additions to standard techniques covered in courses 183A-183B.

†285A. **Waiting Line Theory. (3) I.**

Mr. Davis

(Numbered 298 prior to 1959-1960.)

Analysis of those systems which can be described and studied advantageously by means of stochastic models of waiting line (queuing) theory. Problems in operations research: toll booth, traffic control, maintenance of multiple machine systems, inventory level control, and materials handling.

† Given even-numbered years only.

‡ Open only to Engineering Executive Program students. See page 38 of this bulletin.

287A. Information Systems. (3) I. Mr. Barnes
(Numbered 298 prior to 1959-1960.)

Prerequisite: courses 181A, 183A, and B.S. degree in engineering, physics, or mathematics.

Engineering investigation of information sources, processors, stores, transporters and sinks, with emphasis on the mathematical statistical aspects.

287B. Stochastic Processes in Linear Systems. (3) II. Mr. Barnes
(Numbered 298 prior to 1959-1960.)

Prerequisite: courses 181A, 183A and bachelor's degree in engineering, physics or mathematics.

Formulation and solution of equations of behavior of lumped and distributed linear electrical, rigid- and fluid-mechanical, and thermal systems with stochastic (i.e., chance) excitation, or system change, and response.

‡297. Project Studies in Engineering Systems. (1-4) II.

Mr. Boelter in charge

Prerequisite: acceptance to the Engineering Executive Program.

Studies of actual engineering systems. Technical, economic and human factors involved in the system will all be considered with particular emphasis on the interrelationship among these factors.

298. Seminar in Engineering. (1-5) I, II. Mr. Boelter in charge

Seminars may be organized in advanced technical fields. Course may be repeated provided no duplication exists. If appropriate, field trips may be arranged.

299. Research in Engineering. (1-5) I, II. Mr. Boelter in charge

Occasional field trips may be arranged. Prerequisite: consent of instructor. Application forms for requesting enrollment may be obtained from the Chairman of the Department.

Investigation of advanced technical problems.

PROFESSIONAL COURSE

‡400. Principles and Techniques of Electron Microscopy. (1) I. Mr. Froula

Prerequisite: a physics course including light, electricity, and magnetism; or consent of the instructor. Occasional visits to electron microscopy laboratory.

Fundamental principles of electron microscopy. Design and use of electron microscopes and supplementary equipment. Techniques and problems of specimen preparation. Interpretation of micrographs. Application of electron microscopy in various fields.

ENGLISH

(Department Office, 2303 Humanities Building)

Martin Perry Andersen, Ph.D., *Professor of Speech.*

*Bradford Allen Booth, Ph.D., *Professor of English.*

Hugh Gilchrist Dick, Ph.D., *Professor of English (Chairman of the Department).*

‡John Jenkins Espey, B.Litt., M.A., (Oxon.), *Professor of English.*

Majl Ewing, Ph.D., *Professor of English.*

Earl Leslie Griggs, Ph.D., D.Litt. (London), *Professor of English.*

Leon Howard, Ph.D., L.H.D., *Professor of English.*

Paul Alfred Jorgensen, Ph.D., *Professor of English.*

Wesley Lewis, Ph.D., *Professor of Speech.*

‡ Open only to Engineering Executive Program students. See page 38 of this bulletin.

‡ To be given when there is sufficient demand.

* In residence fall semester only, 1961-1962.

* In residence spring semester only, 1962.

- Alfred Edwin Longueil, Ph.D., *Professor of English*.
 William Matthews, Ph.D., *Professor of English*.
 Ada Blanche Nisbet, Ph.D., *Professor of English*.
 †James Emerson Phillips, Jr., Ph.D., *Professor of English*.
 Clifford Holmes Prator, Ph.D., *Professor of English*.
 Franklin Prescott Rolfe, Ph.D., *Professor of English*.
 John Harrington Smith, Ph.D., *Professor of English*.
 Hugh Thomas Swedenberg, Jr., Ph.D., *Professor of English*.
 Lily Bess Campbell, Ph.D., Litt.D., L.H.D., LL.D., *Professor of English, Emeritus*.
 †Ralph Cohen, Ph.D., *Associate Professor of English*.
 Vinton Adams Dearing, Ph.D., *Associate Professor of English*.
 Robert William Dent, Ph.D., *Associate Professor of English*.
 †Robert Paul Falk, Ph.D., *Associate Professor of English*.
 Elise Stearns Hahn, Ph.D., *Associate Professor of English*.
 †Donald Erwin Hargis, Ph.D., *Associate Professor of Speech*.
 Claude Jones, Ph.D., *Associate Professor of English*.
 Robert Starr Kinsman, Ph.D., *Associate Professor of English*.
 Charles Wyatt Lomas, Ph.D., *Associate Professor of Speech*.
 Lois McIntosh, Ph.D., *Associate Professor of English*.
 Earl Roy Miner, Ph.D., *Associate Professor of English*.
 †Lowry Nelson, Jr., Ph.D., *Associate Professor of English*.
 Blake Reynolds Nevius, Ph.D., *Associate Professor of English*.
 Waldo Woodson Phelps, Ph.D., *Associate Professor of Speech*.
 Ralph Richardson, Ph.D., *Associate Professor of Speech*.
 John Frederic Ross, Ph.D., *Associate Professor of English*.
 Robert Paul Stockwell, Ph.D., *Associate Professor of English*.
 Daniel Vandraegen, Ph.D., *Associate Professor of Speech*.
 †Frank Whittemore Wadsworth, Ph.D., *Associate Professor of English*.
 Llewellyn Morgan Buell, Ph.D., *Associate Professor of English, Emeritus*.
 Carl Sawyer Downes, Ph.D., *Associate Professor of English, Emeritus*.
 Harrison Manly Karr, Ph.D., *Associate Professor of Speech, Emeritus*.
 Michael J. D'Asaro, Ph.D., *Assistant Professor of Speech*.
 Robert Adamson Bone, Ph.D., *Assistant Professor of English*.
 Lawrence Sanford Dembo, Ph.D., *Assistant Professor of English*.
 Philip Calvin Durham, Ph.D., *Assistant Professor of English*.
 Walter Heinrich Evert, Ph.D., *Assistant Professor of English*.
 Charles Bennett Gullans, Ph.D., *Assistant Professor of English*.
 Rudolph Everett Habenicht, Ph.D., *Assistant Professor of English*.
 Charles Vincent Hartung, Ph.D., *Assistant Professor of English*.
 Jack Aaron Hirschman, Ph.D., *Assistant Professor of English*.
 Jascha Kessler, Ph.D., *Assistant Professor of English*.
 Florence H. Ridley, Ph.D., *Assistant Professor of English*.
 Paul Morris Schachter, Ph.D., *Assistant Professor of English*.
 Peter Larsen Thorslev, Ph.D., *Assistant Professor of English*.
 George William Dell, Ph.D., *Instructor in Speech*.
 Lawrence Stanley Graver, Ph.D., *Instructor in English*.
 James Murray, Ed.D., *Lecturer in Speech*.
 Frances Clarke Sayers, *Lecturer in English and Lecturer in the School of Library Science*.
 William H. Buell, M.A., *Associate in English*.
 Harriett Ramras, M.S., *Associate in English*.
 George M. Savage, Ph.D., *Professor of Theater Arts*.
 Lawrence Clark Powell, Ph.D., *Lecturer in English*.
 Joseph Sheehan, Ph.D., *Associate Professor of Psychology*.

† Absent on leave, 1961-1962.

¹ In residence fall semester only, 1961-1962.

Students must have passed Subject A (either examination or course) before taking any course in English. Regulations concerning Subject A will be found on page 23C of this bulletin.

Letters and Science List.—All undergraduate courses in English except 370 and all undergraduate courses in speech except 142A, 142B, and 370 are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

Preparation for the Major.—Courses 1A-1B and 46A-46B or the equivalent, with an average grade of C or higher; History 5A-5B, or History 151A-151B for junior transfers, or the equivalent (except under Plan III).

Recommended: Ancient and modern foreign languages. A reading knowledge of French, German, or Latin is required for the M.A. degree. For the Ph.D. degree a reading knowledge of both French and German is required; a reading knowledge of Latin is essential for work in some fields.

The Major.—Plan I. For the general undergraduate: 24 units of upper division courses in English, including (1) English 117J; (2) one of the Type courses (6 units); (3) three of the Age courses (not more than two courses in adjacent ages); (4) at least 3 units of upper division American literature.

Plan II. For the undergraduate expecting to proceed to the M.A. or Ph.D. degree in English: the student must present, in the first half of the junior year, a program to be examined and approved by the departmental adviser to upper division students. (1) The program must comprise, at a minimum, 24 units of upper division courses in English, including (a) English 117J, to be taken in the junior year; (b) one of the Type courses (6 units); (c) three of the Age courses (not more than two courses in adjacent ages); (d) at least 3 units of upper division American literature; (e) English 151L, to be taken in the senior year. (2) At the end of the senior year the student must complete the Comprehensive Final Examination. If he fails this examination he may still receive the bachelor's degree, but in order to be approved for graduate study in English, he must pass it with a grade of A or B.

Plan III. The major in English (with speech) for the student taking the general secondary credential.

- (a) The completion of the following: (1) English 1A-1B, 46A-46B; (2) Speech 1 and 2 or 4; (3) English 31 or 106L; 115 or 153; 117J; 3 units from 131, 132, 133, 190A, 190B; (4) 6 units from English 114A-114B, 122A-122B, 125C-125D, 125G-125H; (5) 6 units from English 152, 156, 158, 167, 177, 187; (6) 3 units from Speech 106, 107, 109, 110, 111, 112A, 112B, 122, 140; (7) Theater Arts 103.
- (b) The passing of the Senior Comprehensive Final Examination with a grade C or better. (The bachelor's degree may still be granted with a grade of less than C.)
- (c) The following courses, ordinarily to be taken in the graduate year, complete the English requirements for the general secondary credential: English 370, taken prerequisite to or concurrent with Education 130; 6 units from English 201, 221, 222, 223A, 223B, 224, 225, 226, or their equivalent.

The minor in English (with speech) for the general secondary credential will consist of the following courses: (1) English 1A-1B, 46A-46B; (2) Speech 1; (3) English 106L or 31; (4) 6 units from English 114A, 114B, 115, 117J, 125C, 125D, 131, 132, 133, 153, 190A, 190B; (5) English 370.

The Honors Program in English.—Majors with a 3.0 average in English, and nonmajors with honors status in the College of Letters and Science, may, upon completing at least nine upper division units in the department, apply for admission to the honors program in English. In addition to the minimum grade-point average, admission to the program requires a letter of recommendation from a member of the faculty in the department and satisfactory

evidence of the ability to write acceptable prose. Students admitted to the program will enroll in English 196A-196B, and will elect either English 117L or 197. English majors in the honors program may substitute 196A-196B for the type course requirement under Plans I, II, and III. Majors under Plan III may, with the approval of the department chairman, further substitute either 117L or 197 for one of the two required Age courses.

Requirements for Admission to Graduate Courses

The requirement is ordinarily the undergraduate major in English or its equivalent. No graduate student may take a graduate course in English who has fewer than 12 units in upper division major courses in English. This requirement is prerequisite to the 24 units demanded for the master's degree. If the candidate is deficient in this prerequisite, he must fulfill it by work undertaken as a graduate student.

Requirement for the Master's Degree

1. For the general requirements, see page 69. The Department follows Plan II, as described on page 70. The comprehensive examinations are given toward the end of each semester for both the M.A. and for the Ph.D. qualifying examinations, and during the Summer Session for the M.A. degree alone.

2. Under the comprehensive examination plan, the department offers two programs leading to the M.A. degree. Of these, Plan A is designed primarily for students intending to teach in high schools and junior colleges. Plan B constitutes the first phase of the program leading to the Ph.D. degree for students intending to teach in colleges and universities. Students who take the M.A. degree under Plan A may, if recommended by the department, transfer to the Ph.D. program, but they will not be eligible for the qualifying examinations until they have completed the course requirements listed under Plan B. For both Plan A and Plan B, a reading knowledge of French or German or Latin is required. Students should take the reading test in one of these languages at the beginning of the first semester of residence, but in any event no later than the mid-term of the semester in which all degree requirements are to be completed.

Plan A. Students must complete at least 24 units in English, including the following courses: course 201, one course chosen from 110, 111; two courses chosen from 221, 222, 223A, 223B, 224, 225, 226. To meet the general University requirements, at least 12 units must be in strictly graduate (200 series) courses. Upon 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.

Plan B. (See Requirements for the Doctor's Degree, below.)

Requirements for the Doctor's Degree

1. For the general requirements, see page 71.

2. Departmental requirements: (a) On entering the department the candidate will present to the chairman a written statement of his preparation in French, German, and Latin. He should take the reading test in one of the two required modern foreign languages (French and German) at the beginning of the first semester of residence, the test in the other not later than the beginning of the third semester of residence. For work in some fields a reading knowledge of Latin is necessary. (b) In the first year (normally two semesters) of graduate study, the candidate will follow the Plan B program leading to the master's degree. This includes: course 200, 211; four courses chosen from 221, 222, 223A, 223B, 224, 225, 226; one graduate seminar; and three units of elective. Upon completion of these requirements and no later than one semester following the completion of 30 units of graduate

work the candidate will take Part I of the qualifying examination. This examination will consist of four written examinations, each one hour and a half long, and a two-hour oral examination. In the written examinations, the candidate will be expected to demonstrate a sound and comprehensive knowledge of four major fields in English literature (with Linguistics and American Literature each considered as a single field). In the oral examination he will be expected to demonstrate a sufficient knowledge of other fields to guarantee his basic preparation for college teaching. If he does well in both the written and oral examinations, he will be encouraged to proceed further with graduate study. Students holding a master's degree from another institution may enter the program for the doctor's degree, but they will be required to pass Part I of the qualifying examination. (c) Normally the candidate will devote a second year to the completion of the language requirement (211, 212, 213) and the taking of graduate seminars in English or suitable courses in other departments, after which he will take Part II of the Qualifying Examinations and be advanced to candidacy. Of course this period may be curtailed or extended according to circumstances. Part II of the Qualifying Examinations will consist of three three-hour written examinations and a two-hour oral examination in the candidate's special field and in two other fields to be chosen in consultation with his adviser. No special examination in linguistics is required, but questions on the language will appear at appropriate points in the examinations on literature. (d) A final year (which under the University rules may not be curtailed) 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 requirement either by taking additional seminars or by registering in English 299.

If a student has allowed seven years or more to elapse since taking a course or examination to meet the requirements for a graduate degree, it will be necessary to have such a course or examination validated by the department before he can proceed toward completion of the requirements.

LOWER DIVISION COURSES

Freshman Courses

1A. First-Year Reading and Composition. (3) I, II. Mr. Durham in charge

Open to all students who have received a passing grade in Subject A.

Principles and methods of expository writing.

1B. First-Year Reading and Composition. (3) I, II.

Prerequisite: English 1A.

Mr. Habenicht in charge

Introduction to the types of modern literature: the novel, the short story, drama, and poetry.

***4A. Great Books: Dramatic Comedy. (1) I.**

***4B. Great Books: Dramatic Tragedy. (1) II.**

4C. Great Books: the English Novel. (1) I.

Mr. Nelson in charge

4D. Great Books: the Continental Novel. (1) II.

Mr. Nelson in charge

***4E. Great Books: Lyric Poetry. (1) I.**

***4F. Great Books: Narrative Poetry. (1) II.**

***4G. Great Books: Famous Utopias. (1) I.**

***4H. Great Books: Great Satirists. (1) II.**

* Not to be given, 1961-1962.

*Sophomore Courses***30A. American Literature of the Pre-Civil War Period. (2) I, II.**

Mr. Howard in charge
Prerequisite: course 1A. Not open for credit to students who have taken upper division courses in the same period.

30B. American Literature of the Post-Civil War Period. (2) I, II.

Mr. Howard in charge
Prerequisite: course 1A. Not open for credit to students who have taken upper division courses in the same period.

31. Intermediate Composition. (2) I, II.

Mr. Ewing in charge
Prerequisite: course 1A-1B.

46A-46B. Survey of English Literature. (3-3) Yr. Beginning each semester.

Mr. Jorgensen in charge
Prerequisite: course 1A-1B.

UPPER DIVISION COURSES

Upper division standing is required for all upper division courses in English. Courses 1A-1B and 46A-46B are prerequisite to all upper division courses in English, except 106S, 110, 111, 115, 116A-116B, 117J, 118, 125C-125D, 130, 133, 135, 136, 151M, 190A, 190B, for which 1A is prerequisite, and 195 and 153, for which 1A and 1B are prerequisite. Theater Arts students may substitute Humanities 1A-1B for course 46A-46B as a prerequisite for 113A and 113B. Students who have not passed English 31 will be admitted to 106C and 106F only upon a test given by the instructor.

A. *The Junior Course*: Course 117J. Required of juniors whose major is English.

B. *The Type Courses*: Courses 114A-114B, 122A-122B, 125C-125D, and 125G-125H. It is understood that major students in English will take one of these year courses.

C. *The Age Courses*: Courses 152, 156, 158, 167, 177, and 187. It is understood that major students in English under Plans I and II will take three of these courses, and majors under Plan III will take two.

D. *Courses in American Literature*: Courses 130, 131, 132, 133, 135, and 136. It is understood that major students in English under Plans I and II will take at least 3 units of these courses.

E. *The Senior Course*: Course 151L. Required of seniors whose major subject is English under Plan II.

106A. The Short Story. (2) I, II.

Mr. Espey, Mr. Kessler
Prerequisite: consent of the instructor.

106C. Critical Writing. (2) I, II.

Mr. Jorgenson, Mr. Ross

106D-106E. Fundamentals of Dramatic Writing. (3-3) Yr.

Mr. Savage

106F. Exposition. (2) I, II.

Mr. Espey

106L. Advanced Composition for Teachers. (2) I, II.

Mr. Hartung, Mr. Jorgensen, Miss Ridley
Designed primarily for candidates for the general secondary teaching credential.

106S. Advanced Composition for Majors in the Physical and Life Sciences.

(3) I, II.

Mr. Durham, Mr. Evert

110. Introduction to the English Language. (3) I.

Mr. Matthews, Mr. Stockwell
A survey of the changes in the English systems of sounds, grammar, and

lexicon from 750 A.D. to the present, with consideration of the broader linguistic principles exemplified by these changes.

111. **The English Language in America.** (3) I, II.
Mr. Matthews, Mr. Stockwell
- 113A. **British and Continental Drama, 1500-1850.** (3) I, II.
Mr. Wadsworth, Mr. Smith
Prerequisite: English 46AB or Humanities 1AB, and English 117J or Classics 113. Not open for credit to students who have completed English 114A-114B.
A study of the major European dramatic traditions, with emphasis on significant plays of Britain, France, Spain, Germany, and Russia.
- 113B. **Modern Drama.** (3) I, II.
Mr. Wadsworth, Mr. Smith
(Former number, 114C.)
Prerequisite: English 113A, or English 46A-46B, or Humanities 1A-1B.
A comparative study of the drama from Ibsen to the present, with consideration of significant continental, British, and American playwrights.
- 114A-114B. **English Drama from the Beginning to 1900.** (3-3) Yr.
Mr. Dent, Mr. Smith
115. **Primitive Literature.** (3) II.
Mr. Jones
The study of primitive types, such as the fable, folk tale, myth, legend, ballad, and hero tales, as to characteristics and theories of origin and diffusion. The comparative study of typical stories, and the work of collectors and adapters.
- 116A. **The English Bible as Literature: the Old Testament.** (2) I.
Mr. Dearing
- 116B. **The English Bible as Literature: the New Testament.** (2) II.
Mr. Dearing
- 117J. **Shakespeare.** (3) I, II.
The Staff
A survey of from twelve to fifteen plays, with special emphasis on one chronicle, one comedy, and one tragedy.
- 117L. **Advanced Shakespeare.** (3) I, II.
Mr. Dent, Mr. Jorgensen, Mr. Wadsworth
Prerequisite: course 117J.
Intensive study of three to five plays, with consideration of sources, textual problems, and various critical approaches.
118. **Children's Literature.** (3) I, II.
Mrs. Sayers
- 122A-122B. **English Poetry from the Beginning to the Present.** (3-3) Yr.
Mr. Espey, Mr. Longueil
- 125C-125D. **The English Novel from the Beginning to the Present.**
(3-3) Yr.
Mr. Booth, Mr. Jones
- 125G-125H. **English Prose from the Beginning to the Present.** (3-3) Yr.
Mr. Ewing
130. **American Literature of the Colonial and Early National Periods.**
(2) II.
Mr. Falk, Mr. Howard
131. **American Literature of the Nineteenth Century.** (3) I.
Not open to students who have not had 46A-46B.
Mr. Falk, Mr. Nevius

- 132. American Literature in the Twentieth Century.** (3) I, II.
Mr. Bone, Mr. Durham, Mr. Nevius
Not open to students who have not had 46A-46B.
- 133. American Life in American Letters.** (3) I. Mr. Durham, Mr. Falk
The main currents of thought in American life as reflected in literature.
- 135. American Fiction.** (3) I, II. Mr. Bone, Mr. Booth, Mr. Howard
The history of the American novel and short story from the beginning to the present day.
- ***136. American Humor and Satire.** (3) II. Mr. Ross
From the colonial period to the twentieth century.
- 151L. Chaucer.** (3) I, II. Mr. Longueil, Miss Ridley
- 151M. Milton.** (3) II. Mr. Swedenberg
A survey of the major and minor poems of Milton and his more significant prose works.
- 152. English Literature of the Later Middle Ages.** (3) II.
Mr. Kinsman, Miss Ridley
- 153. Introduction to the Study of Poetry.** (3) I, II.
Mr. Jones, Miss Nisbet, Mr. Thorslev
- 155. Literary Criticism.** (3) I. Mr. Cohen, Mr. Nelson
- 156. The Age of Elizabeth.** (3) I, II. Mr. Kinsman, Mr. Phillips, Mr. Dick
- 158. The Age of the Stuarts.** (3) I, II. Mr. Miner, Mr. Swedenberg
- 167. The Age of Pope and Johnson.** (3) I, II.
Mr. Cohen, Mr. Dearing, Mr. Swedenberg
- 177. The Romantic Age: 1784-1832.** (3) I, II. Mr. Longueil, Mr. Griggs
- 187. The Victorian Age: 1832-1892.** (3) I, II.
Mr. Booth, Mr. Rolfe, Miss Nisbet
- 190A. English Literature since 1900.** (3) I. Mr. Ewing, Mr. Nevius
The novel.
- 190B. English Literature since 1900.** (3) II. Mr. Ewing, Mr. Espey
Poetry.
- ***195. Libraries and Learning.** (2) II. Mr. Powell
A survey of printing, publishing, bookselling, book collecting, and reading from the viewpoint of their relationship to the development and use of libraries.
- 196A. Honors Course in English.** (3) I. Mr. Kinsman in charge
Prerequisite: (1) for the English major; senior standing with a minimum 3.0 average in the major and consent of departmental honors committee; (2) for students with honors status in the College of Letters and Science: senior standing with a minimum 3.5 general average and consent of departmental honors committee.
Intensive study of problems in separate areas of fiction, nonfictional prose, drama, and poetry with discussion, oral reports, and preparation of one or more papers on the subject. Sections limited to ten students.

196B. Honors Course in English. (3) II. Mr. Kinsman in charge
Prerequisite: course 196A.

Supervised preparation of an honors essay (12,000-word) on an aspect of fiction, nonfictional prose, drama, or poetry.

197. Proseminar. (3) I, II. The Staff

Prerequisite: senior standing as an English major and consent of the instructor. Sections limited to twenty students.

Intensive study of a single author, with discussion, oral reports, and the preparation of one or more papers on the subject. 1961-1962: first semester—Nathaniel Hawthorne; second semester—Ben Johnson.

199. Special Studies in English. (1-3) I, II. The Staff

Prerequisite: senior standing and consent of the instructor.

COMPREHENSIVE FINAL EXAMINATION

The Comprehensive Final Examination is taken at the end of the senior year by majors working under Plans II and III. It will consist of one two-hour paper and one three-hour paper. The examination will cover English literature from the beginning to the present. The papers will be set by the examining committee of the department. The student's preparation for this examination will presumably extend throughout the entire college course. A portion of the examination will be based on the required section of the departmental reading list. Upon his passing the examination the grade assigned by the department will be recorded. The examination is given each semester—first semester, December 5, 6; second semester, May 1, 2.

Mr. Nevius in charge

GRADUATE COURSES

200. Bibliography. (3) I, II. Mr. Dearing, Mr. Dick

201. The Functions of Literary Criticism. (3) I, II. Mr. Longueil, Mr. Nelson

211. Old English. (3) I, II. Mr. Matthews, Mr. Stockwell

212. Middle English. (3) II. Mr. Matthews, Mr. Stockwell
Prerequisite: course 211.

213. The Development of Modern English. (3) I. Mr. Matthews, Mr. Stockwell
Prerequisite: course 212.

221. Medievalism. (3) I. Mr. Matthews

222. The Renaissance. (3) I, II. Mr. Dick, Mr. Jorgensen

223A. Jacobean and Caroline Literature. (3) II. Mr. Miner, Mr. Swedenberg

223B. Neo-Classicism. (3) I. Mr. Cohen, Mr. Dearing, Mr. Swedenberg

224. Romanticism. (3) I. Mr. Griggs, Mr. Longueil

225. Victorianism. (3) I, II. Miss Nisbet, Mr. Rolfe

226. American Literature. (3) I, II. Mr. Falk, Mr. Howard, Mr. Nevius

250A, B. English Linguistics. Seminar.

*†250A. Phonological Structure and Dialectology. (3) II. Mr. Matthews, Mr. Stockwell

†250B. Grammatical and Lexical Structure. (3) II. Mr. Matthews, Mr. Stockwell

* Not to be given, 1961-1962.

† Offered in alternate years.

260A, B, C. Studies in Old and Middle English. Seminar.

- 260A. Old English Poetry. (3) II. Mr. Matthews
 *260B. Medieval English Poetry. (3) I. Mr. Matthews
 *260C. Chaucer and His Contemporaries. (3) II. Mr. Matthews

261. Studies in Early Tudor Literature. Seminar. (3) I. Mr. Kinsman

262A, B, C, D, E, F. Studies in Elizabethan Literature. Seminar.

- 262A. Shakespeare. (3) I. Mr. Jorgensen, Mr. Phillips
 262B. Shakespeare. (3) II. Mr. Jorgensen, Mr. Phillips
 *262C. Spenser. (3) II. Mr. Phillips, Mr. Dick
 *262D. Studies in Elizabethan and Jacobean Drama. (3) I.
 Mr. Dick, Mr. Wadsworth
 *262E. Elizabethan Prose. (3) I. Mr. Dick, Mr. Jorgensen
 *262F. Elizabethan Poetry. (3) II. Mr. Dick, Mr. Phillips

263A, B, C, F. Studies in Seventeenth-Century Literature. Seminar.

- *263A. Trends in Seventeenth-Century Prose. (3) I. Mr. Swedenberg
 *263B. Trends in Seventeenth-Century Poetry. (3) I. Mr. Swedenberg
 *263C. Studies in Drama, 1660-1790. (3) I. Mr. Smith, Mr. Wadsworth
 263F. Dryden and His Contemporaries. (3) I. Mr. Swedenberg

264A, C. Studies in Eighteenth-Century Literature. Seminar.

- *264A. Pope and His Contemporaries. (3) II. Mr. Cohen, Mr. Swedenberg
 264C. Johnson and His Contemporaries. (3) II.
 Mr. Cohen, Mr. Swedenberg

265A, B, C, D. Studies in Nineteenth-Century Literature. Seminar.

- 265A. Studies in the Romantic Writers. (3) I. Mr. Griggs
 *265B. Studies in Victorian Prose. (3) I. Mr. Griggs
 265C. Studies in Victorian Poetry. (3) II. Mr. Griggs
 *265D. Studies in the English Novel. (3) II. Mr. Booth, Miss Nisbet

266A, B. Studies in Contemporary Literature. Seminar.

- 266A. (3) II. Mr. Espey, Mr. Ewing
 266B. (3) I. Mr. Ewing, Mr. Nevius

270A, B, C, D, E, F. Studies in American Literature. Seminar.

- *270A. American and European Literary Relations. (3) I. Mr. Howard

* Not to be given, 1961-1962.

- *270B. American and European Literary Relations. (3) II. Mr. Howard
- 270C. American Literature and Its Intellectual Background. (3) I.
Mr. Howard
- 270D. American Literature and Its Intellectual Background. (3) II.
Mr. Howard
- *270E. American Literature and History. (3) I. Mr. Howard
- *270F. American Literature and History. (3) II. Mr. Howard
297. Directed Studies. (1-4) I, II. The Staff
Restricted to those who have passed Part I of the qualifying examinations for the doctor's degree.
299. Research on Dissertation. (1-6) I, II. The Staff
Restricted to those who have passed Part II of the qualifying examinations for the doctor's degree.

PROFESSIONAL COURSE IN METHOD

370. The Teaching of English. (3) I, II. Mr. Hartung
Required of candidates for the general secondary credential with the field major in English and speech.

COURSES IN ENGLISH AS A SECOND LANGUAGE

Courses 33A and 33B are only for students whose first language was other than English and are not open to those who have received a satisfactory grade in English 1A at the University of California. Permission to enroll in 33A and 33B is given on the basis of the entrance examination which students whose native language is not English must take instead of the Subject A examination (see page 23C of this bulletin. Depending on the result of this examination, entering students are: (1) required to spend a semester studying elementary English; (2) required to take 33A followed by 33B; (3) required to take 33B; or (4) credited as having met the Subject A requirement.

CERTIFICATE IN THE TEACHING OF ENGLISH AS A SECOND LANGUAGE

To qualify for this certificate students must meet the following requirements: (1) Both students educated in the United States and in foreign countries must have an educational background sufficient to qualify them as teachers in their home state or country, and will normally be admitted to the University as graduate students. With the approval of the Dean of the Graduate Division and the Chairman of the Department of English, graduate admission may be granted to bona fide foreign students solely for the purpose of pursuing the courses leading to this certificate, provided they meet graduate admission requirements. Students who do not meet these requirements may, upon recommendation of the Chairman of the Department of English, be admitted to limited status to pursue the course leading to the certificate. (2) All students must complete a 24-unit program of graduate work. Courses to be completed in the first semester are Speech 103K, Linguistics 170, English 370K, 3 units of nondepartmental elective (Education 110A-110B, 119; Folklore 106; History 177; Political Science 113). Depending upon the results of the University's entrance examination for foreign students, nonnative speakers may be required to take English 33B in lieu of this elective. Courses to be completed in the second semester are English 106K, English 111, English 370L, 3 units from English 118, 132, 133, 135, or 201. (3) Certificate candi-

* Not to be given, 1961-1962.

dates in graduate status must maintain a grade average equivalent to that required of candidates for a University-recommended general secondary teaching credential.

Special Language Requirement for Native Speakers of English.—Students whose mother tongue is English will not be held to the 6 units of electives. Instead they will be required to devote those 6 units to acquiring or perfecting their knowledge of the native language of the pupils to whom they expect to teach English. Courses which deal with the linguistic structure of the language in question should be chosen wherever possible, and such courses must be taken after the work leading to the certificate is begun. In case there is doubt as to which foreign language will be most appropriate, a non-Indo-European language should be chosen.

English 33A. Intermediate English for Foreign Students. (4) I, II.

Mr. Buell, Miss Ramras

Intensive drill in pronunciation, structural patterns, vocabulary, conversation, and composition. Meets five hours weekly.

English 33B. Intermediate English for Foreign Students. (4) I, II.

Mr. Buell, Miss Ramras

Continuation of course 33A. Meets five hours weekly.

Speech 103K. Phonetics for Foreign Students. (3) I.

Prerequisite: consent of the instructor. Mr. Buell, Miss McIntosh

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 and to the training of teachers of English as a second language.

English 106K. Advanced Composition for Foreign Students. (3) II.

Prerequisite: course 33B or the equivalent. Mr. Buell, Miss McIntosh

Exercise in writing based on literature dealing with American life and thought, with the aim of developing control of idiomatic expression.

English 370K. The Teaching of English as a Second Language. (3) I.

Miss McIntosh, Mr. Prator

Prerequisite: an educational background sufficient to qualify the student as a teacher in his home country or in the United States.

Bibliography, survey, and evaluation of methods and materials; the nature of language learning; analysis of the differences between two languages as the basis of instruction.

English 370L. Problems in the Teaching of English as a Second Language.

(3) II.

Miss McIntosh, Mr. Prator

Prerequisite: English 370K.

The development of plans and materials to meet the various needs of pupils of different language backgrounds in elementary schools, secondary schools, and adult classes. Observation of classes and practice teaching.

SPEECH

Students must have passed Subject A (either examination or course) before taking any course in speech. Regulations concerning Subject A will be found on page 23C of this bulletin.

Preparation for the Major.—Speech 1, 2, 3, 4, with an average grade of C or higher; English 1A–1B, 46A–46B; Psychology 1A, 1B.

The Major.—Plan I. For the general undergraduate: the program must include (a) Speech 111 (or 112A); 134, or 135, or 137; 6 units from 106, 107, 109 (or 110); (b) 12 units of electives in upper division courses in speech; (c) 6 units of electives in upper division courses in each of two of

the departments of Anthropology and Sociology, Economics, English, Education (100A-100B, 110A-110B), History, Philosophy, Political Science, Psychology, Theater Arts (118A-118B, 119, 122, 130, 173), the courses to be approved by the departmental adviser.

Plan II.—The major in speech (with English) for the student taking the general secondary credential.

- (a) The completion of the following: (1) Speech 1, 2, 3, 4; (2) English 1A-1B, 46A-46B, English 31 or 106L, English 117J; (3) 3 units from English 131, 132, 133, or 190A-190B; (4) Speech 140; (5) Theater Arts 103; (6) 12 or 13 units selected, in consultation with the departmental adviser, to complete a 24-unit upper division major; 6 units from 106 (or 107), 109 (or 110), 111 (or 112A); 6 or 7 additional units of electives in upper division speech courses.
- (b) The attainment of a satisfactory level of skill in oral reading and public speaking.
- (c) The following courses, ordinarily to be taken in graduate year, complete the speech requirements for the general secondary credential: Speech 370; 6 units from graduate courses in two major areas of speech.

The minor in speech (with English) for the general secondary credential will consist of the following courses: (1) Speech 1, 2, 3, 4; (2) English 1A-1B; (3) 6 units in speech from one of the following sequences: (a) 106, 107, 109, 110, (b) 111, 112A, 112B, (c) 103, 140, 142A, 142B.

For the field major and the field minor in English (with speech), see page 207.

Requirement for the Credential to Teach Exceptional Children: Speech Correction and Lipreading.

1. For general requirements, see the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES.

2. Specific course requirements:

- (a) The general area of preparaton (12 units): Education 116 or Psychology 161; Education 118 or 216A; Speech 140, Education 328SC.
- (b) Area of specialization—Speech correction and lipreading (15 units): Psychology 162; Speech 103, 142A-142B, 145, 146.

Requirements for Admission to Graduate Courses

A bachelor's degree with a major consisting of at least 24 upper division units in speech or speech and English or speech and drama. (No graduate student may take a graduate course in speech who has to his credit fewer than 12 upper division units in speech.) This requirement is prerequisite to the 24 units demanded for the master's degree. If the candidate is deficient in this prerequisite, he must fulfill it by work undertaken as a graduate student.

Requirements for the General Secondary Credential

Consult the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES.

Requirement for the Master's Degree

1. For the general requirements see page 69. The department follows Plan II as described on page 70. The Master's Comprehensive Examination is given toward the end of each semester.

2. Departmental requirements: (a) Students are required to take the reading test in French or German in the first year of residence. (b) During the first semester of residence, students must pass a speech proficiency examination in public speaking and oral reading. (c) They must complete the requirements under Plan II as follows: English 200, Section 2; 12 units of graduate courses in speech, including 3 units of Speech 290, selected from two speech

fields (interpretation, public address, speech correction); 9 units of upper division or graduate courses to complete a 24-unit program (6 of these may be in related courses in other departments selected with the approval of the graduate adviser). (d) They must pass a comprehensive final examination consisting of four written tests of one and one-half hours each, as follows: (1) one examination in general speech; (2) two examinations in one major speech area (public address, interpretation, speech correction); and (3) one examination in a second major speech area. Specific information about these examinations may be secured from departmental advisers.

Requirements for the Doctor's Degree

1. For general requirements, see page 71.

2. Departmental requirements: (a) On entering the department the student will present to the Graduate Committee a written statement of his preparation in French and German. He must take the reading test in one of the languages not later than the first semester of residence, and the test in the other foreign language not later than the third semester of residence. No student will be permitted to take Part II of the Qualifying Examination until the language requirements have been met. (b) During the first semester of residence, the candidate must demonstrate proficiency in public speaking and oral reading (see M.A. requirements above). (c) The Qualifying Examination for the Ph.D. will be given in two parts, each of which consists of oral and written sections. Part I is normally taken after one year of graduate work and Part II at the end of a second year. The written portion of Part I is the same as the comprehensive examination for the master's degree, and students receiving that degree from this University will have completed this requirements. Students transferring here with a master's degree in speech will normally take this written examination at the end of the first semester of residence. Those who show promise of superior scholarship in the written examination will be given a two-hour oral examination by a departmental committee. If they do well in this, they will be encouraged to proceed with further graduate study. (d) In the year following successful completion of Part I of the Qualifying Examination, the candidate will take additional courses in his fields of major and minor interests in speech, and such courses in other departments as are necessary in preparation for writing his dissertation, after which he will take Part II of the Qualifying Examination and be advanced to candidacy. Of course, this period may be curtailed or extended according to circumstances. Part II will consist of two three-hour written examinations in the major speech area and one three-hour written examination in the minor area. It will also include a two-hour oral examination, before an interdepartmental committee, in the candidate's special field and such areas as are chosen in consultation with the adviser. (e) A final year (which under the University rules may not be curtailed) 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 requirement either by taking additional seminars or by registering in Speech 299.

If a student has allowed seven years or more to elapse since taking a course or examination to meet the requirements for a graduate degree, it will be necessary to have such course or examination validated by the department before he can proceed toward completion of the requirements.

LOWER DIVISION COURSES

1. Introduction to Speech. (3) I, II.
(Formerly numbered 1A.)

The Staff

The basic principles and practices of effective oral communication in platform speaking, group discussion, and oral reading.

- 2. Elements of Public Speaking.** (3) I, II. The Staff
(Formerly numbered 1B.)
Prerequisite: course 1.
The principles of effective speech composition in public address.
- 3. Basic Voice Training.** (2) I, II. The Staff
(Formerly numbered 3A.)
Lecture and discussion, 3 hours. Prerequisite: course 1.
Voice physiology, phonetics, and voice drills.
- 4. Elementary Interpretation.** (3) I, II. The Staff
(Formerly numbered 3B.)
Prerequisite: course 1.
Principles and methods of the oral communication of prose and poetry with understanding and appreciation.

UPPER DIVISION COURSES

- 103. Phonetics.** (3) I. Mr. Hargis
Prerequisite: consent of the instructor.
A study of the physical production and acoustic characteristics of the sounds of American English; modifications of the sounds in connected speech; extensive practice in phonetic recording of general American speech and its deviate forms.
- 106. Principles and Types of Public Discussion.** (3) I, II. Mr. Andersen
Prerequisite: course 2 or consent of the instructor.
Analysis of the purposes, principles, and types of public discussion. Practice in organizing group discussion.
- 107. Principles of Argumentation.** (3) I, II. Mr. Lewis
Prerequisite: course 2 or consent of the instructor.
Analysis of propositions, tests of evidence, briefing. Study of hindrances to clear thinking, ambiguity of terms, or prejudices. The critical analysis of selected argumentative speeches.
- 109. Principles of Audience Analysis.** (3) I, II. Mr. Lewis, Mr. Lomas
(Formerly numbered 110A.)
Prerequisite: course 2 or the equivalent.
Theory of audience analysis and adaptation. Preparation and delivery of the occasional speech.
- 110. Analysis of Style in Speech Composition.** (3) II. Mr. Lewis, Mr. Lomas
(Formerly numbered 110B.)
Prerequisite: course 2 or the equivalent.
Development of speaking style through critical study of selected speeches and the preparation of special forms of public address.
- 111. Theories and Techniques of Interpretation.** (3) I, II. Mr. Hargis, Mr. Vandraegen
(Formerly numbered 111A.)
Prerequisite: course 4 or the equivalent.
A study of the schools, principles, and techniques of oral interpretation.
- 112A-112B. Oral Interpretation of Literature.** (3-3) Yr. Mr. Hargis, Mr. Vandraegen
(Formerly numbered 111B.)
Prerequisite: course 4 or equivalent.
A study of the literary, aesthetic, and oral bases for the analysis and communication of prose and poetry.

- 122. Scientific Bases of Speech.** (3) I. Mr. D'Asaro
Prerequisite: course 3.
An introduction to the development of speech, and to its physical anatomical, and physiological bases.
- *134. Classical Public Address.** (3) I. Mr. Lewis, Mr. Lomas
A critical study of speeches by leading Greek and Roman orators.
- 135. British Public Address.** (3) I. Mr. Lomas
Critical study of speeches by leading British orators from the eighteenth century to the present time. Relationship of speakers to issues and social movements of their day.
- 137. American Public Address.** (3) II. Mr. Lomas, Mr. Richardson
Critical study of speeches by leading American orators from the colonial period to the present time. Relationship of speakers to issues and social movements of their day.
- 140. Principles of Speech Correction.** (3) I, II. Mrs. Hahn
Types and causations of speech disorders, the developmental and communicative approach to correction with emphasis on defects of articulation and voice; observation of Speech Clinic (Articulation Division) required.
- 142A. Methods of Speech Correction.** (2) I, II. Mrs. Hahn
One hour lecture, 3 hours laboratory. Prerequisite: Speech 140.
Study of literature of speech correction and practice in the Speech Clinic (Articulation).
Observation of methods in the Speech Clinic of the Psychological Clinic.
- 142B. Methods of Speech Correction.** (2) I, II. _____
Prerequisite: Speech 142A and Psychology 162.
Observation and discussion of cases, study of research data, practice in the Speech Clinic (Articulation Division).
- 145. Introduction to Audiology.** (2) I. Mr. Gibbons
Prerequisite: Speech 1, 3.
- 146. Principles of Aural Rehabilitation.** (3) II. Mr. Gibbons
Prerequisite: Speech 145.
History and methods of improving the speech of the hard of hearing, including the principles and practice of audiometry and lip-reading.
- 190A-190B. Forensics.** (1-1) Yr. Mr. Lewis, Mr. Murray
Prerequisite: consent of the instructor. May be repeated once for credit.
- 199. Special Studies.** (1-3) I, II. The Staff
Prerequisite: senior standing and consent of instructor.

GRADUATE COURSES

- 204. The Development of Speech in the Child.** (3) I. Mrs. Hahn
- *206. Backgrounds and Theories of Discussion.** (3) I. Mr. Andersen
- 207. Forms and Methods of Argumentation.** (3) II. Mr. Lewis
- 211A, B. Backgrounds and Theories of Oral Interpretation.**
- *211A. From Quintilian to Rush.** (3) I. Mr. Vandraegen
- 211B. From Rush to the Present.** (3) I. Mr. Hargis

234A, B. Rhetorical Theory.

*234A. Classical Theory. (3) I.

234B. Modern Theory. (3) I.

Mr. Phelps

240A, B. Organic Speech Disorders.

240A. Voice Defects and Cleft Palate. (3) II.

Mrs. Hahn

240B. Cerebral Palsy and Aphasia. (3) I.

Mr. D'Asaro

250A, B. Seminar in Oral Interpretation.

*250A. Theory. (3) II.

Mr. Hargis

250B. Analysis of Materials. (3) II.

Mr. Vandraegen

260A, B. Seminar in the Criticism of Public Address.

*260A. Historical and Social Settings. (3) II.

Mr. Richardson

260B. Rhetorical Criticism. (3) II.

Mr. Lomas

***266. Seminar in Critical Analysis of Discussion. (3) II.**

Mr. Andersen

267. Seminar in Critical Analysis of Argumentation. (3) II.

Mr. Lewis

270A, B. Seminar in Speech Correction.

*270A. Speech Correction. (3) II.

Mr. D'Asaro

270B. Speech Therapy. (3) II.

Mrs. Hahn

275. Seminar in Audiology. (3) II.*290. Individual Directed Research. (3) I, II.**

The Staff

297. Directed Studies. (1-4) I, II.

The Staff

Restricted to those who have passed Part I of the qualifying examinations for the doctor's degree.

299. Research on Dissertation. (1-6) I, II.

The Staff

Restricted to those who have passed Part II of the qualifying examinations for the doctor's degree.

PROFESSIONAL COURSE IN METHODS**370. The Teaching of Speech. (3) I, II.**

Mr. Phelps

Required of candidates for the general secondary credential with the field major in speech and English.

ENTOMOLOGY

(Department Office, 297 Physics-Biology Building)

John N. Belkin, Ph.D., *Professor of Entomology.*Walter Ebeling, Ph.D., *Professor of Entomology (Vice-Chairman of the Department).*I. Barry Tarshis, Ph.D., *Assistant Professor of Entomology.*

For other courses in Entomology, see under Zoology.

* Not to be given, 1961-1962.

Completion of the curriculum requires residence during the last two years on the Berkeley or Davis campus. See the BULLETIN OF THE COLLEGE OF AGRICULTURE and consult the appropriate adviser for students in agriculture.

UPPER DIVISION COURSE

199. *Special Studies*. (2-4) I, II. The Staff

Prerequisite: senior standing and consent of the instructor.

GRADUATE COURSE

283A-283B. *Research in Entomology*. (2-6; 2-6) Yr. The Staff

FLORICULTURE AND ORNAMENTAL HORTICULTURE

(Department Office, 357 Physics-Biology Building)

B. Lennart Johnson, Ph.D., *Professor of Ornamental Horticulture*.

Vernon T. Stoutemyer, Ph.D., *Professor of Ornamental Horticulture and Assistant Director of the Botanical Garden (Chairman of the Department)*.

Anton M. Kofranek, Ph.D., *Associate Professor of Floriculture*.

Harry C. Kohl, Jr., Ph.D., *Associate Professor of Floriculture*.

Roy M. Sachs, Ph.D., *Assistant Professor of Ornamental Horticulture*.

Joseph W. Towner, Ph.D., *Assistant Professor of Ornamental Horticulture*.

Victor B. Youngner, Ph.D., *Assistant Professor of Ornamental Horticulture*.

Preparation for the Major.—Required courses, or the equivalent: Chemistry 1A, 1B, 8; Botany 1, 107; Irrigation and Soil Science 101. Recommended: Botany 3, 6, 151; Plant Pathology 140; Zoology 150.

The Major.—Minimum of 12 units of upper division courses in the major, including courses 131A or 131B, 136B, and two courses from the following: 121, 131A or 131B, 136A, 139, 146A or 146B or Horticultural Science 110.

Graduate Study.—Graduate work in Floriculture and Ornamental Horticulture is offered as Plant Science. See page 391 for description.

UPPER DIVISION COURSES

121. *Taxonomy, Ecology and Physiology of Turfgrass*. (3) II.

Mr. Youngner

Lecture, two hours; laboratory, three hours. Prerequisite: Botany 1 or the equivalent. Offered in spring 1962 and alternate years.

Taxonomy, identification, adaptation, and breeding of turfgrasses and ground covers. Ecological relationships of grasses and other components of the turfgrass community. Basic principles underlying turfgrass cultural practices, including soil management, nutrition, and water relations.

131A-131B. *Taxonomic Classification and Ecology of Ornamental Plants*.

(3-3) Yr.

Mr. Stoutemyer, Mr. Towner

Lecture, two hours; laboratory, three hours; several field trips. Prerequisite: Botany 1 or the equivalent. 131A is not a prerequisite to 131B.

The botanical classification, relationships, and identification of the more important ornamental plants in southern California, with special emphasis on their environmental requirements and adaptations.

136A-136B. *General Floriculture*. (4-4) Yr.

Mr. Kofranek, Mr. Kohl

Lecture, three hours; laboratory, three hours; several field trips. Prerequisite: Botany 107 or the equivalent. 136A is not a prerequisite to 136B.

The basic practices and principles of floricultural crop production from a commercial standpoint, including photoperiod, temperature, nutrition, and water relations, with special reference to the more important crops grown in California.

- 139. Advanced Floriculture.** (2) II. Mr. Kofranek, Mr. Kohl
Lecture, two hours. Prerequisite: senior standing in Floriculture.
Interpretation of current floricultural literature and research; future trends in production; scheduling production; diagnosing field problems; control of environmental factors, including photoperiod, temperature, nutrition, water and gas relations.
- 146A. Plant Breeding.** (3) I. Mr. Towner
Lecture, two hours; laboratory, three hours. Prerequisite: Botany 140 or the equivalent, and consent of the instructor. Offered in fall 1962 and alternate years.
Application of cytogenetics to the problems and methods of plant breeding, including studies of interspecific hybridization, sterility phenomena, inbreeding acceleration, gene transfer, chromosomal aberrations, and special linkage problems.
- 146B. Plant Breeding.** (3) II. Mr. Johnson
Lecture, two hours; laboratory, three hours. Prerequisite: Botany 140 or the equivalent. Offered in spring, 1963, and alternate years.
Application of biometrical genetics to the problems and methods of plant breeding, including studies of linkage, inbreeding and heterosis, quantitative inheritance, selection in populations, backcrossing and hybridization.
- 148. Design and Analysis of Experiments.** (3) II. Mr. Johnson
Lecture, two hours; laboratory, three hours. Prerequisite: Statistics 1 or the equivalent. Offered in spring, 1962, and alternate years.
Principles of experimental design, including tests of significance, analysis of variance and covariance; types of designs, including randomized blocks, Latin squares, factorial and other designs.
- 199. Special Studies.** (2-4) I, II. The Staff
Prerequisite: senior standing and consent of the instructor.

GRADUATE COURSES

- 260A-260B. Seminar in Floriculture.** (2-2) Yr. The Staff
- 286A-286B. Research in Ornamental Horticulture.** (2-6; 2-6) Yr. The Staff

FOLKLORE GROUP

Wayland D. Hand, Ph.D., *Professor of German and Folklore.*



James Richard Andrews, Ph.D., *Assistant Professor of Spanish.*
Gustave Otto Arlt, Ph.D., *Professor of German.*
Samuel G. Armistead, Ph.D., *Assistant Professor of Spanish.*
Pedro Carrasco, Ph.D., *Assistant Professor of Anthropology.*
John A. Crow, Ph.D., *Professor of Spanish.*
Alma Hawkins, Ed.D., *Professor of Physical Education.*
John T. Hitchcock, Ph.D., *Assistant Professor of Anthropology.*
Mantle Hood, Ph.D., *Associate Professor of Music.*
Claude E. Jones, Ph.D., *Associate Professor of English.*
Boris A. Kremenliev, Ph.D., *Professor of Music.*
William A. Lessa, Ph.D., *Associate Professor of Anthropology.*
William Matthews, Ph.D., *Professor of English.*
Laurance A. Petran, Ph.D., *Professor of Music.*
William F. Pillich, M.S., *Associate Supervisor of Physical Education.*

- Jaan Puhvel, Ph.D., *Assistant Professor of Classics and Indo-European Linguistics.*
 Stanley L. Robe, Ph.D., *Associate Professor of Spanish.*
 John Frederic Ross, Ph.D., *Associate Professor of English.*
 Richard C. Rudolph, Ph.D., *Professor of Oriental Languages.*
 Frances Clark Sayers, *Lecturer in English.*
 Carol J. Scothorn, M.A., *Assistant Supervisor of Physical Education.*
 Charles Speroni, Ph.D., *Professor of Italian.*
 Councill Taylor, Ph.D., *Assistant Professor of Anthropology.*
 Erik Wahlgren, Ph.D., *Professor of Scandinavian Languages.*
 Harry F. Williams, Ph.D., *Associate Professor of French.*
 Marion Albert Zeitlin, Ph.D., *Professor of Spanish.*



Charles Seeger, A.B., *Research Associate in Music (Ethnomusicology and Folk Music.)*

Letters and Science List.—All undergraduate courses in folklore and all related courses in anthropology, art, English, German, Italian, music, and Spanish.

Although no major in folklore is offered, a wide variety of course work is available in the three following general areas: (1) languages and literatures (English and foreign languages); (2) Social Sciences (anthropology, history, sociology); (3) folk arts (art, music, physical education, theater arts). Students with undergraduate preparation in folklore may continue their work on the graduate level. For the planning of course work, students should consult departmental advisers and Mr. Hand.

Through its member departments the Folklore Group also offers a variety of course work leading to M.A. and Ph.D. degrees. Financial aid and research opportunities are available to qualified graduate students in the form of fellowships, research assistantships, and collecting stipendia, administered by the Center for the Study of Comparative Folklore and Mythology. For further information, students should consult the Director of the Center, Mr. Hand.

UPPER DIVISION COURSES

- 101. Introduction to Folklore. (3) I.** Mr. Hand
 Prerequisite: junior standing. A reading knowledge of a foreign language is desirable, but not prerequisite to the course.
 The various fields of folklore, their literature, and problems.
- 105. American Folklore. (3) II.** Mr. Hand
 Prerequisite: junior standing.
 A survey of American folklore with illustrative materials from all genres (folk songs, folk tales, legends, superstitions, proverbs, folk speech).
- 106. American Folk Song. (3) I.** Mr. Hand
 Prerequisite: junior standing.
 A survey of American balladry and folk song, with attention to historical development, ethnic background, and poetic and musical values.
- 190. Research Methods and Field Collecting. (2) II.** The Staff
 Lecture, one hour; laboratory, two hours. Prerequisite: Folklore 101 and any one of the following courses: Folklore 105, Anthropology 102, 124, English 115, German 102, Italian 105, Music 136A or 136B.
 The bibliography and methods of folkloristic research. Attention will also be given to field collecting, including the use of mechanical apparatus, and to the problem of folklore archiving.

199. **Special Studies in Folklore.** (1-3) I, II. The Staff
Prerequisite: senior standing and consent of the instructor.

GRADUATE COURSES

- *245. **The Folk Tale.** (2) II. Mr. Hand
Prerequisite: course 101, or any one of the following courses: Folklore 105, Anthropology 102, 124, English 115, German 102, Italian 105, Music 136A or 136B.
259. **Seminar in Folklore.** (3) II. Mr. Hand
Prerequisite: graduate standing and consent of the instructor.
- 298A-298B. **Special Studies in Folklore.** (1-5; 1-5) Yr. The Staff

RELATED COURSES IN OTHER DEPARTMENTS

UPPER DIVISION COURSES

- Anthropology 102. **Ethnology.** (3) I, II. Mr. Carrasco, Mr. Hitchcock, Mr. Taylor
- Anthropology 124. **Comparative Religion.** (3) I, II. Mr. Lessa
- Anthropology 127. **Primitive Art.** (3) II. Mr. Taylor
- Classics 178. **Greek and Roman Mythology.** (3) I. Mr. Puhvel
- English 115. **Primitive Literature.** (3) II. Mr. Jones
- English 118. **Children's Literature.** (3) I, II. Mrs. Sayers
- English 136. **American Humor and Satire.** (3) I. Mr. Ross
- German 102. **German Folklore.** (3) II. Mr. Hand
- Integrated Arts 1A-1B. **Man's Creative Experience in the Arts.** (3-3) Yr. Mr. With
- Italian 105. **Italian Folklore.** (3) I. Mr. Speroni
- Music 122. **Music of Indonesia.** (3) I. Mr. Hood
- Music 129. **Music of the Balkans.** (3) II. Mr. Kremenliev
- Music 136A-136B. **Musical Cultures of the World.** (3-3) Yr. Mr. Hood, Mr. Petran
- Music 197. **Proseminar in Ethnomusicology.** (3) II. Mr. Hood
- Oriental Languages 32. **History of Japanese Civilization.** (2) II. Mr. Rudolph
- Oriental Languages 42. **History of Chinese Civilization.** (2) I. _____
- Physical Education 150A-150B. **History of Dance and the Related Arts.** (3-3) Yr. Mrs. Scothorn
- Physical Education 151. **History of Dance.** (3) II. Mrs. Scothorn
- Physical Education 155. **Folk Festivals.** (2) II. _____
- Spanish 108. **The Folk Song in Spain and Spanish America.** (1) II. Mr. Crow
- Spanish. 119. **Readings in Spanish Literature of the Middle Ages.** (2) I. Mr. Zeitlin, Mr. Andrews, Mr. Armistead

* Not to be given, 1961-1962.

GRADUATE COURSES

- Anthropology 251A-251B. Myth and Ritual. (2-2) Yr.** Mr. Lessa
- Classics 260. Seminar in Indo-European Mythology. (3) I.** Mr. Puhvel
- English 221. Medievalism. (3) II.** Mr. Matthews
- French 206A-206B. Survey of Medieval Literature. (2-2) Yr.** Mr. Williams
- German 208. The Sixteenth and Seventeenth Centuries. (3) I.** Mr. Arlt
- German 240. Folklore of the Germanic Peoples. (3) I.** Mr. Hand
- Music 254. Seminar in Notation and Transcription in Ethnomusicology. (3) I.** Mr. Hood
- Music 255. Musical Instruments of the World. (3) II.** Mr. Petran
- Music 280A-280B. Seminar in Ethnomusicology. (3-3) Yr.** Mr. Hood
- Physical Education 227. Comparative Study of Materials and Methods in Dance. (2) II.** Miss Hawkins
- Scandinavian 244. Old Norse-Icelandic Prose and Poetry. (2) II.** Mr. Wahlgren

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:

- Classics 113. Ancient Drama. (2)**
 Greek 180A-180B. A Survey of Greek Literature in English. (2-2)
 *Latin 180. A Survey of Latin Literature in English. (3)
- English *4A. Great Books: Dramatic Comedy. (1)**
 *4B. Great Books: Dramatic Tragedy. (1)
 4C. Great Books: The English Novel. (1)
 4D. Great Books: The Continental Novel. (1)
 *4E. Great Books: Lyric Poetry. (1)
 *4F. Great Books: Narrative Poetry. (1)
 *4G. Great Books: Famous Utopias. (1)
 *4H. Great Books: Great Satirists. (1)
- 113A. British and Continental Drama, 1500-1850. (3)
 113B. Modern Drama. (3)
- French 109M-109N. A Survey of French Literature. (3-3)**
 110A-110B. The Novel of the Nineteenth and Twentieth Centuries. (2-2)
 122A-122B. Medieval Literature in English Translation. (2-2)
- German 121A-121B. German Literature in Translation. (2-2)**
- Humanities 1A-1B. World Literature. (3-3)**
- Italian 152. Italian Literature in English Translation. (3)**
- Near Eastern Languages**
 Arabic 150A-150B. A Survey of Arabic Literature in English. (2-2)
 (Numbered 142A-142B prior to 1960-1961.)
 Hebrew 150A-150B. A Survey of Hebrew Literature in English. (2-2)
 (Numbered 182A-182B prior to 1960-1961.)
 Persian 150A-150B. A Survey of Persian Literature in English. (2-2)
- Oriental Languages 112. Chinese Literature in Translation. (2)**
 132. Japanese Literature in Translation. (2)

* Not to be given, 1961-1962.

- Scandinavian* 141A-141B. Scandinavian Literature in English Translation. (2-2)
- Slavic Languages* 130. Survey of Russian Literature to 1917. (3)
132. Russian Literature Since 1917. (3)
- *137. The Russian Drama. (3)
- 143A-143B. Russian Novelists of the Nineteenth Century. (2-2)
- *145. Tolstoy. (3)
- *147. History of Russian Poetry. (3)
- Spanish* 150A-150B. Spanish and Spanish-American Literature in English Translation. (2-2)

FRENCH

(Department Office, 4303 Humanities Building)

- George Blin, Docteur ès Lettres, *Visiting Professor of French*.
- Gabriel Bonno, Docteur ès Lettres, *Professor of French*.
- Francis J. Crowley, Ph.D., *Professor of French*.
- †John C. Lapp, Ph.D., *Professor of French*.
- Oreste F. Pucciani, Ph.D., *Professor of French*.
- Guy Raynaud de Lage, Docteur ès Lettres, *Visiting Professor of French*.
- ‡Myron Irving Barker, Ph.D., *Associate Professor of French*.
- Juud D. Hubert, Ph.D., *Associate Professor of French*.
- Clinton C. Humiston, Ph.D., *Associate Professor of French*.
- L. Gardner Miller, Docteur de l'Université de Strasbourg, *Associate Professor of French*.
- *Neal Oxenhandler, Ph.D., *Associate Professor of French*.
- Leland J. Thielemann, Ph.D., *Associate Professor of French*.
- Harry F. Williams, Ph.D., *Associate Professor of French*.
- Alexander Green Fite, Ph.D., *Associate Professor of French, Emeritus*.
- *Hassan El Nouty, Docteur ès Lettres, *Assistant Professor of French*.
- Madeleine Lazard, Agrégée des Lettres, *Acting Assistant Professor of French*.
- Marius Ignace Biencourt, Docteur de l'Université de Paris, *Assistant Professor of French, Emeritus*.
- Ralph M. Hester, M.A., *Lecturer in French*.
- Colette Brichant, Docteur de l'Université de Paris, *Associate in French*.
- Jacqueline Hamel, license ès Lettres, *Associate in French*.
- Madeleine Korol, Ph.D., *Associate in French*.
- Yvone Lenard, M.A., *Associate in French*.

Letters and Science List.—All undergraduate courses in French except 370 are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

Preparation for the Major.—Required: courses 1, 2, 3, and 4, or their equivalents.

The Major.—Required: at least 24 units of upper division French, including 101, 109A-109B, and at least 12 additional units in literature. Students who fail to maintain a C average or better on all work undertaken in upper division courses in the Department of French, 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 the major adviser before registering for French courses in the upper division.

* Not to be given, 1961-1962.

† Absent on leave, 1961-1962.

‡ Sabbatical leave in residence, 1961-1962.

‡ In residence fall semester only, 1961-1962.

* In residence spring semester only, 1962.

Requirements for the General Secondary Teaching Credential

Consult the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES. At the discretion of the department an examination will be given preparatory to recommendation for the certificate of completion for the general secondary teaching credential. Should the department direct that this examination be given, it will be held on the first Thursday after January 1 and the third Thursday in May, and it must be passed before the department will recommend that the student take his practice teaching.

Requirements for the Master's Degree

I. The department offers two alternative programs: Plan A designed for teachers of French at the secondary and junior college levels, and Plan B leading to the Ph.D. in French.

II. Department requirements:

(1) Language requirements: for all candidates for the M.A. in French, the foreign language requirement will be fulfilled by passing a reading test in one of the following languages: German, Spanish, Italian, or Latin. In special cases, substitution of another foreign language will be accepted, if approved by the chairman of the department. Students are required to pass the reading test in one of the foreign languages before the end of the second semester of residence.

(2) Course requirements:

Plan A: At least 24 units in French, including the following courses: 131A-131B, 201, 220, and 230. To meet the general University requirements, at least 12 units must be in graduate courses.

The comprehensive examination will consist of a written examination in three out of five fields (16th-20th century), a sight translation, from English to French (for native French students, from French to English), a literary composition in French (in the modern field only) of not less than two hours, an *explication de texte* and an oral examination in French covering the candidate's general knowledge of French literature. For native French students the oral examination will be conducted in English.

Plan B: At least 24 units in French, including the following courses: 131A-131B, 201, 220, and 230. To meet the general requirements, at least 12 units must be in graduate courses.

The comprehensive examination for Plan B will consist of a written examination in three out of six fields (medieval-twentieth century), each two hours long, an *explication de texte*, and an hour oral examination. Passing this examination will be equivalent to passing Part I of the qualifying examination.

Requirements for the Ph.D. Degree**III. Department requirements:**

(a) *Language requirements:* Students must pass a reading examination in German, Latin, and either Italian or Spanish. They must take the reading test in *one* of the required languages during the *first year of residence*, the tests in the other languages not later than the fourth semester of residence.

(b) *Required Courses:* 131A-131B, 201, 202, 220, 235, and at least four seminars.

In the case of students who already have the *Licence ès Lettres* or the M.A., the work taken will be evaluated by the department, and credit given towards the course requirements. These students will, however, take Part I of the qualifying examination, which in this case will serve as a guidance examination for the use of the department.

(c) Part I of the qualifying examination will consist of a written examination in 3 out of 6 fields (medieval-twentieth century), each two hours long, an *explication de texte*, and an hour oral examination. If the student

does well on these examinations, he will be encouraged to proceed further with graduate study toward either the Ph.D. in French or Romance languages.

(d) Normally the candidate will devote a second year to the completion of the language requirements and the required courses, after which he will take Part II of the qualifying examination and the qualifying oral, and, if successful, be advanced to candidacy. This period will be curtailed or extended according to circumstances. Part II will consist of four written examinations: a five-hour examination in the candidate's chosen area to consist of a three-hour essay question and a two-hour question on literary history; and three four-hour examinations in the other areas, each consisting of a two-hour essay question and a two-hour question on literary history. For the purpose of this examination, the four areas will be defined as follows:

I. Medieval

II. Renaissance and Baroque

III. Classicism and Enlightenment

IV. Modern

No examination in linguistics is required; grade A or B in courses 201 and 202 satisfy this requirement.

The passing grade for Parts I and II is an average grade of B (3.0).

(e) All candidates for the M.A. and Ph.D. must satisfy the department as to their proficiency in spoken French. For English-speaking students this will normally mean passing French 107 with a grade of A or B.

(f) A final year will be devoted to the dissertation after which the student will take the final oral. The thesis subject and outline should be approved by the student's guidance committee no later than October 1st of the year in which it is to be submitted.

(g) If seven years have elapsed since any of the requirements have been taken, these requirements must be revalidated by the department.

Requirements for the Ph.D. Degree in Romance Languages and Literature

See page 432 of this bulletin.

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, be permitted a more advanced program; or such students may be transferred to a more advanced course by recommendation of the instructor.

1. **Elementary French.** (4) I, II. The Staff
Sections meet five hours weekly.

1G. **Elementary French for Graduate Students.** (No credit) I, II. The Staff

2. **Elementary French.** (4) I, II. The Staff
Sections meet five hours weekly.
Prerequisite: course 1 or two years of high school French.

3. **Intermediate French.** (4) II. The Staff
Sections meet five hours weekly.
Prerequisite: course 2 or three years of high school French.

4. **Intermediate French.** (4) I, II. The Staff
Sections meet four hours weekly.
Prerequisite: course 3 or four years of high school French.

8A-8B-8C-8D. **French Conversation.** (1-1-1-1) Beginning each semester. The Staff
The class meets two hours weekly. Open only to students who have com-

pleted course 2 or its equivalent with grade A or B; or by permission of the department.

UPPER DIVISION COURSES

The prerequisite to all upper division courses except those in translation is 16 units of lower division courses, including course 4 with a grade of B or higher.

All upper division courses are conducted in French. Course 109A is prerequisite to all other upper division courses in literature.

101. Intensive Reading. Grammar and Composition. (3) I, II.

Beginning either semester.

Mr. Oxenhandler in charge

107. French Phonetics. (3) I, II.

Mr. Pimsleur

Prerequisite: consent of the instructor.

French pronunciation, diction, intonation in theory and practice; phonetic transcription, phonetic evolution of the modern language; remedial exercises; recordings.

109A-109B. Introduction to the Study of French Literature. (3-3) Yr.

Beginning either semester. Mr. Oxenhandler, Mr. Pucciani, Mr. Nouty

Prerequisite: French 101 or the equivalent.

Open to majors in Romance languages, and others sufficiently prepared, with the consent of the instructor. Not open to students who have taken or are taking courses 109M, 109N.

112A-112B. The Nineteenth Century. (2-2) Yr.

Mr. Blin, Mr. Nouty

114A-114B. Contemporary French Literature. (2-2) Yr.

Mr. Oxenhandler, Mr. Pucciani

The French novel, poetry, and essay since 1885. Symbolism, surrealism, existentialism, as represented by Rimbaud, Mallarmé, Gide, Proust, Apollinaire, Valéry, Malraux, Satre, and others.

†118A-118B. The Sixteenth Century. (2-2) Yr.

Mr. Humiston

Literature and thought in the sixteenth century as represented by Rabelais, Marot, Calvin, Marguerite de Navarre, the Pléiade, Montaigne, and others.

120A-120B. The Seventeenth Century. (2-2) Yr.

Mr. Hubert, Mr. Lapp

A study of the development of Classicism through representative works of Corneille, Molière, Racine, Descartes, Pascal, and others.

121A-121B. The Eighteenth Century. (2-2) Yr.

Mr. Crowley, Mr. Thielemann

121A. Readings and discussions of the outstanding works of the literature and thought of the period (1680-1789), omitting Voltaire and Rousseau.

121B. Limited to study of Voltaire and Rousseau.

***124. French Lyric Poetry from Villon to the Present.** (3) II.

Mr. Lapp

A course in the history of French poetry: versification, imagery, changing themes and approaches to poetry through the ages.

130A-130B. Advanced Grammar and Composition. (3-3) Yr.

Mr. Bonno

Prerequisite: course 101A-101B.

This course is required of all candidates for the Certificate of Completion of the teacher training curriculum.

131A-131B. Advanced Literary Composition. (3-3) Yr.

Mr. Hubert

Prerequisite: course 101A-101B.

A course in the writing of literary French. Advanced syntax, problems of style, creative translation. Required of all candidates for the M.A.

* Not to be given, 1961-1962.

† Not to be given, fall, 1961.

- 134A-134B. Survey of French Culture and Institutions. (3-3) Yr.
Required for the Certificate of Completion. Mrs. Lazard
199. Special Studies in French. (1-5) I, II. The Staff
Prerequisite: senior standing and consent of the instructor.

COURSES IN WHICH NO KNOWLEDGE OF FRENCH IS REQUIRED

(May not be taken for major or graduate credit)

- 109M-109N. Survey of French Literature. (3-3) Yr. Beginning either semester. Mr. Humiston
- *110A-110B. The Novel of the Nineteenth and Twentieth Centuries. (2-2) Yr. Mr. Barker
- *122A-122B. Medieval Literature in English Translation. (2-2) Yr.
A. Epic, Romance, history. Mr. Barker
B. Drama, lyric and allegorical poetry.

GRADUATE COURSES

Concerning conditions for admission to graduate courses, see page 75 of this bulletin.

201. History of the French Language. (3) I, II. Mr. Williams
Phonology, morphology, syntax and lexicography of the French language from its origin to the present.
202. Old French. (3) I, II. Mr. de Lage
Grammar of medieval northern dialects; intensive reading and translation of representative texts.
- *205. Contemporary French Linguistics. (3) II. _____
The major areas of current French linguistics: experimental phonetics; phonology, morphology; acoustic phonetics; semantics.
- 206A-206B. Survey of Medieval Literature. (2-2) Yr. Mr. Williams
Prerequisite: French 202 or the equivalent.
Religious and profane literature of the Old French periods: Saints' lives, epics, romances, *fabliaux*, lyric poetry, drama.
- 208A-208B. The Renaissance. (2-2) Yr. Mr. Humiston
The development of poetry; prose writers and dramatists; the early Baroque.
- 212A-212B. The Age of Enlightenment. (2-2) Yr. Mr. Thielemann
Main currents and figures of eighteenth-century French literature.
220. Explication de Textes. (2) I, II. Mr. Bonno
230. French Literary Criticism. (2) I, II. Mr. Oxenhandler, Mr. Pucciani
Literary criticism from the Renaissance to the present.
235. Methods of Literary Research. (2) I, II. Mr. Crowley
- 250A-250B. Studies in Medieval French Literature. Seminar.
A. Medieval Literature to the 14th Century. (3) I. Mr. de Lage
B. Medieval Literature of the 14th and 15th Centuries. (3) II. Mr. Williams
- 251A-251B-251C-251D. Studies in the Renaissance.
*A. Rabelais. (3) I. Mr. Lapp

* Not to be given, 1961-1962.

- *B. Montaigne. (3) II. Mr. Lapp
 *C. Poetry. (3) I. Mr. Humiston
 *Drama. (3) II. Mr. Humiston
- 252A-252B-252C-252D. *Studies in Classicism.*
 *A. Classic Tragedy. (3) I. Mr. Bonno
 *B. Classic Comedy. (3) II. Mr. Hubert
 C. Classic Prose. (3) II. Mr. Bonno
 *D. Non-Dramatic Poetry. (3) I. Mr. Lapp
- 253A-253B-253C-253D. *Studies in the Enlightenment and Neo-Classicism.*
 A. The Philosophes: Voltaire. (3) I. Mr. Crowley
 B. Eighteenth-Century Prose. (3) II. Mr. Hubert
 *C. The Philosophes: Diderot. (3) II. Mr. Thielemann
 D. The Drama. (3) II. Mr. Crowley
- 254A-254B-254C-254D. *Studies in the Nineteenth Century.*
 *A. Romantic Prose. (3) I. Mr. Nouty
 *B. Romantic Poetry. (3) II. Mr. Nouty
 C. Realism and Naturalism. (3) I. Mr. Barker
 *D. Theater. (3) II. Mr. Nouty
- 255A-255B-255C. *Studies in Contemporary Literature.*
 *A. The Novel. (3) I. Mr. Pucciani
 *B. The Theater. (3) II. Mr. Oxenhandler
 C. Lyric Poetry. (3) I. Mr. Hubert
297. *Directed Studies.* (1-6) I, II. The Staff
299. *Research on Theses.* (1-6) I, II. The Staff

PROFESSIONAL COURSE IN METHOD

370. *The Teaching of French.* (3) I. Mr. Miller
 Prerequisite: courses 101, 107, and 130A, 130B. Required of all candidates for the Certificate of Completion in French; should be completed before practice teaching.

RELATED COURSES IN ANOTHER DEPARTMENT

- Latin 220. *Vulgar Latin.* (3) I. Mr. Puhvel
- Classics 178. *Greek and Roman Mythology.* (3) I. Mr. Puhvel

GENETICS

For courses in genetics, see under Departments of Bacteriology, Botany, and Zoology.

GEOGRAPHY

(Department Office, 55A Haines Hall)

- Henry J. Bruman, Ph.D., *Professor of Geography.*
 Robert M. Glendinning, Ph.D., *Professor of Geography.*
 Clifford H. MacFadden, Ph.D., *Professor of Geography.*
 ‡Joseph E. Spencer, Ph.D., *Professor of Geography.*
 Clifford M. Zierer, Ph.D., *Professor of Geography.*

* Not to be given, 1961-1962.

‡ Sabbatical leave in residence, fall semester, 1961-1962.

Buth Emily Baugh, Ph.D., *Professor of Geography, Emeritus.*
 George McCutchen McBride, Ph.D., *Professor of Geography, Emeritus.*
 Harry P. Bailey, Ph.D., *Associate Professor of Geography.*
 John F. Gaines, Ph.D., *Associate Professor of Geography.*
 H. Louis Kostanick, Ph.D., *Associate Professor of Geography.*
 *Richard F. Logan, Ph.D., *Associate Professor of Geography.*
 Howard J. Nelson, Ph.D., *Associate Professor of Geography.*
 †Benjamin E. Thomas, Ph.D., *Associate Professor of Geography.*
 Charles F. Bennett, Ph.D., *Assistant Professor of Geography.*
 Richard E. Dahlberg, Ph.D., *Assistant Professor of Geography.*
 *Tom L. McKnight, Ph.D., *Assistant Professor of Geography.*
 †William D. Pattison, Ph.D., *Assistant Professor of Geography.*
 Myrta L. McClellan, M.A., *Assistant Professor of Geography, Emeritus.*
 Norman J. W. Thrower, Ph.D., *Assistant Professor of Geography.*

Letters and Science List.—All undergraduate courses in geography are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

Preparation for the Major.—Geography 1, 2, 3, and 4 are required of all majors. In addition, Geology 2 or 101 is required of professional majors. Appropriate courses in anthropology, botany, economics, geology, history, political science, and the modern foreign languages are recommended for all majors.

Three general objectives may be recognized for those who select geography as a major. These are: (1) preparation for graduate study in the subject leading to advanced degrees and professional occupation as a geographer, (2) preparation for the student who wishes to gain a broad understanding of the world and its peoples, and (3) preparation for the student who desires to secure a teaching credential with a specialty in geography and the social sciences. Plans applicable to the three objectives are listed below.

The Major.—The minimum requirement for all majors is 30 units of upper division work in geography.

Plan I. For the student expecting to proceed to the M.A. or Ph.D. degree in geography the following courses are required: Group I—Geography 101, 105, 115, 175; Group II—two courses chosen from Geography 121, 122A, 122B, 123A, 123B, 124A, 124B, 125, 126, 127, 131; Group III—two courses chosen from Geography 141, 142, 155, 161, 165, 171, 173, 181, 199; Group IV—two courses chosen from Geography 106, 108, 113, 117, 118, 119.

Plan II. For the student desiring a less specialized program leading to a broad understanding of the world who is working for a teaching credential, the following courses are required: Group I—Geography 115 and 175; Group II—three courses chosen from Geography 121, 122A, 122B, 123A, 123B, 124A, 124B, 125, 126, 127, 131; Group III—three courses chosen from Geography 141, 142, 155, 171, 173, 181, 199; Group IV—two courses chosen from Geography 108, 113, 117, 118, 161.

Admission to Graduate Status

In order to gain admission to the graduate program in geography, the applicant must meet the following:

1. Have an A.B. or B.S. degree and completion of an undergraduate major totaling approximately 30 semester units of junior-senior year work in geography, distributed among topical, systematic, and regional courses.

2. Have a scholastic average of at least 3.0 ("B" average) in the major and at least 2.75 in total junior-senior work outside of geography. At the

¹ In residence fall semester only, 1961-1962.

² In residence spring semester only, 1962.

³ Sabbatical leave in residence, spring semester, 1962.

discretion of the department a student with slight scholastic or course deficiencies may be admitted in graduate status for a trial period, during which deficiencies must be made up.

3. The admission of every student to graduate status in geography must be approved by the chairman of the department, in addition to the general approval by the Graduate Division. Write directly to the Chairman, Department of Geography, for such approval, providing at least two letters of evaluation from previous instructors. Completed official applications for admission, supported by transcripts, must be filed with the Graduate Division prior to the final dates (August 1 for the fall semester, and December 15 for the spring semester). Students seeking teaching assistantships may secure applications from the Department of Geography, and must file them not later than February 1, supported by at least two recommendations and a photograph.

Requirements for the General Secondary Teaching Credential

Consult the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES.

Requirements for the Master's Degree

The general requirements of Graduate Division are listed on pages 69-71, and the specific requirements of the department of geography follow.

The M.A. degree may be obtained either by Plan I or Plan II; Plan I being the one normally required by the department.

Screening Examination.—Required under both Plan I and Plan II, this will be given by the candidate's informal guidance committee in the course of the first semester in residence, to assess the candidate's general competence in the field of geography up to the graduate level.

Foreign Language.—Required under both Plan I and Plan II is a reading knowledge of a modern foreign language, normally German, French, or Spanish, demonstrated by passing an examination conducted by the Graduate Division examiner.

Plan I, Thesis Plan.—(A) The course work in residence must consist of at least 12 units in graduate courses designated by the department, including courses 250 (Growth of Geographic Thought); 275 (Advanced Field Problems in Local Geography, a six-week summer graduate field course); and 280 (Geographic Writing).

(B) Each student must present a thesis, based in whole or in part on original investigation, and preferably a field study. Selection of a thesis topic, conduct of the investigation, and final organization, proceeds initially under the supervision of an informal guidance committee (2 members of the department staff) and, later, under an official Graduate Division committee (2 members of the department staff, plus one member from another university department).

Plan II, Comprehensive Examination Plan.—(A) The work in residence must include course 250 (Growth of Geographic Thought).

(B) This examination normally is given in the final two-week period of the semester in which the candidate completes his work for the degree. It usually consists of two half-day written examinations covering the broad divisions of history of geography, systematic geography, regional geography, and functional applications of systematic geography. The examination is designed to test for broad grasp of subject, as well as the more specialized abilities of the candidate.

Requirements for the Doctor's Degree

General requirements of the Graduate Division are stated on pages 71 to 74. Specific requirements pertaining to geography follow.

A. An M.A. or M.S. Degree, with Geography Specialty.—The department

believes strongly that students normally will find it to their advantage to have had the background and experience of the Master's degree before undertaking work toward the Ph.D. degree.

B. Preliminary Examinations.—(Preliminary examinations may consist of any number of oral or written examinations, at the discretion of the guidance committee. At the minimum, there shall be a written examination covering both general and specific aspects of the geographical field, as well as the student's particular fields of specialization. This examination also shall include a field problem in local geography. The examination, including the field problem, normally is spread over a three-day period and shall be given at a time designated by the guidance committee.)

C. Qualifying Examination.—The foreign language requirement must be met prior to taking the qualifying examination, which is an oral examination conducted by the candidate's official Ph.D. committee. This examination stresses particularly those segments of geography in which the candidate has specialized.

D. The Dissertation.—Each candidate is required to choose a dissertation topic, and to secure approval of the topic by the department, via his doctoral committee. A topic entailing field, as well as library study normally is required.

LOWER DIVISION COURSES

1. Introduction to Geography: Physical Elements. (3) I, II.

Mr. Gaines in charge

Students who have had course 5A or 100 will receive only half credit for course 1.

A study of the basic physical elements of geography (especially climate, land forms, soils, and natural vegetation), and their integrated patterns of world distribution.

2. Introduction to Geography: Cultural Elements. (3) I, II.

Mr. Spencer in charge

Students who have had course 5B or 100 will receive only half credit for course 2.

A study of the basic cultural elements of geography (population distribution, general land-use patterns, and trade) and their correlation with the physical elements. Delimitation of the major geographic regions of the world.

3. Introduction to Climate and Weather. (3) I, II.

Mr. Bailey

Not open for credit to students who have credit for Meteorology 3.

A survey of the earth's atmospheric phenomena, with special reference to the causes and regional distribution of climate and weather.

4. Map Reading and Interpretation. (3) I, II.

Mr. Dahlberg

Lecture, one hour; laboratory, three hours.

Interpretation of maps, charts, and aerial photographs; coverage and quality of world mapping; sources; properties of map projections; interpretation of symbols, terrain characteristics and settlement patterns on foreign and domestic maps.

5A. Economic Geography. (3) I.

Mr. Dahlberg in charge

Not open to students who have credit for courses 1 and 2. Students who have credit for course 1 or 100 will receive only $1\frac{1}{2}$ units of credit for course 5A.

A study of those physical and cultural elements of the environment essential to the geographic interpretation of economic activities.

5B. Economic Geography. (3) I, II.

Mr. Nelson

Prerequisite: course 1, or 5A, or 100. Students who have credit for course 2 will receive only half credit for course 5B.

The principles of economic geography as developed through studies of representative occupations, commodities, and trade.

UPPER DIVISION COURSES

Prerequisite for all upper division courses: upper division standing, except as indicated below.

100. Principles of Geography. (3) I, II.

Mr. Pattison

Not open to those who have credit for courses 1 and 2 or 5A-5B; may not be counted on the major in geography.

A brief survey of the fundamental physical and cultural elements of geography and their intergration on a world-wide regional basis.

101. Fundamentals of Geographic Field Work. (3) I, II.

Mr. Bennett, Mr. Logan

Saturdays. Prerequisite: courses 1 and 2 or 5A-5B, and consent of instructor. To be taken by major students normally in the junior year.

Selected field studies in the Los Angeles area. The course affords training in field mapping of rural and urban types and in techniques of area analysis.

105. Introductory Cartography. (3) I.

Mr. Dahlberg

Prerequisite: course 4 and one of the following: 1 and 2, or 5A-5B, or 100, or consent of instructor.

Survey of the field of cartography. Includes theory and construction of map projections, compilation procedures, principles of generalization and symbolization, cartographic drafting and lettering techniques, and map reproduction methods.

106. Intermediate Cartography. (3) II.

Mr. Dahlberg

Prerequisite: courses 4 and 105, or consent of the instructor.

Examination of principles of map design and their relationship to representation and reproduction methods. Theory and practice of quantitative mapping, graphics, and lettering.

108. Geographical Air Photo Analysis. (3) I.

Mr. Thrower

Prerequisite: course 4 or consent of the instructor.

A study of features of cultural and physical geography by means of aerial photographs. Emphasis is placed on the use of aerial photographs in geographical research and on the theory and practice of interpreting individual features and their interrelationships.

113. General Climatology. (3) I.

Mr. Bailey

Prerequisite: course 3 or consent of instructor. To be taken by major students normally in the junior year.

A study of the causes of climatic phenomena and of the larger features which characterize the climates of the earth.

115. Physical Bases of Geography. (3) I, II.

Mr. Glendinning, Mr. Logan

Prerequisite: course 1 or equivalent, or consent of instructor. One or two field trips may be required. To be taken by major students in the junior year; by others in either the junior or senior year.

A study of the basic physical factors existing in each of the major geographic realms, with special emphasis on the interrelationships of climates, land forms, soils, drainage, and natural vegetation.

117. Animal Geography. (3) I.

Mr. Bennett

A study of the physical and cultural factors of animal distribution and an examination of the role of animals in human societies.

118. Plant Geography. (3) II. Mr. Gaines

Prerequisite: course 1 or consent of instructor.

Character, distribution, and environmental relationships of the principal vegetation regions of the world.

119. Geography of the Arid Lands. (3) I. Mr. Thomas in charge

Prerequisite: courses 1 and 2, 101, 115, 118, 175 and/or 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 occupation, including future possibilities for human utilization.

121. The Geography of Anglo-America. (3) I. Mr. Zierer

Prerequisite: courses 1 and 2, or 5A-5B, or 100.

Delimitation and analysis of the principal economic geographic divisions of the United States, Canada, and Alaska.

122A. The Geography of Middle America. (3) I. Mr. Bruman

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 social geography of Mexico and the countries of Central America and the West Indies.

122B. The Geography of South America. (3) II. Mr. Bruman

A study of the geographic factors, physical and cultural, that are basic to an understanding of the historical development of South America and of the contemporary economics and social geography of the individual South American countries.

123A. The Geography of Western Europe. (3) I. Mr. Kostanick

A study of geographic conditions and their relation to economic, social, and political problems in the Atlantic states of Europe. Emphasis on France, Germany, the British Isles, Scandinavia, and the Benelux Countries.

123B. The Geography of Eastern Europe and the Soviet Lands. (3) II.

Mr. Kostanick

A study of geographic conditions and their relation to economic, social, and political problems in eastern and southern Europe, including Soviet Asia.

124A. The Geography of Southern Asia. (3) I. Mr. MacFadden

A regional survey of the physical and cultural features which characterize the economic, social, and political geography of southern Asia (India through the East Indies) during historic and modern times.

124B. The Geography of Eastern Asia. (3) II. Mr. Spencer

A regional survey of the physical and cultural features which characterize the economic, social, and political geography of eastern Asia (China, Korea, and Japan).

125. The Geography of Australia and Oceania. (3) II. Mr. Zierer

Prerequisite: courses 1 and 2, or 5A-5B, or 100.

A regional synthesis of the physical and human features which characterize Australia and New Zealand, Hawaii, and the islands of the South Pacific.

126. The Geography of Africa. (3) II. Mr. Thomas

The regions of Africa in terms of physical features, human settlement, economic production, and political patterns.

127. The Geography of the Middle East. (3) I. Mr. Thomas

A regional survey of the physical and cultural features which character-

ize the economic social, and political geography of Asia Minor, the Near East, and the Middle East during historic and modern times.

131. The Geography of California. (3) I, II. Mr. Logan

An analysis of geographic conditions in the seven major provinces of California. Utilization of resources, routes of communication, location of settlements, and distribution of population in their geographical and historical aspects.

141. Commercial Geography. (3) I. Mr. Nelson

Analysis of the geographic distribution of basic raw materials in relation to world trade centers and trade routes.

142. Industrial Geography. (3) II. Mr. McKnight

Analysis of the distribution of the manufacturing industries.

155. Urban Geography. (3) II. Mr. Nelson

A study of the origin, development, distribution, and regional variation of the world's cities, with emphasis on an analysis of the functions and patterns of American cities.

161. The Conservation of Natural Resources. (3) I. Mr. Zierer

The general principles of conservation and their application, especially in the United States.

165. Geographical Aspects of Land Planning. (3) I. Mr. Glendinning

Prerequisite: courses 1 and 2, or 5A-5B, and consent of the instructor. Normally limited to ten students.

A study of the role of geographic discipline in land-planning activities.

171. Historical Geography of Anglo-America. (3) II. Mr. Zierer

The geography of the major divisions of the United States and Canada at selected times in the past.

173. The Historical Geography of the Mediterranean Region. (3) II.

Prerequisite: course 1, or 5A, or 100.

Mr. Pattison

A study of the geographic factors operative in the Mediterranean lands from ancient to modern times.

175. The Cultural Bases of Geography. (3) I, II. Mr. Bruman, Mr. Spencer

Prerequisite: course 2 or consent of instructor.

The geographic factor in the evolution of primitive cultures and of advanced civilizations.

181. Political Geography. (3) I, II. Mr. Kostanick

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.

199. Special Studies. (1-5) I, II. The Staff

Prerequisite: senior standing and consent of the instructor.

GRADUATE COURSES

***205. Advanced Cartography.** (3) II. Mr. Thower

Prerequisite: course 105 or the equivalent, and consent of the instructor.

Advanced work in cartographic methodology, including terrain representation, symbolization, color, and reproduction. Laboratory work in advanced construction techniques.

250. The Growth of Geographic Thought. Seminar. (3) I. Mr. Spencer

Prerequisite: consent of instructor.

Normally the first seminar to be taken by graduate students in geography.

* Not to be given, 1961-1962.

255. **Seminar in the Geography of Asia.** (3) II. Mr. Spencer
Prerequisite: course 124A, or 124B, or the equivalent, and consent of instructor.
256. **Seminar in the Geography of Anglo-America.** (3) I. Mr. Zierer
Prerequisite: course 121 or the equivalent, and consent of instructor.
257. **Seminar in the Geography of Latin America.** (3) I. Mr. Bruman
Prerequisite: course 122A, or 122B, or the equivalent, and consent of instructor.
258. **Seminar in California Geography.** (3) II. Mr. Gaines
Prerequisite: consent of instructor.
259. **Seminar in the Geography of Australia and Oceania.** (3) II. Mr. Zierer
Prerequisite: course 125 or the equivalent, and consent of the instructor.
261. **Seminar in Climatology.** (3) II. Mr. Bailey
Prerequisite: course 113 or the equivalent, and consent of instructor.
262. **Landforms and Their Geographic Significance. Seminar.** (3) II. Mr. Glendinning
Prerequisite: course 115 or the equivalent, and consent of instructor.
270. **Seminar in Economic Geography.** (3) I. Mr. MacFadden
Prerequisite: course 141 or 142, or the equivalent, and consent of instructor.
271. **Seminar in Political Geography.** (3) II. Mr. Kostanick
Prerequisite: course 181 or the equivalent, and consent of instructor.
272. **Seminar in Cultural Geography.** (3) II. Mr. Bruman
Prerequisite: consent of instructor.
273. **Seminar in Selected Regions.** (3) II. _____
275. **Advanced Field Problems in Local Geography.** (6) Mr. Logan
Six weeks, concurrent with the Summer Session.
Prerequisite: course 101 or the equivalent, and consent of instructor.
Advanced field study in representative areas of southern California; reconnaissance and detailed field-mapping, systematic and regional analysis of significant physical and cultural features, and the preparation of written research and field reports.
280. **Geographic Writing—Research Techniques and Reports.** (3) I, II. Mr. Gaines
Prerequisite: consent of instructor.
290. **Research in Geography.** (1-6) I, II. The Staff
Prerequisite: consent of instructor.
Investigation subsequent to, and growing out of, any of the above seminars.

GEOLOGY

(Department Office, 3611 Geology Building)

Daniel I. Axelrod, Ph.D., *Professor of Geology.*
John C. Crowell, Ph.D., *Professor of Geology.*
Cordell Durrell, Ph.D., *Professor of Geology.*
Willis P. Popenoe, Ph.D., *Professor of Geology.*
William C. Putnam, Ph.D., *Professor of Geology.*
William W. Rubey, D.Sc., *Professor of Geology and Geophysics.*

- *George Tunell, Ph.D., *Professor of Geology*.
 Kenneth D. Watson, Ph.D., *Professor of Geology (Chairman of Department)*.
 George W. Wetherill, Ph.D., *Professor of Geophysics and Geology*.
 U. S. Grant, Ph.D., *Professor of Geology, Emeritus*.
 William John Miller, Ph.D., Sc.D., *Professor of Geology, Emeritus*.
 Joseph Murdoch, Ph.D., *Professor of Geology, Emeritus*.
 Donald Carlisle, Ph.D., *Associate Professor of Geology*.
 †Clemens A. Nelson, Ph.D., *Associate Professor of Geology*.
 Gerhard Oertel, Dr. rer. nat., *Associate Professor of Geology*.
 John M. Christie, Ph.D., *Assistant Professor of Geology*.
 Charles E. Corbató Ph.D., *Assistant Professor of Geology*.
 W. Gary Ernst, Ph.D., *Assistant Professor of Geology*.
 Clarence A. Hall, Jr., Ph.D., *Assistant Professor of Geology*.
 N. Gary Lane, Ph.D., *Assistant Professor of Geology*.
 John L. Rosenfeld, Ph.D., *Assistant Professor of Geology*.
 Ronald L. Shreve, Ph.D., *Assistant Professor of Geology and Geophysics*.
 Edward L. Winterer, Ph.D., *Assistant Professor of Geology*.
 †Ted L. Bear, A. B., *Lecturer in Petroleum Geology*.
 †Helen Tappan Loeblich, Ph.D., *Lecturer in Geology*.
 William S. Ting, Ph.D., *Assistant Research Geologist*.
 Alexander Stoyanow, Ph.D., *Research Associate in Geology*.



- David T. Griggs, *Professor of Geophysics*.
 George C. Kennedy, Ph.D., *Professor of Geochemistry*.
 Leon Knopoff, Ph.D., *Professor of Geophysics*.
 Gordon J. F. MacDonald, Ph.D., *Professor of Geophysics*.
 Louis B. Slichter, Ph.D., *Professor of Geophysics and Director of the Institute of Geophysics*.

Letters and Science List.—All undergraduate courses in geology, mineralogy, and paleontology are included in the Letters and Science List of Courses. For regulations governing this list see page 2.

GEOLOGY

The program described below is designed to provide the student majoring in geology with as broad and generalized a training as possible in a curriculum leading to the A.B. degree. A student who intends to continue to graduate work, or who plans on a specialized career within the field of geology, should aim to complete the field of emphasis shown in the section following the description of the major that is most nearly related to his particular interest. A student continuing to graduate work must complete in graduate standing those courses required in his field of emphasis which he has not taken as an undergraduate.

Students intending to major in geology should confer with a departmental adviser as early as possible, and preferably before registration.

Preparation for the Major.—Geology 2, 2L, 3; Mineralogy 6A–6B; Chemistry 1A–1B; Physics 1A or 2A, 1B or 1C or 1D or 2B; Mathematics D or 1, 3A or 5A; English 106S; one course selected from among the following: Zoology 1A, Life Science 1A, Botany 2, Meteorology 4, Mathematics 3B or 5B, Chemistry 5A, Statistics 1.

The Major.—Geology 102A, 102B, 103, 116, 118A–118B; Paleontology 110; and nine units from among the following: any upper division courses in Geology, Mineralogy, Paleontology, and Geophysics; Physics 105, 107, 107C;

† Absent on leave, 1961–1962.

¹ In residence fall semester only, 1961–1962.

² In residence spring semester only, 1962.

Chemistry 110A, 110B, 111; Mathematics 4B or 6B, 110AB or 110C, 122A, 122B, 124, 125; Statistics 131A-131B; Zoology 106, 112, 130A, 134, 159.

At the end of the senior year each student must take a comprehensive final examination in geology.

Fields of Emphasis.—Those students planning graduate work or specialized careers in geology should aim to complete one of the following fields of emphasis or submit an alternative program for approval by a committee of the geology faculty. Each field is a selection of courses from among those listed above and constitutes a basis for advanced work. A student continuing to graduate work must complete in graduate standing those courses required in his field of emphasis which he has not taken as an undergraduate.

Each field of emphasis requires Geology 2, 2L, 3; Mineralogy 6A-6B; Chemistry 1A-1B; Mathematics D or 1, 3A or 5A; English 106S; Geology 102A, 102B, 103, 116, 118A-118B, 119; Paleontology 110.

The additional courses for each option are as follows:

(1) *Physical Geology, Geophysics.*—Physics 1A or 2A, and 1B, 1C, 1D; Mathematics 3B, 4A, 4B or 5B, 6A, 6B; (Recommended: Chemistry 5A); Mineralogy 108, 109 or 110; eight units from among the following: Geology 107, 117 or 158, 150; Chemistry 110A-110B; Mathematics 110AB or 110C, 122A-122B, 124, 125; Physics 105; Statistics 131A-131B.

(2) *Mineralogy, Petrology, Mineral Deposits, Geochemistry.*—Physics 1A or 2A, and 1C; Chemistry 5A; Mathematics 3B, 4A, 4B, or 5B, 6A, 6B; Geology 110; Mineralogy 108, 109; Chemistry 110A, Chemistry 110B or Geophysics 122 or Mineralogy 101; (Recommended: Chemistry 110B, 111; Geology 107, 158).

(3) *Paleontology, Stratigraphy.*—Physics 1A or 2A, and 1B or 1C or 1D or 2B; Statistics 1; Zoology 1A, 1B; (Recommended: Botany 2); Geology 158; Paleontology 111, and 114 or 120 or 136 or 137 or Geology 111 or Zoology 137; two of the following: Zoology 106, 112, 130A, 134, 159; Mineralogy 108 and 110; (Recommended: Geology 107, 117, 150).

Suggested programs for each of these emphases are available in the departmental office.

Requirements for the Master of Arts Degree

1. For the general University requirements, see page 69.

2. Departmental requirements:

The department follows Plan I (Thesis Plan), as described on page 70. Each candidate for the M.A. degree is required to complete three seminars selected from geology, mineralogy, paleontology, or geophysics and to pass the Graduate Division examination in a modern foreign language.

A candidate for the M.A. degree in geology must either elect one of three fields of emphasis in geology or submit an alternative program for approval by a committee of the geology faculty. He must have to his credit, in addition to the general University requirements, the lower and upper division courses (or their equivalents) recommended for the field of emphasis chosen (or alternative program). Under most circumstances, students deficient in these requirements will be allowed to complete them while in graduate status. He must also complete one of the sequences listed below or an alternative program.

a. *Physical Geology, Geophysics.*—Twenty units from among the following: Geology 107, 117 or 158, 150; Paleontology 111 or 114 or 120 or 136 or 137; Chemistry 110A-110B; Mathematics 110AB or 110C, 122A-122B, 124, 125; Physics 105, 107, 107C; Statistics 131A-131B.

b. *Mineralogy, Petrology, Mineral Deposits, Geochemistry.*—Mineralogy 101 or 110 or 181; Chemistry 110B, 111; nine units from among the following: Geology 107, 117, 150, 158; Geophysics 122; Mathematics 110AB or 110C, 122A-122B.

c. *Paleontology, Stratigraphy*.—Geology 107 or 117 or 150; Mineralogy 108, 110; three of the following: Paleontology 114, 120, 136, 137; Zoology 137; three of the following: Zoology 106, 112, 130A, 134, 159, 266.

Requirements for the Degree of Doctor of Philosophy

1. For the general University requirements, see page 71.

2. Departmental requirements:

Prospective candidates for the degree of Doctor of Philosophy in geology must have the A.B. degree in geology from this university, or from an institution of equivalent standing and with a preparation deemed equivalent to that required for the A.B. degree from this university. The candidate must either (a) elect one of the three fields of emphasis in geology and be familiar with the subject matter of courses required for the M.A. degree in their respective fields of emphasis, or (b) submit an alternative program for the Ph.D. degree for approval by a committee of the geology faculty.

a. *General Preliminary Examination*.—Each prospective candidate for the Ph.D. degree in geology is required to take a written preliminary examination during the first semester of graduate status. This examination will be based upon the A.B. curriculum in geology at this institution.

b. *Program of Study*.—On the basis of the student's performance in the above examination, a guidance committee will recommend a program of study.

c. *Special Examination*.—Upon completion of the program of study recommended by the guidance committee, the candidate is required to take a written examination in his field of specialization. This examination must be taken within two years of the General Preliminary Examination.

GEOPHYSICS

For the interdepartmental curriculum in geophysics, see page 10.

GEOLOGY

LOWER DIVISION COURSES

2. **General Geology—Physical.** (3) I, II. The Staff
An elementary course in the principles of physical geology.
- 2L. **Laboratory, General Geology—Physical.** (1) I, II. The Staff
Laboratory, three hours. Prerequisite: Geology 2 must be taken concurrently except by consent of instructor.
Laboratory exercises in topographic and geologic map study, mineral and rock identification.
3. **General Geology—Historical.** (4) II. Mr. Corbató
Lecture, three hours; laboratory, three hours. Prerequisite: Geology 2.
The geologic history of the earth and its inhabitants.

UPPER DIVISION COURSES

101. **Principles of Geology.** (3) I. Mr. Putnam
Prerequisite: junior standing. Not open to students who have taken Geology 2 or 3.
A survey of the principles of physical and historical geology.
- 102A. **Geologic Problems.** (3) I. The Staff
Laboratory, three hours; field, one day per week. Prerequisite: Geology 2, 2L, 103 (may be taken concurrently).
Introduction to geologic mapping. Application of descriptive geometry and trigonometry to geologic problems; interpretation of geologic maps.
- 102B. **Field Geology.** (3) II. The Staff
Laboratory, three hours; field, one day per week. Prerequisite: Geology 102A; English 106S (may be taken concurrently).
Principles and methods of geologic mapping.

- 103. Petrology. (4) I.** Mr. Durrell
Lecture, two hours; laboratory, six hours. Prerequisite: Mineralogy 6A-6B; Chemistry 1B (may be taken concurrently).
Origins and characteristics of rocks. Laboratory determination with the hand lens.
- *107. Geology of North America. (2) II.** Mr. Nelson
Prerequisite: Geology 3 or consent of the instructor.
A regional study of North American geology.
- 110. Economic Geology. (3) II.** Mr. Tunell
Lecture, two hours; laboratory, three hours. Prerequisite: Geology 103.
Origin and occurrence of the important metallic and nonmetallic mineral deposits.
- 111. Petroleum Geology. (3) I.** Mr. Bear
Prerequisite: Geology 116 or consent of the instructor.
Geology applied to the exploration and production of petroleum, techniques of surface and subsurface geology; petroleum engineering problems of concern to geologists.
- 116. Structural Geology. (3) II.** Mr. Christie
Lecture, two hours; laboratory, three hours. Prerequisite: Geology 102A and 103 or consent of the instructor. A knowledge of descriptive geometry is desirable.
Fracture, folding, and flow of rocks. Solution of structural problems.
- 117. Geomorphology. (3) I.** Mr. Putnam
Prerequisite: Geology 2 or 101.
Principles of geomorphology.
- 118A. Intermediate Field Geology. (4)** The Staff
Eight weeks, commencing with Summer Session. Prerequisite: Geology 102B or the equivalent and 116. Geology 118B must be taken concurrently.
Preparation of a geologic field map and structure sections of a selected region.
- 118B. Geologic Report Writing. (2)** The Staff
Eight weeks commencing with Summer Session. Geology 118A must be taken concurrently.
Preparation of a geologic report concerning the geology of the region mapped in course 118A.
- 119. Advanced Field Geology. (2) I.** The Staff
Field, one day. Prerequisite: Geology 118A-118B or the equivalent.
Problems in field geology with some choice of emphasis available to the student.
- 150. Advanced Physical Geology. (3) I.** Mr. Shreve
Prerequisite: One year of Physics, Mathematics 4A or 6A, or consent of instructor.
Study of selected geological phenomena with emphasis on physical principles and processes.
- 158. Foundations of Stratigraphy. (2) II.** Mr. Lane
Prerequisite: Geology 102B (may be taken concurrently).
A survey of geologic, paleontologic, biologic, and climatic principles applicable to stratigraphy, and their bearing on paleogeography.

* Not to be given, 1961-1962.

199. **Special Studies in Geology.** (1 to 5) I, II.
The Staff (Mr. Watson in charge)
Prerequisite: senior standing and consent of the department chairman.

GRADUATE COURSES

236. **Physical Geology of California.** (3) II. Mr. Durrell
250. **Seminar in Physical Geology.** (3) II. Mr. Shreve
Prerequisite: consent of the instructor.
251. **Seminar in Chemical Petrology.** (3) I. Mr. Ernst
Prerequisite: Mineralogy 109.
252. **Seminar in Geomorphology.** (3) II. Mr. Putnam
Prerequisite: Geology 117 or the equivalent.
- 254A-254B. **Seminar and Laboratory in Igneous Petrology.** (2-5; 2-5) Yr.
Mr. Durrell, Mr. Rosenfeld, Mr. Watson
Prerequisite: Mineralogy 109. Recommended: Geology 251. Offered in alternate years.
- *255A-255B. **Seminar and Laboratory in Metamorphic Petrology.**
(2-5; 2-5) Yr. Mr. Durrell, Mr. Rosenfeld, Mr. Watson
Prerequisite: Mineralogy 109. Offered in alternate years.
- *256. **Seminar and Laboratory in Structural Petrology of Deformed Rocks.**
(3-5) II. Mr. Christie
Prerequisite: Geology 116, Mineralogy 108, or consent of the instructor.
Offered in alternate years.
Study of microscopic structures and the orientation of minerals in deformed rocks, using the microscope and universal stage. Laboratory compulsory.
257. **Seminar and Laboratory in Sedimentary Petrology.** (2-5) I.
Prerequisite: Mineralogy 110 or equivalent. Mr. Winterer
Advanced study of problems concerning sedimentary rocks and sedimentation processes.
258. **Seminar in Stratigraphy.** (3) II. Mr. Winterer
Prerequisite: Geology 158.
259. **Field Investigations in Geology.** (2) II. Mr. Crowell
Prerequisite: graduate standing and consent of the instructor.
Preparatory seminars on a selected field problem, followed by a field trip to the region during spring recess, with a report required.
260. **Seminar in Structural Geology.** (3) I. Mr. Crowell, Mr. Oertel
Prerequisite: Geology 116 or equivalent.
Seminar in fundamentals of structural geology with emphasis on sedimentary terranes.
261. **Structural Analysis of Deformed Rocks.** (3) II. Mr. Christie
Prerequisite: Geology 116 or equivalent. Geology 260 strongly recommended.
Geometrical study and interpretation of structures in terranes with complex or multiple deformations, with special attention to structures on a megascopic scale. Supervised field or laboratory studies optional.
262. **Seminar in Advanced Problems in Geology.** (3) II.
Prerequisite: consent of the instructor. Mr. Axelrod, Mr. Rubey
Study of selected geological problems of broad scope.

* Not to be given, 1961-1962.

263A-263B. Seminar in Economic Geology. (3-3) Yr. Mr. Carlisle
Occasional field trips during the course. Prerequisite: Geology 110. The second semester of this course may be taken without the first.

264. Seminar in Geochronology. (3) I. Mr. Wetherill
Prerequisite: consent of the instructor.

Study of natural decay systems, such as U-Pb, Th-Pb, Rb-Sr, K-A, C¹⁴; experimental techniques, mass spectrometry, evaluation of geochronologic data.

299. Research in Geology. (1-6) I, II. The Staff (Mr. Durrell in charge)

MINERALOGY

LOWER DIVISION COURSES

6A. Introductory Mineralogy. (3) I. Mr. Ernst

Lecture, one hour; laboratory, six hours. Prerequisite: elementary chemistry, trigonometry; Geology 2 and 2L (may be taken concurrently).

Properties, relationships, origin of minerals; form and structure of crystals; determination of common minerals by physical and chemical tests.

6B. Intermediate Mineralogy. (2) II. Mr. Ernst

Laboratory, six hours. Prerequisite: Mineralogy 6A.

Continuation of Mineralogy 6A.

UPPER DIVISION COURSES

101. Paragenesis of Minerals. (2) II. Mr. Ernst

Prerequisite: Geology 103, or consent of the instructor.

Principles governing heterogeneous equilibria, with selected application to mineral stability relations in igneous, metamorphic, and sedimentary rocks.

108. Optical Mineralogy and Petrography. (4) I. Mr. Rosenfeld

Lecture, two hours; laboratory, six hours. Prerequisite: Mineralogy 6B or upper division standing in science or engineering with the consent of the instructor.

Optical properties of minerals; determination of minerals and rocks with the petrographic microscope; immersion methods.

109. Petrology and Petrography of Igneous and Metamorphic Rocks. (2) II. Mr. Watson

Laboratory, six hours. Prerequisite: Geology 103, Mineralogy 108.

Characteristics and origin of igneous and metamorphic rocks; determination with the petrographic microscope.

110. Petrology and Petrography of Sedimentary Rocks. (2) II. Mr. Winterer

Laboratory, six hours. Prerequisite: Geology 103, Mineralogy 108.

Characteristics and origin of sedimentary rocks; physical and mineralogical analysis of sediments: determination of minerals by immersion methods.

***181. Mineralography.** (2) II. _____

Laboratory, six hours. Prerequisite: Mineralogy 108.

Determination of opaque minerals in polished sections; recognition of common ore minerals; paragenetic relationships.

GRADUATE COURSES

274. Seminar in Structural Crystallography. (2-5) II. Mr. Tunell

* Not to be given, 1961-1962.

Seminar, two hours; laboratory, optional. Prerequisite: consent of the instructor.

Advanced crystallography and the atomic structure of crystals.

*282. **Problems in Goniometry.** (2 to 4) II.

299. **Research in Mineralogy.** (1 to 6) I, II.

Mr. Ernst, Mr. Tunell

PALEONTOLOGY

UPPER DIVISION COURSES

101. **Principles of Paleontology.** (3) II.

Mr. Hall

Prerequisite: junior standing or consent of the instructor.

A survey of the principles governing the evolution and distribution of fossils.

110. **General Paleontology.** (3) II.

Mr. Lane

Lecture, two hours; laboratory, three hours. Prerequisite: Geology 3 or upper division standing in the life sciences.

Methods and principles of paleontology, including evolution, classification, and distribution of organisms. The geologic history of plants, vertebrates, and invertebrates.

111. **Systematic Invertebrate Paleontology.** (3) I.

Mr. Popenoe

Lecture, one hour; laboratory, six hours. Prerequisite: Geology 3, or Geology 101 or Paleontology 101 or upper division standing in the life sciences.

The study of invertebrate fossils.

114. **Micropaleontology.** (3) I.

Mrs. Loeblich

Lecture, one hour; Laboratory, six hours. Prerequisite: Paleontology 110 or 111 or upper division standing in the life sciences.

Study of the microfossils important in stratigraphic work.

*120. **Paleobotany.** (3) II.

Mr. Axelrod

Lecture, two hours; laboratory, three hours. Prerequisite: Geology 3, Botany 2 or consent of the instructor. Offered in alternate years.

Vegetation of the earth during geologic time.

136. **Paleontology and Stratigraphy of the Paleozoic and Mesozoic.** (3) I.

Mr. Popenoe

Lecture, one hour; laboratory, six hours. Prerequisite: Paleontology 110 or 111 or consent of the instructor.

137. **Paleontology and Stratigraphy of the Cenozoic.** (3) II.

Mr. Hall

Lecture, one hour; laboratory six hours. Prerequisite Paleontology 110 or 111 or upper division standing in the life sciences.

GRADUATE COURSES

258. **Seminar in Paleontology.** (3) I.

Mr. Popenoe

Prerequisite: Paleontology 111.

Review of current and classic paleontologic works, with emphasis on principles of paleontology.

*290. **Research in Biogeography.** (1-4) I, II.

Mr. Axelrod

Prerequisite: graduate standing in biological science; consent of the instructor.

Application of geological and paleontological data to a solution of present-day biogeographical problems.

299. **Research in Paleontology.** (1 to 6) I, II.

The Staff

GEOPHYSICS

UPPER DIVISION COURSE

122. **Geophysical Prospecting.** (3) II. Mr. Slichter
Prerequisite: consent of the instructor.
The principles of geophysical prospecting for ores, petroleum, and other economic minerals.

GRADUATE COURSES

See page 382 for related offerings under Physics

249. **Experimental Petrology.** (3) I. Mr. Kennedy
250. **Seminar in Geophysics.** (3) I. Mr. Slichter
Seismology, geophysical prospecting, electromagnetic prospecting. Selected topics in earth physics. The content will vary from year to year.
253. **Seminar in Geochemistry.** (3) I. Mr. Kennedy
Consideration of phase equilibria with particular attention to the origin of igneous and metamorphic rocks.
260. **Experimental Geology.** (3 to 6) II. Mr. Griggs
Seminar, two hours: laboratory optional. Prerequisite: consent of the instructor.
The mechanics of rock deformation. Dimensional analysis and model theory applied to geological problems.
290. **Research in Geophysics.** (1-6) I, II. The Staff
This course will include studies relative to exploration geophysics and experimental work in the electromagnetic model laboratory; research relative to gravity-surveying and to gravity earthtides (Mr. Slichter); theoretical and experimental studies relative to seismology and geophysics (Mr. Knop-off); tectonophysics and properties of matter at high pressure (Mr. Griggs); atmospheric electrical phenomena (Mr. Holzer); meteorological problems (Mr. Palmer).

GERMANIC LANGUAGES

(Department Office, 310 Royce Hall)

- Gustave Otto Arlt, Ph.D., *Professor of German.*
Alfred Karl Dolch, Ph.D., *Professor of German.*
Wayland D. Hand, Ph.D., *Professor of German and Folklore.*
Victor A. Oswald, Jr., Ph.D., *Professor of German.*
†Erik Wahlgren, Ph.D., *Professor of Scandinavian Languages.*
Frank H. Reinsch, Ph.D., *Professor of German, Emeritus.*
Carl William Hagge, Ph.D., *Associate Professor of German.*
†Robert B. Heitner, Ph.D., *Associate Professor of German.*
Vern W. Robinson, Ph.D., *Associate Professor of German.*
Eli Sobel, Ph.D., *Associate Professor of German.*
William J. Mulloy, Ph.D., *Associate Professor of German, Emeritus.*
Franz H. Bäuml, Ph.D., *Assistant Professor of German.*
Charles W. Hoffmann, Ph.D., *Assistant Professor of German.*
Lee B. Jennings, Ph.D., *Assistant Professor of German.*
Terence Harrison Wilbur, Ph.D., *Assistant Professor of German.*

† Absent on leave, 1961-1962.

¹ In residence fall semester only, 1961-1962.

Kenneth G. Chapman, Ph.D., *Assistant Professor of Scandinavian Languages.*
 William F. Roertgen, Ph.D., *Lecturer in German.*
 Edith A. Schulz, M.A., *Lecturer in German.*
 Stephanie Lombardi, Ph.D., *Associate in German.*



William Melnitz, Ph.D., *Professor of Theater Arts.*

Letters and Science List.—All undergraduate courses in German and Scandinavian languages except German 370 are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

Preparation for the Major.—Required: course 1, 2, 3, (3PS), 4, 6, and 42A–42B, or their equivalents. Recommended: History 1A–1B; English 1A–1B, 46A–46B; Philosophy 20A–20B.

The Major in German.—At least 24 units in upper division courses, including 106A, 106B, 107, 118A, 118B, and one course from each of the following groups: (1) 105, 108, 119; (2) 109A, 109B; (3) 104A, 104B, 110, 111; (4) 114A, 114B. Students looking forward to the secondary credential should take also 106C–106D. Students desiring a purely literary or philological major, not looking toward secondary teaching, should consult the departmental adviser regarding permissible substitutions of courses.

Admission to Graduate Status

The completion of the undergraduate major, or its equivalent, with a minimum grade-point average of 2.5 is required. If the candidate is deficient in this prerequisite he must fulfill it by undergraduate courses taken as a graduate student.

Entering graduate students may be required to take a placement examination in German language and literature before enrolling in courses.

Requirements for the General Secondary Credential

Consult the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES.

Requirements for the Master's Degree

1. For the general requirements, see pages 69–71. The department usually follows the comprehensive examination plan, but under certain conditions the thesis plan may be approved.

2. Application for advancement to candidacy may be made when the student has passed the reading examination in French.

3. Courses offered in satisfaction of the general requirements, under both Plans I and II, must include courses 201, 239, and one seminar course.

4. The final examinations under Plan II consist of three sections.

a. *Linguistics.* The student must present evidence of a knowledge of the history and development of the modern German language, and a thorough acquaintance with Middle High German.

b. *Older Literature.* The student must have an acquaintance with the history of older German literature (to 1750) and with its important monuments and personalities.

c. *Modern Literature.* He must have a thorough acquaintance with the history of modern German literature (1750 to date) and with a considerable number of its authors and their works.

Examination in these three fields will be in writing and will be based upon the suggested readings which are given to the student. In a final oral examination the student will be examined in the fields of his major interests and on his general background.

Students who are accepted on the thesis plan do not take the written final

examination but will take an oral examination on the field of the thesis, as provided on page 70.

Requirements for the Doctor's Degree

1. For the general requirements, see pages 71-74.

2. Advancement to candidacy will take place when the student has (a) passed the graduate reading examination in French; (b) passed a departmentally administered reading examination in a modern Scandinavian language or successfully completed two semesters of study, in residence, of a modern Scandinavian language; (c) passed 201 (Bibliography), 232 (Old High German), 239 (Middle High German), and 240 (Folklore of the Germanic Peoples), or the equivalents; (d) successfully completed three seminars.

The degree is offered in the following four fields, from which one major and one minor field shall be selected:

a. *German Literature*

b. *Germanic Philology and Linguistics*

c. *Scandinavian Literature and Philology*

d. *Germanic Folklore*

The field in which the candidate intends to present a dissertation will be designated as his major field. 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, as provided on pages 71-74.

GERMAN

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 be permitted a more advanced program; or such students may be transferred to a more advanced course on recommendation of the instructor.

1. **Elementary German.** (4) I, II. Miss Schulz and Mrs. Lombardi in charge
This course corresponds to the first two years of high school German.
- 1G. **Elementary German for Graduate Students.** (No credit) I, II.
Four hours a week. Miss Schulz in charge
2. **Elementary German.** (4) I, II. Miss Schulz and Mrs. Lombardi in charge
Prerequisite: course 1 or two years of high school German.
- ‡3. **Intermediate German.** (4) I, II. Mr. Hoffmann in charge
Prerequisite: course 2 or three years of high school German.
Readings in literary German.
- ‡3PS. **Intermediate German.** (4) I, II. Mr. Roertgen in charge
Prerequisite: course 2 or three years of high school German.
Readings in the physical sciences.
4. **Intermediate German.** (4) I, II. Mr. Hoffmann in charge
Prerequisite: any one of courses 3, 3PS, or four years of high school German.
Advanced readings in literary German.
6. **Review of Grammar.** (2) I, II. Mr. Roertgen in charge
Prerequisite: course 2 or three years of high school German.
Required for the major in German.

‡ The two courses numbered 3 and 3PS may be taken for credit. It is recommended that German 3 be taken before the specialized course 3PS.

8A-8B. German Conversation. (1-1) Beginning each semester.

Mr. Roertgen in charge

The class meets two hours weekly. Open to students who have completed course 2 or its equivalent. Course 8A is normally prerequisite to 8B.

42A-42B. German Civilization. (2-2) Yr.

Mr. Bäuml, Mr. Sobel

Lectures and reports. Conducted in English. No knowledge of German required.

A general survey of the development of German civilization in its more important cultural manifestations. Required for the major in German.

UPPER DIVISION COURSES

The prerequisite for all upper division courses except 121A and 121B is course 4 or the equivalent.

102. German Folklore. (3) II.

Mr. Hand

A survey of the various genres of German folklore. Lectures and reading of selected texts.

Offered only in alternate years.

104A-104B. Readings in the Drama of the Nineteenth Century. (3-3) Yr.

Selected readings from nineteenth-century authors.

Mr. Robinson

105. Lessing's Life and Works. (3) I.

Mr. Heitner

Lectures and readings of selected texts.

106A-106B. Grammar, Composition, and Conversation. (2-2) Yr.

106A. Emphasis on composition.

Mr. Roertgen

106B. Emphasis on conversation. Prerequisite: course 8A or 8B.

106C-106D. Grammar, Composition, and Conversation. (2-2) Yr.

Prerequisite: course 106A-106B.

Mr. Roertgen

107. Phonetics of the German Language. (2) I.

Mr. Wilbur

Lecture, two hours; laboratory, one hour.

Study of the articulatory basis of the sounds of German and practice in standard pronunciation.

108. Schiller's Life and Works. (3) II.

Mr. Hagge

Lectures and reading of selected texts.

109A. Introduction to Goethe: The Young Goethe. (3) I.

Mr. Hagge

Intensive study of a selection of Goethe's lyrics to 1786 and of *Götz*, *Werther*, *Urfaust*, and *Egmont*. Lectures on the literary background of the Storm and Stress Movement.

109B. Introduction to Goethe: The Classical Goethe. (3) II.

Mr. Hagge

Intensive study of a selection of Goethe's lyrics from 1786 to 1832 and of *Iphigenie*, *Tasso*, *Hermann und Dorothea*, and *Novelle*. Lectures on the literary background of the Classical Movement.

110. The German Lyric. (3) II.

Mr. Oswald

Prerequisite: 6 units of upper division German or consent of the instructor. A survey from 1750 to 1950.

111. German Narrative Prose. (3) I.

Mr. Jennings

Prerequisite: 6 units of upper division German or consent of the instructor. A survey from 1750 to 1880, with special reference to the *Novelle*.

- 114A. German Literature from 1875 to the Present.** (3) I. Mr. Oswald
Prerequisite: 6 units of upper division German or consent of the instructor.
Prose and poetry.
- 114B. German Literature from 1875 to the Present.** (3) II. Mr. Hoffmann
Prerequisite: 6 units of upper division German or consent of the instructor.
Dramatic literature.
- 117. History of the German Language.** (3) II. Mr. Wilbur
Prerequisite: course 106A-106B, 107, or consent of the instructor.
- 118A. History of German Literature.** (3) I. Mr. Sobel
Prerequisite: 6 units of upper division German or consent of the instructor.
The Middle Ages to 1624.
- *118B. History of German Literature.** (3) II. Mr. Heitner
Prerequisite: 6 units of upper division German or consent of the instructor.
Lectures in German. From 1624 to 1850.
- 119. Middle High German.** (3) I. Mr. Bäuml
Outline of grammar; selections from Middle High German poetry.
- 121A. German Literature in Translation.** (2) I. Mr. Hagge
Prerequisite: junior standing. Not accepted as part of the major in German.
Readings and lectures on Lessing, Schiller, and Goethe.
- 121B. German Literature in Translation.** (2) II. Mr. Sobel
Prerequisite: junior standing. Not accepted as part of the major in German.
Readings and lectures on selected modern authors.
- 132. Goethe's Faust.** (3) II. Mr. Hagge
Prerequisite: course 109A and 6 additional units of upper division German,
or consent of the instructor.
Intensive study of the text of Goethe's *Faust*, Parts I and II, together with
more general consideration of other treatments of the Faust theme in Euro-
pean literature.
- 199. Special Studies.** (1-5) I, II. The Staff
Prerequisite: senior standing and consent of the instructor.

GRADUATE COURSES

- 201. Bibliography and Methods of Literary History.** (2) I. Mr. Arlt
Required for the M.A. and Ph.D. degrees.
- 208. The Sixteenth and Seventeenth Centuries.** (3) I. Mr. Sobel
- *210. The Age of Goethe.** (3) I. Mr. Hagge
- *212. Nineteenth-Century Narrative and Poetry.** (3) II. Mr. Jennings
- *213. The Enlightenment and Pre-Romanticism.** (3) II. Mr. Heitner
- 225. Nineteenth-Century Drama.** (3) II. Mr. Robinson
- 226. Contemporary German Literature.** (3) I. Mr. Hoffmann
From *Neue Sachlichkeit* to the present.
- 228. Recent German Literature.** (3) II. Mr. Oswald
From Naturalism to Expressionism.
- *229. Expressionism.** (2) I. Mr. Melnitz

* Not to be given, 1961-1962.

230. Survey of Germanic Philology. (3) I. Mr. Wilbur
231. Gothic. (3) I. Mr. Dolch
232. Old High German. (3) I. Mr. Dolch
233. Old Saxon. (3) II. Mr. Dolch
239. Readings in Middle High German Literature. (3) II. Mr. Bäuml
Prerequisite: course 119 or the equivalent.
Required for the M.A. degree.
240. Folklore of the Germanic Peoples. (3) I. Mr. Hand
Prerequisite: course 102, or Folklore 101.
- *251. Seminar on the Age of Goethe. (3) II. Mr. Hagge
253. Seminar in Nineteenth-Century Literature. (3) I. Mr. Jennings
254. Seminar in the Enlightenment and Pre-Romanticism. (3) I.
Mr. Heitner
256. Seminar in Literature after 1875. (3) I, II. Mr. Oswald, Mr. Hoffmann
257. Seminar in Sixteenth- and Seventeenth-Century Literature. (3) II.
Prerequisite: course 208. Mr. Arlt
- *259. Seminar in Germanic Linguistics. (1 to 3) II. Mr. Dolch
Prerequisite: course 230 and one dialect or the equivalent.
- 297A-297B. Individual Studies for Graduate Students. (1-6; 1-6) I, II.
The Staff
299. Research on Doctoral Dissertation. (1-6) I, II. The Staff

PROFESSIONAL COURSE IN METHOD

370. The Teaching of German. (3) I. Mrs. Lombardi
Prerequisite: graduate standing or consent of instructor. Required of all candidates for the general secondary credential in German.

DUTCH-FLEMISH AND AFRIKAANS

LOWER DIVISION COURSES

1. Elementary Dutch-Flemish and Afrikaans. (4) I. Mr. Boertgen
2. Elementary Dutch-Flemish and Afrikaans. (4) II. Mr. Boertgen
Prerequisite: course 1 or the equivalent.

SCANDINAVIAN LANGUAGES

LOWER DIVISION COURSES

1. Elementary Swedish. (4) I. Mr. Wahlgren
2. Intermediate Swedish. (4) II. Mr. Wahlgren
Prerequisite: course 1 or the equivalent.
11. Elementary Norwegian. (4) I. Mr. Chapman
12. Intermediate Norwegian. (4) II. Mr. Chapman
Prerequisite: course 11 or the equivalent.

* Not to be given, 1961-1962.

15. **Second-Year Scandinavian.** (4) I. Mr. Chapman, Mr. Wahlgren
Prerequisite: Swedish 2 or Norwegian 12, or equivalent, or a second semester college course in Danish.
Readings in Swedish, Norwegian, and Danish.
16. **Second-Year Scandinavian.** (4) II. Mr. Chapman, Mr. Wahlgren
Prerequisite: course 15, or three semesters of any modern Scandinavian language.
Advanced readings in Swedish, Norwegian, and Danish.

UPPER DIVISION COURSES

- 141A. **Scandinavian Literature in English Translation.** (2) I.
Mr. Chapman, Mr. Wahlgren
No prerequisite; open to all upper division students.
From earliest times to 1500. Selections from the sagas, Eddic and Scaldic verse, and the ballads.
- 141B. **Scandinavian Literature in English Translation.** (2) II.
Mr. Chapman, Mr. Wahlgren
No prerequisite; open to all upper division students.
From 1500 to the present.
199. **Special Studies in Scandinavian.** (1-5) I, II.
Mr. Chapman, Mr. Wahlgren

GRADUATE COURSES

- *243. **Old Icelandic.** (3) I. Mr. Wahlgren
- *244. **Old Norse-Icelandic Prose and Poetry.** (2) II. Mr. Wahlgren
- 297A-297B. **Individual Studies for Graduate Students.** (1-6; 1-6) I, II.
The Staff
299. **Research on Doctoral Dissertation.** (1-6) I, II. The Staff

GREEK

For courses in Greek, see under Department of Classics.

HEBREW

For courses in Hebrew, see under Department of Near Eastern and African Languages.

HISTORY

(Department Office, 264 Haines Hall)

- †Eugene N. Anderson, Ph.D., *Professor of History.*
Truesdell S. Brown, Ph.D., *Professor of History (Chairman of the Department).*
John W. Caughey, Ph.D., *Professor of History.*
Brainerd Dyer, Ph.D., *Professor of History.*
John S. Galbraith, Ph.D., *Professor of History.*
Gustave E. von Grunebaum, Ph.D., *Professor of History.*

* Not to be given, 1961-1962.

† Absent on leave, 1961-1962.

- †Yu-Shan Han, Ph.D., *Professor of History.*
 †Clinton N. Howard, Ph.D., *Professor of History.*
 †Jere C. King, Ph.D., *Professor of History.*
 George E. Mowry, Ph.D., *Professor of History.*
 Theodore Saloutos, Ph.D., *Professor of History.*
 Lynn T. White, Ph.D., *Professor of History.*
 David K. Bjork, Ph.D., *Professor of History, Emeritus.*
 Frank J. Klingberg, Ph.D., *Professor of History, Emeritus.*
 Waldemar Westergaard, Ph.D., *Professor of History, Emeritus.*
 Robert N. Burr, Ph.D., *Associate Professor of History.*
 *Mark H. Curtis, Ph.D., *Associate Professor of History.*
 Raymond H. Fisher, Ph.D., *Associate Professor of History.*
 William R. Hitchcock, Ph.D., *Associate Professor of History.*
 †Harold M. Hyman, Ph.D., *Associate Professor of History.*
 †Andrew Loesky, Ph.D., *Associate Professor of History.*
 Donald B. Meyer, Ph.D., *Associate Professor of History.*
 Bradford Perkins, Ph.D., *Associate Professor of History.*
 Charles Page Smith, Ph.D., *Associate Professor of History.*
 Eugen J. Weber, M.A., *Associate Professor of History.*
 Robert A. Wilson, Ph.D., *Associate Professor of History.*
 Keith B. Berwick, Ph.D., *Assistant Professor of History.*
 Mortimer H. Chambers, Jr., Ph.D., *Assistant Professor of History.*
 Speros Vryonis, Ph.D., *Assistant Professor of History.*
 Robert W. Winter, Ph.D., *Assistant Professor of History.*
 *Stanley Wolpert, Ph.D., *Assistant Professor of History.*
 Lucy M. Gaines, M.A., *Assistant Professor of History, Emeritus.*

Letters and Science List.—All undergraduate courses in history are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

Preparation for the Major.—Required: (1) course 1A–1B, to be taken in the freshman year, and (2) course 5A–5B or 6A–6B or 7A–7B or 8A–8B, to be taken in the sophomore year, or equivalent preparation for students transferring from other departments or other institutions. History majors who offer 5A–5B in satisfaction of (2) must take 6 units of United States history in the upper division; those who offer 8A–8B in satisfaction of (2) must take at least 3 units of United States history in the upper division.

Recommended: French, German, Latin, Spanish, Italian, or a Scandinavian language. For upper division work in history, a reading knowledge of one of these is usually essential. For language requirements for graduate work, see pages 71 and 72 of this bulletin.

The Major

- (1) A minimum of 24 units of upper division work in history, including
 - a. History 111A–111B or History 121A–121B or 6 units chosen from courses numbered 141 to 149 or 6 units chosen from courses numbered 151 to 159.
 - b. History 162A–162B or 6 units chosen from courses numbered 171 to 188 or History 191A–191B.
 - c. Course 197 to be taken in the junior year.
 - d. Course 199 in a field for which preparation has been made to be taken in the senior year.

History majors are required to maintain a "C" average in their 24 units of upper division history.

† Absent on leave, 1961–1962.

‡ Sabbatical leave in residence, fall semester, 1961–1962.

* In residence fall semester only, 1961–1962.

* In residence spring semester only, 1962.

(2) Six units of approved upper division courses in an allied field. Allied fields include anthropology, art history, economics, geography, philosophy, political science, sociology, and a national literature of the field of the student's emphasis, e.g., English literature in combination with an English history emphasis. Approval of the courses selected must be obtained from a Department of History adviser in writing.

Honors in History.—Inquiries regarding honors may be directed to the chairman of the department.

Admission to Graduate Status

Students who have completed the undergraduate major in history, or the equivalent, will be recommended for admission to graduate work in history provided they meet general admission requirements. Students may be admitted with subject deficiencies, but such deficiencies will have to be made up by taking courses in addition to those required for the advanced degree program.

Students who hold a bachelor's degree with a science major and who wish to pursue the department's Ph.D. program in the history of science will be exempted from the requirement of an undergraduate major in history, provided that they satisfy the chairman of the Department of History that they are competent to undertake the required program in history. Students in this category will be expected to enroll in any history course or courses, for example, History 197, which the graduate adviser may deem advisable.

Only students who have met all admission and course prerequisites are eligible to enroll in graduate courses in history.

Requirements for the General Secondary Teaching Credential

Consult the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES.

Requirements for the Master's Degree

Candidates for the degree of Master of Arts in history must qualify under Plan II, except that in the field of California history Plan I may be elected with the consent of the instructor concerned.

Plan II. Comprehensive Examination Plan

Candidates under Plan II must meet the following requirements, in addition to those stated on page 71.

A. *Foreign Language.* A reading knowledge of a foreign language approved by the Department of History (see page 71). The department recommends that this requirement be met in the first semester of graduate work and requires that it be met before advancement to candidacy for the master's degree. Students in graduate work in medieval history are required to have a reading knowledge of medieval Latin.

B. *Units of Work.* The strictly graduate courses in history required for the degree must include a year seminar in one of the fields listed in groups I and II below, and a year seminar in one of the fields listed in Group III. It is strongly recommended that the student begin his seminar work in the fall semester.

C. *Comprehensive Examination.* A written examination in three of the fields listed below, including one field from each group.

Group I

Field 1: Ancient History.

Field 2: Medieval History, 300–1500.

Group II

Field 1: Modern European History since 1500.

Field 2: British History since 1485.

Field 3: Far Eastern History since 1368.

Group III

Field 1: United States History since 1492.

Field 2: Latin-American History since 1492.

An acquaintance solely with textbook information will not be adequate. The departmental guidance committee will hold a meeting, usually each semester, for students who expect to take the comprehensive examination, to advise them of the department's expectations. The student also is advised to consult lists of recommended readings prepared by the department. Likewise, the candidate is advised to confer at the outset of his graduate work with instructors offering graduate courses in the fields in which he proposes to present himself for examination. The examination will ordinarily be given in May and at the close of the Summer Session, on dates announced by the chairman of the department.

Plan I. Thesis Plan (Open only to students working in California history)

Candidates under Plan I must meet the following requirements in addition to those stated on page 70.

A. *Foreign Language.* The requirement as stated under Plan II.

B. *Units of Work.* The strictly graduate courses in history required for the degree must include at least 2 units in European history.

C. *Examination.* A written examination in two fields taken at the same time as, and as part of, the master's comprehensive examination. The fields must be one European (ancient, medieval, modern European, or British) and one American (United States or Latin-American) history.

Requirements for the Doctor's Degree

Candidates for the degree of Doctor of Philosophy in history must meet the general requirements set forth on pages 71-74. 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 French and German, and an acquaintance with general history, are expected of all candidates. The candidates are also required to take at least two one-year seminars in history.

A. Examinations

1. *Foreign Language Examinations.* A reading knowledge of two languages is required of every candidate, one of which must be French or German, the other of which may not be a second Romance or Germanic language. This requirement should be met before the candidate enters the second year of graduate study. Knowledge of other languages which may be required of the student in the course of his study may not be substituted for a reading knowledge of these two languages.

2. *Qualifying Examinations.* Before he is admitted to candidacy the student must pass a series of qualifying examinations, both written and oral. In these examinations he is expected to show an adequate grasp of the wider fields of historical knowledge and an ability to correlate historical data pertaining to them and to explain their significance. These examinations will be designed to test not merely factual knowledge but 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 economic, religious, and other historical aspects.

The candidate must offer himself for examination in four history fields chosen from the list below and in an approved field in anthropology, economics, geography, language and literature, philosophy, political science, or other allied subject. This allied field should be comparable in size and scope to the history fields listed below. The candidate should select the four history

fields with consideration to both geographic and chronological distribution and must receive the department's approval of all five fields not less than six months before his qualifying examinations are taken. To this end he should seek a conference with the departmental guidance committee early in his graduate work.

Greek History	England, 1485-1763
Roman History	England since 1763
The Early Middle Ages, 300-1100	The British Empire
The Later Middle Ages, 1050-1500	The Far East, 1500-1850
Byzantine History	The Far East since 1800
The Near East, 500-1500	United States, 1492-1800
The Near East since 1500	United States since 1763
History of Science to 1600	The American West
History of Science since 1600	Hispanic America, 1492-1830
Europe, 1454-1789	Hispanic America since 1759
Europe since 1740	

The qualifying examinations will include a three-hour written examination in each of the five fields offered by the candidate. At the discretion of his doctoral committee, however, the candidate may be excused from the written examination in one or two fields if he has a satisfactory record of course work therein. The oral examination will cover all five fields and will normally be held shortly after the written examinations, but at the discretion of the doctoral committee it may be held as late as six months after the written examinations. Both the written and the oral examinations are the responsibility of the committee as a whole. A candidate in the history of science program must select three of the fields listed above and two of the following: history of biomedical science, a science, or an allied field.

LOWER DIVISION COURSES

1A-1B. Introduction to Western Civilization. (3-3) Yr.

Mr. Hitchcock, Mr. Weber

Lecture, two hours, discussion section, two hours.

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.

5A-5B. History of England and Greater Britain. (3-3) Yr. Mr. Howard

Lecture, two hours; quiz section, one hour.

The political, economic, and cultural development of the British Isles and the Empire from the earliest times to the present.

†6A-6B. History of American Civilization. (3-3) Yr. Mr. Meyer, Mr. Smith

Lecture, three hours; quiz, one hour.

A survey of American civilization and culture with emphasis upon the central ideas found embedded in the fine arts, science, philosophy, religion, and law. Guest lecturers from outside the department will be scheduled.

†7A-7B. Political and Social History of the United States. (3-3) Yr.

Beginning either semester. Mr. Dyer, Mr. Mowry, Mr. Salouts, Mr. Perkins
Lecture, two hours; quiz section, one hour.

This course is designed for students in the social sciences who want a thorough survey of the political and social development of the United States as a background for their major work and for students in other departments who desire to increase their understanding of the rise of American civilization.

† Credit will not be given for both 6A and 7A or for both 6B and 7B.

8A-8B. History of the Americas. (3-3) Yr.

Mr. Burr

Lecture, two hours; quiz section, one hour.

A study of the development of the Western Hemisphere from the discovery to the present. Attention in the first semester to exploration and settlement, colonial growth, imperial rivalries, and the achievement of independence. In the second semester, emphasis upon the evolution of the American nations and people in the nineteenth and twentieth centuries.

UPPER DIVISION COURSES

The prerequisite for course 101 is upper division standing. The prerequisite for all other upper division courses is upper division standing and course 1A-1B, or 5A-5B, or 6A-6B, or 7A-7B, or 8A-8B, or other preparation satisfactory to the instructor.

101. Main Currents in American History. (2) I, II.

Mr. Meyer, Mr. Winter, Mr. Berwick

A one-semester survey of United States history, with emphasis upon the growth and development of a distinctive American culture. Not open to students who have credit for course 7A, 7B, or 6A, 6B, or 8B. Not to be counted toward the major.

111A-111B. History of the Ancient Mediterranean World. (3-3) Yr.

Mr. Brown, Mr. Chambers

A survey of the history of the ancient Mediterranean world from earliest times to the reign of Constantine. The work of the first semester ends with the death of Alexander.

112A-112B. History of Ancient Greece. (3-3) Yr.

Mr. Brown

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.

113A-113B. History of Rome. (3-3) Yr.

Mr. Chambers

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.

117A-117B. History of Ancient Egypt. (3-3) Yr.

Miss Lichtheim

117A. From early dynastic times to the end of the New Kingdom (ca. 3000 B.C. to 1000 B.C.). The rise of Pharaonic Egypt from tribal beginnings to leading power in the ancient Near East; its peaks of achievement in the Old, Middle, and New Kingdoms.

117B. From the end of the New Kingdom to the Arab conquest (1000 B.C. to 640 A.D.). Break-up of the homogeneous Pharaonic civilization; foreign invasions and occupations (Ethiopian, Assyrian, and Persian); Alexander the Great and the Hellenization of Egypt; the Graeco-Roman period bilingual culture; the rise of the Coptic church; Egypt under Byzantine rule.

121A. The Early Middle Ages. (3) I.

Mr. White

A survey of religious, intellectual, artistic, social, and economic changes in Europe from the decay of the Roman Empire until about 1050.

¹ Not to be given fall semester, 1961.

- 121B. The Later Middle Ages. (3) II.** Mr. White
A continuation of 121A, from 1050 to about 1450, with the added consideration of the new scientific movements.
- 123A-123B. Byzantine History. (3-3) Yr.** Mr. Vryonis
This course stresses the political, socioeconomic, 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.
- 124. The History of Technology to 1650. (3).** Mr. White
A general survey of the history of technology with some consideration of its changing social, economic, and cultural relationships.
- 125A-125B. History of Science. (3-3) Yr.** _____
Scientists and scientific thought in relationship to societies from Aristotle to the present.
- 126. History of Cosmological Thought. (3) I.** _____
Discussion, based on a reading of the sources, of selected scientific cosmological ideas from Aristotle to the present.
- 130. History of South Africa. (3) II.** Mr. Galbraith
Changing patterns of South African society from the arrival of the Dutch to the present.
- 134A-134B. Near and Middle East from 600 A.D. (3-3) Yr.** Mr. von Grunebaum
134A. The rise of Islam, the Caliphate, the Crusades, the Turkish and Mongol invasions; the rise of the Ottoman Turks.
134B. The Ottoman and Persian empires, decay and westernization, internal change and reform.
- 135. Introduction to Islamic Culture. (2) I.** Mr. von Grunebaum
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.
- 136. Islamic Institutions and Political Ideas. (2) II.** Mr. von Grunebaum
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.
- 137. Near East in the Nineteenth and Twentieth Centuries. (3) I.** Mr. von Grunebaum
The decay of the Islamic empires and the expansion of Europe, the Eastern Question, westernization and the rise of national states in the Near East.
- 138A-138B. Jewish History. (3-3) Yr.** Mr. Greenfield
Jewish history from Biblical times to our period.
- 139. History of the Turks to 1687. (3) I, II.** Mr. Vryonis
A survey of the society and government of the Turks from earliest times down to 1687.
- 140A-140B. History of Modern Europe. 1500-1914. (3-3) Yr.** Mr. Anderson
A general survey of European history, 1500-1914.
- 141A-141B. Europe in Transition, 1450-1610. (3-3) Yr.** Mr. Hitchcock
141A. The Renaissance.
141B. The Reformation.

141C. Europe in the Seventeenth Century, 1610-1715. (3) I. Mr. Lossky
European culture, institutions, and politics in the seventeenth century.

141D. Europe in the Eighteenth Century. (3) II. Mr. Lossky
European culture, institutions, and politics from the death of Louis XIV to 1789.

***141E. Europe, 1789-1815: The French Revolution and the Napoleonic Empire. (3) I.** Mr. Weber

The First Republic and the First Empire: their origins, rise, decline, and fall; their effects in France and Europe.

141F. Europe, 1815-1870. (3) I. Mr. King

The history of Europe from the decline of Napoleon to the end of the Franco-Prussian War; a survey covering international relations and internal conditions of the major European countries, with special stress on the rise of nationalism and liberalism.

141G. Europe, 1870-1914. (3) II. Mr. King

The history of Europe from end of the Franco-Prussian War to eve of First World War. A survey covering internal conditions of major European countries, nationalism, neo-imperialism, the rise of socialism, spread of industrial revolution, and diplomatic background of First World War.

141H. Europe Since 1914. (3) II. Mr. King

Political, economic, and military developments since the outbreak of the First World War.

142A-142B. European Diplomacy and Imperialism. (3-3) Yr. Mr. Hitchcock

A study of European international rivalries primarily in the nineteenth and twentieth centuries.

142C. Social History of Europe in the Nineteenth Century. (3) I. Mr. Anderson

Impact of the rise of industrialism upon the social structure and ideals of Europe; the conflict between the new social forces and those of the Old Regime; emphasis upon the nineteenth century.

142D. Social History of Europe in the Twentieth Century. (3) II. Mr. Anderson

Impact of war, revolution and the continued expansion of industrialism and of knowledge upon the structure, relations and ideals of the social groups.

142E-142F. Cultural and Intellectual History of Europe in Nineteenth and Twentieth Centuries. (3-3) Yr. Mr. Weber

Climates of taste and climates of opinion. The art, thought, and manners of the time in an historical context.

143A. France from 1500 to 1789. (3) I. Mr. Lossky

The *ancien régime* in France from the end of the fifteenth century to its dissolution in the eighteenth century: its institutions, society, and culture.

143D. France Since the Founding of the Third Republic. (3) I. Mr. King
(Former number, 149C.)

An intensive study of modern France, emphasizing the nation's search for political and economic stability and for military security in the twentieth century. Recommended preparation: course 1A-1B.

* Not to be given, 1961-1962.

144A. Germany, 1496 to 1806. (3) I. Mr. Hitchcock, Mr. Anderson

The Holy Roman Empire from the Renaissance to the French revolutionary era. Rise of the German territorial states, especially Prussia. Institutional and cultural developments. Background and origins of modern German nationalism.

144B. Germany Since 1806. (3) II. Mr. Anderson

A political, economic, social and cultural analysis of the period of national unification, the Bismarckian Reich, the reign of William II, and the wars and revolutions of the twentieth century.

145. The Netherlands in European Affairs, 1555-1830. (3) II. Mr. Lossky

Emphasis will be on the republican institutions of the Dutch and on the leading role of the Dutch in international affairs, maritime ventures, and the cultural and economic life of Europe, especially in the seventeenth century.

146A-146B. History of Russia. (3-3) Yr. Mr. Fisher

146A. History of Russia to 1801. Political, economic, and social developments and the foreign relations of Russia in the Kievan, Muscovite, and imperial periods.

146B. History of Russia, 1801-1917. The agrarian problem, the great reforms, the radical movement, the revolution of 1905; Russia in international politics, especially the Near Eastern question.

146C. The Soviet Union. (3) II. Mr. Fisher

Internal developments and foreign affairs of the Soviet Union from the revolutions of 1917 to the present.

150. Modern British Biography. (3) II. Mr. Howard

A study of the lives of leaders of Britain, the development of biographical technique and the place of biography in the writing of history.

151A-151B. History of the British People in Modern Times. (3-3) Yr.

A study of the main currents in the thought, culture, and social progress of the British people from Henry VIII to the death of Victoria.

152. Constitutional History of England. (3) II. Mr. Howard

Prerequisite: course 5A-5B or consent of the instructor.

A study of the institutions, social and political forces, and ideas which contributed to the development of the British constitution, especially during the formative period before the Glorious Revolution.

153. Renaissance England. (3) I. Mr. Curtis

A study of the intellectual forces and the social, economic, and political conditions in England in the age of the Renaissance. The Reformation, the Elizabethan era, and the Puritan revolution will receive attention.

154. Great Britain in the Seventeenth Century. (3) II.

A study of the intellectual forces and the social, economic, and political conditions in England during the seventeenth century.

155. Great Britain in the Eighteenth Century (1688-1783). (3) I.

The structure of the British government, society, and economic life under the Hanoverians.

156. Great Britain in the Nineteenth Century. (3) I.

British culture, institutions, and politics in the Great Century from the French Revolution to the death of Victoria.

157. Great Britain in the Twentieth Century. (3) II.

The changing British scene in war and peace from the accession of Edward VII to the present.

158A-158B. The British Empire Since 1783. (3-3) Yr. Mr. Galbraith

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. The work of the first semester covers to 1900.

159. History of Canada. (3) I. Mr. Galbraith

A survey of the growth of Canada into a modern state from its beginnings under the French and British colonial empires.

160. History of the Caribbean. (3) I.**162A-162B. Latin America from the Discovery to the Present. (3-3) Yr.**

Mr. Burr

166. History of Mexico. (3) I. Mr. Burr

The development of the viceroyalty of New Spain and the Mexican nation, with emphasis upon the problems of the period since Díaz.

169. History of Inter-American Relations. (3) I. Mr. Burr

Emphasizes the historical development of a distinctive system of international relations among the nations of the Western Hemisphere, from 1808 to the present.

171A. The United States: Colonial Period. (3) I. Mr. Smith

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.

171B. The United States: The New Nation. (3) II. Mr. Smith, Mr. Berwick

Political and social history of the American nation from 1750 to 1801, with emphasis upon the rise of the New West; revolution, confederation, and union; the fathers of the Constitution.

172. The United States: Jeffersonianism and Jacksonianism. (3) II.

Mr. Perkins, Mr. Berwick

Political and social history of the United States from 1801 to 1850, with emphasis on the Jeffersonian and Jacksonian movements, western settlement and territorial expansion, economic developments, and the roots of inter-sectional conflict.

173A. The United States: Civil War and Reconstruction. (3) I. Mr. Dyer

The topics studied will include: the rise of sectionalism, the anti-slavery crusade; the formation of the Confederate States; the war years; political and social reconstruction.

173H. The United States, 1875-1900. (3) II. Mr. Hyman

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.

174A-174B. The United States: The Twentieth Century. (3-3) Yr.

Mr. Mowry

The political, economic, intellectual, and cultural aspects of American democracy in the twentieth century.

- 175. History of American Capitalism Since the Civil War. (3) I.** Mr. Saloutos
 Recommended preparation: courses 7A-7B and economics 13.
 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.
- 176. American Reform Movements and Reformers. (3) II.** Mr. Saloutos
 A study of educational, monetary, labor, and agrarian reforms advocated in the nineteenth and twentieth centuries.
- 177. Intellectual History of the United States. (3) I.** Mr. Meyer
 The principal systems 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.
- 178A-178B. American Diplomatic History. (3-3) Yr.** Mr. Perkins
 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 twentieth-century world.
- 179. Constitutional History of the United States. (3) I and II.** Mr. Dyer
 Prerequisite: 6 units of United States history or government, or consent of the instructor.
 A study of the Federal Constitution from the historical point of view, with emphasis upon the constitutional convention and the constitutional controversies of the nineteenth century.
- 180. Social History of the United States Since 1800. (3) II.** Mr. Meyer
 An historical study of the character and values of the American people as affected by regions, classes, and economic change; with particular attention to the cultural roles of women, businessmen, Negroes, and ethnic groups.
- 181. The American West. (3) I.** Mr. Caughey
 Recommended preparation: course 8A-8B.
 A study of the West as frontier and as region, in transit from the Atlantic seaboard to the Pacific, and from the seventeenth century to the present.
- 182. The Social History of American Art. (3) II.** Mr. Winter
 A study of the relationship of painting, sculpture, architecture, music, and, to a limited degree, of literature to the American culture.
- 188. History of California. (3) II.** Mr. Caughey
 Recommended preparation: course 8A-8B.
 The economic, social, intellectual, and political development of California from the earliest times to the present.
- 191A. History of the Far East. (3) I.** Mr. Han, Mr. Wilson, Mr. Wolpert
 China and Japan from the earliest times to the beginning of Westernization.
- 191B. History of the Far East. (3) II.** Mr. Han, Mr. Wilson
 Transformation of the Far East in modern times under the impact of Western civilization.
- 192A-192B. The Twentieth-Century Far East. (2-2) Yr.** Mr. Han
 A study of the social, economic, and political development of the Far Eastern countries since 1898, with special attention to the changes in ideas and institutions after a century of Western impact.

- 193. Diplomatic History of the Far East. (3) II.** Mr. Wilson
The role of 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.
- 194A-194B. History of Modern China. (3-3) Yr.** Mr. Han
Final consolidation of the Tunghus peoples in Manchuria and their rule over China; social, economic, political, and literary achievements; movements for modernization toward the end of the nineteenth century; the founding of the Republic.
- 195A-195B. History of Modern Japan. (2-2) Yr.** Mr. Wilson
The political, economic, and cultural development of Japan since the establishment of the Tokugawa Shogunate in 1603.
- 196A. Early History of India. (3) I.** Mr. Wolpert
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.
- 196B. Recent History of India and Pakistan. (3) II.** Mr. Wolpert
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.
- 196C. History of Southeast Asia. (3) II.** Mr. Wolpert
The history and culture of modern Burma, Thailand, Laos, Cambodia, Vietnam, Malaya, Indonesia, and the Philippines from earliest times. Emphasis on the expansion of European influence, and the growth of Nationalism in Burma, Indonesia, Indo-China, and the Philippines.
- 197. History and Historians. (3) I, II.** The Staff
Required of all history majors in their junior year.
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.
- 199. Special Studies in History. (3) I, II.** The Staff
An introduction to historical method, followed by individual investigation of selected topics.
To be taken by all history majors in their senior year in a field for which specific preparation has been made in the junior year. Assignment to sections is made only by the departmental coordinator for registration in this course. Sections 1, 2, 9, 10, and 12 are rarely given more than once each year.
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|--|----------------------------|
| Section 1. Ancient History. | Mr. Brown, Mr. Chambers |
| Section 2. Medieval History. | Mr. White |
| Section 3. European History. | Mr. Hitchcock |
| Section 4. European History. | Mr. King |
| Section 5. English History. | Mr. Howard, Mr. Curtis |
| Section 6. American Colonial History. | Mr. Berwick, Mr. Smith |
| Section 7. United States History. | Mr. Perkins |
| Section 8. Recent United States History. | Mr. Meyer |
| Section 9. Hispanic-American History. | Mr. Burr |
| Section 10. Pacific Coast History. | Mr. Caughey |
| Section 11. The British Empire. | Mr. Galbraith, Mr. Wolpert |
| Section 12. The Far East. | Mr. Han, Mr. Wilson |

GRADUATE COURSES

- 202. Advanced Historiography.** (3) I, II. The Staff
 A. Ancient and Medieval.
 B. Modern European.
 C. British.
 D. American.
 E. Latin American.
 F. The Near East.
- 215A-215B. Westernization in the Arabic-Speaking World.** (2-2) Yr.
 Prerequisite: History 134A-134B or equivalent. Mr. von Grunebaum
 Impact of the West on the Arabic-speaking world including North Africa since 1800 A.D. and the reactions of the various sections of the Arab world, especially in their religious, social, and cultural aspects.
- 251A-251B. Seminar in Ancient History.** (3-3) Yr. Mr. Brown
- 254A-254B. Seminar in Medieval History.** (3-3) Yr. Mr. White
- 255A-255B. Seminar in the History of Science.** (3-3) Yr. _____
 Studies in the history of science.
- 256A-256B. Seminar in Early Modern European History.** (3-3) Yr. Mr. Lossky
 Studies in European political and cultural history of the seventeenth and eighteenth centuries.
- 257A-257B. Seminar in Late Modern European History.** (3-3) Yr. Mr. King
 Studies in continental European history since the earlier nineteenth century.
- 258A-258B. Seminar in Modern European History.** (3-3) Yr. Mr. Anderson
 Studies in European political and cultural history of the nineteenth and twentieth centuries.
- 259A-259B. Seminar in Slavic History.** (3-3) Yr. Mr. Fisher
 Prerequisite: the student should have a reading knowledge of at least one European language.
 Studies in the history of Russia and other Slavic countries.
- 260A-260B. Seminar in English History.** (3-3) Yr. Mr. Howard
 Studies in the later Stuart and early eighteenth-century periods.
- 261A-261B. Seminar in British Empire History.** (3-3) Yr. Mr. Galbraith
 Studies in nineteenth- and twentieth-century imperial history.
- 262A-262B. Seminar in English History.** (3-3) Yr. Mr. Curtis
 Studies in Tudor and early Stuart England.
- 265A-265B. Seminar in Hispanic-American History.** (3-3) Yr. Mr. Burr
 Studies in the colonial and early national periods.
- 268A-268B. Seminar in Near Eastern History.** (3-3) Yr. Mr. von Grunebaum
 Studies in the history of the Near East.
- 269A-269B. Seminar in United States History.** (3-3) Yr. Mr. Smith
 Studies in the colonial period.
- 270A-270B. Seminar in United States History.** (3-3) Yr. Mr. Mowry
 Studies in the recent United States and the recent American West.

- 271A-271B. **Seminar in United States History.** (3-3) Yr. Mr. Saloutos
Studies in recent United States history.
- 272A-272B. **Seminar in United States History.** (3-3) Yr. Mr. Dyer
Studies in political and social problems of the middle nineteenth century.
- 274A-274B. **Seminar in American History.** (3-3) Yr. Mr. Caughey
Studies of the American West.
- 279A-279B. **Seminar in Far Eastern History.** (3-3) Yr. Mr. Han
290. **Research in History.** (1 to 6) I, II. The Staff
Open only to students who have passed the qualifying examination for the doctor's degree.
298. **Directed Studies.** (1-3) I, II. The Staff

HOME ECONOMICS

(Department Office, 1209 Home Economics Building)

Dorothy Leahy, Ed.D., *Professor of Education.*

Helen B. Thompson, Ph.D., *Professor of Home Economics, Emeritus.*

Frances Obst, Ed.D., *Associate Professor of Home Economics.*

Marguerite G. Mallon, Ph.D., *Associate Professor of Home Economics, Emeritus.*

Olive Hall, Ph.D., *Assistant Professor of Education.*

Clarice H. Lindsey, M.S., *Assistant Professor of Home Economics.*

Theodora Corey, M.A., *Associate in Home Economics.*

Mary Rogers, M.S., *Associate in Home Economics.*

The degree of Bachelor of Science with a major in home economics will not be awarded after June 30, 1965.

The specializations in clothing, textiles, and related arts; food technology; and general home economics are to be discontinued and new students will not be admitted to these majors after June 30, 1961. Continuing, reëntering and transfer students in these majors may proceed toward the bachelor's degree as indicated below, and should consult their advisers or the Home Economics office as to their programs.

The specialization in nutrition has become a major in the School of Public Health. Students interested in this major should consult the School of Public Health section of this bulletin, page 63.

The specialization in home economics teacher education will be continued until June 30, 1965, as an interdepartmental curriculum in the College of Letters and Science. See page 12 of this bulletin for the curriculum course requirements. New students will be admitted to this curriculum only during the academic year of 1961-1962.

Continuing, reëntering and transfer students meeting the College of Letters and Science requirements may proceed toward the bachelor's degree as follows: students registering in the fall semester of the academic year 1962-1963 with 30 units or more of advanced standing; 1963-1964, 55 units or more; and 1964-1965, with 85 units or more.

Students meeting the requirements of the former College of Applied Arts (now the College of Fine Arts) may register in all specializations according to the following schedule:

Transfer students may register during the academic year 1961-1962 with 55 or more acceptable units of advanced standing; 1962-1963, 85 or more units.

Continuing students may register in the fall semester, 1961, with 40 or more units in the former College of Applied Arts.

Reëntering students, formerly in the College of Applied Arts, may register during the academic year 1961-1962 with 55 or more units; 1962-1963, 85 or more units.

Letters and Science List.—Course 170 is included in the Letters and Science List of Courses. For regulations covering this list see page 2.

Requirements for the Teaching Credentials

Consult the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES, for the General Elementary Secondary and Junior College Credential requirements.

Requirements for the Master's Degree

Requirements for the degree of Master of Science in home economics may be met by Plan I or by Plan II. This degree will not be awarded after June 30, 1965. New graduate students in home economics will not be permitted to enter this program after June 30, 1961. Continuing and reëntering students should contact the Home Economics office for further information about their programs. For graduate division requirements, see pages 69-71. A reading knowledge of a foreign language is not required. In addition to the general scholarship requirements for graduate status, the candidate for the degree must present an undergraduate major substantially equivalent to that offered at University of California, Los Angeles. If the student is deficient in this prerequisite, he must fulfill it by work taken prior to and in preparation for the 20- or 24-unit requirement for the master's degree.

LOWER DIVISION COURSES

15. Selection of House Furnishings. (3) I, II. Miss Obst
Lecture, two hours; laboratory, four hours. Prerequisite: Art 30A recommended.

A study of floor plans, furniture selection and arrangement, suitable materials for floor coverings, wall decorations, curtains, draperies, and upholstery, table linens, china, glass, and silver.

16. Introduction to Clothing and Textiles. (3) I, II. Mrs. Lindsey
Lecture, one hour; laboratory, six hours.

A study of the fundamental principles of clothing construction including a study of textiles in relation to their selection and use.

UPPER DIVISION COURSES

135. Laboratory in Child Study. (2) I, II. Mrs. Rogers
Prerequisite: Psychology 112 or consent of the instructor.

Further study of the growth and development of children, with emphasis on the preschool period. Observation and participation in the nursery school with discussion of nursery school theory and practice.

145. Home Management Problems. (3) I, II. Miss Obst
Lecture, two hours; laboratory and demonstration, two hours. Prerequisite: consent of the instructor.

A study of the management of the various resources available to the family with a view to promoting family well-being and satisfaction.

146. Home Management Laboratory. (2) I, II. _____
Laboratory: six hours. Prerequisite or concurrent: course 145, Nutritional Science 11.

Experience in group living for five weeks in the home management house with the guidance of an instructor.

155. House Planning and Furnishings. (2) II. Miss Obst
Lecture, one hour; laboratory, three hours. Prerequisite: course 15, Art 30A.

Planning the home with reference to livability, selection of furnishings and equipment, arrangements for minimizing work, and adaptation to the needs of families of varying interests and incomes.

***160. Fundamentals of Textiles. (2) I, II.** Mrs. Lindsey

The study of textile fabrics, fibers, and the processes used in their manufacture as a basis for selection and use. Not open to those who have taken course 16.

161. Decorative Textiles. (2) I, II. Miss Obst
Prerequisite: course 16 or 160.

Studies in the appreciation of the construction and historical background of woven, printed, and embroidered textiles; handmade laces; the damasks, brocades, and prints of China, Persia, and India; French tapestries; oriental rugs; French and English prints, and early American textiles.

170. History and Development of the Clothing Industry. (3) I, II.

Mrs. Lindsey
A study of the growth, location, influences of technological advances, designers, legislation, organizations, publications, fashions, and problems of production, promotion, and distribution of ready-to-wear upon the clothing and textile industry.

172. Advanced Clothing. (3) I, II. Miss Corey, Mrs. Lindsey
Lecture, one hour; laboratory, six hours. Prerequisite: course 16.

Problems of clothing construction, including the adaptation of commercial patterns and the selection, care, and use of equipment.

175. Tailoring Problems. (3) I, II. Mrs. Lindsey
Lecture, two hours; laboratory, four hours. Prerequisite: course 172.

The design, fashion, construction, and economic factors involved in selecting and in making tailored garments.

176. Advanced Dress Design. (3) I, II. Miss Corey
Lecture, two hours; laboratory, four hours. Prerequisite: course 172.

Creation of original designs through French draping and flat pattern. Selection and manipulation of fabrics.

177A-177B. Pattern Analysis. (3-3) Yr. Miss Corey
Lecture, two hours; laboratory, four hours. Prerequisite: course 176A.

A study of pattern drafting and grading in relation to the problem of design, with consideration of personal and industrial needs. Standardization of size and relationship to problems of production and consumption.

181. Problems in Home Economics. (2) I, II. Miss Leahy
Prerequisite: course 370.

A study of special problems in the teaching of homemaking selected in accordance with the needs of the student. Emphasis is placed on the contribution of homemaking to school and community life.

199. Special Studies in Home Economics. (1-3) I, II. The Staff
Prerequisite: senior standing and consent of the instructor.

GRADUATE COURSES

229. Methods of Research in Home Economics. (2) I, II. Miss Hall
A study of the methods of research applicable to the various areas of home

* Not to be given, 1961-1962.

economics. Individual guidance in research in a selected problem. Assistance in the statistical treatment of data.

271. Seminar in Home Economics Education. (2) I, II. Miss Hall
Review of recent and current developments in the teaching of home economics.

272. Seminar in the Supervision of Home Economics. (2) II. Miss Leahy
Prerequisite: teaching experience.
Individual investigation of the nature and function of supervision of home economics at all school levels.

273. Seminar in the Organization and Administration of Home Economics
(2) I. Miss Leahy
A review of the literature, and intensive individual study of problems concerned with the organization and administration of home economics at all school levels.

282A-282B. Selected Problems. (2-4; 2-4) Yr. The Staff
Laboratory or field investigation in a specialized area of home economics.

PROFESSIONAL COURSE IN METHOD

370. Principles of Home Economics Teaching. (3) I, II. Miss Leahy
Prerequisite: 12 units of upper division course work in home economics.
A survey and evaluation of methods and materials used in teaching home-making in the secondary school.

HORTICULTURAL SCIENCE

(Department Office, 190 Physics-Biology Building)

Jacob B. Biale, Ph.D., *Professor of Horticultural Science.*
Sidney H. Cameron, Ph.D., *Professor of Horticultural Science.*
William H. Chandler, Ph.D., *Professor of Horticulture, Emeritus.*
Robert W. Hodgson, M.S., *Professor of Subtropical Horticulture, Emeritus.*
George G. Laties, Ph.D., *Associate Professor of Horticultural Science.*
Arthur Wallace, Ph.D., *Associate Professor of Horticultural Science.*
———, *Assistant Professor of Horticultural Science.*
Leland M. Shannon, Ph.D., *Assistant Professor of Horticultural Science.*

Preparation for the Major.—Required courses, or their equivalent: Chemistry 1A, 1B, 8; Botany 1, 107. Recommended courses, or their equivalent: Irrigation and Soil Science 101; Zoology 150.

The Major.—Twelve units of upper division courses in the major, which should normally include Horticultural Science 101 and 110.

Graduate Study.—Graduate work in horticultural science is offered as plant science. See pages 391 and 466 for description.

UPPER DIVISION COURSES

***101. Citriculture.** (4) II. Mr. Shannon
Lecture, three hours; laboratory, three hours; four or five Saturday field trips. Prerequisite: course 2 or the equivalent.

The characteristics of the citrus fruits and their responses to environmental influences and cultural practices; the economics of the citrus fruit industry.

* Not to be given, 1961-1962.

***102. Subtropical Fruits Other Than Citrus. (4) I.**

Lecture, three hours; laboratory, three hours; four or five Saturday field trips. Prerequisite: course 2 or the equivalent.

A survey of the knowledge concerning the requirements and responses of the subtropical fruit plants other than *Citrus*; the economics of their industries. The fruits considered include the walnut, pecan, almond, fig, olive, avocado, date, oriental persimmon, and certain others grown in California.

110. Plant Propagation. (3) II.

Mr. Cameron

Lecture, one hour; laboratory, six hours. Prerequisite: Botany 1 or the equivalent. Recommended: Botany 6 and 107 (may be taken concurrently).

Principles and practices in plant propagation.

111. Plant Metabolism. (2) I.

Mr. Biale, Mr. Laties

Lecture-discussion, two hours. Prerequisite: Chemistry 8 or the equivalent. Biochemical approach to major plant processes; metabolic pathways; formation and utilization of energy; composition and enzymatic reactions of cellular constituents.

***113. Fruit Physiology and Storage Problems. (2) I.**

Mr. Biale

Fruit morphogenesis; physiological, chemical and enzymatic changes during development and maturation; respiratory and fermentative processes; senescence as a general biological phenomenon.

142. Physiology of Fruit Trees. (3) I.

Mr. Wallace

Lecture, two hours; laboratory-demonstration, three hours. Prerequisite: consent of the instructor.

A discussion, demonstration, and laboratory study of tree growth, flowering, fruiting, nutrition, water relations, rootstock-scion relations, translocation, metabolism, and responses to environment and management practices.

199. Special Studies. (2-4) I, II.

The Staff

Prerequisite: senior standing and consent of the instructor.

GRADUATE COURSES

240. Horticultural Experimentation. (3) II.

Mr. Shannon

Lecture and discussion, three hours. Prerequisite: graduate standing and consent of the instructor.

A critical review and analysis of horticultural research in selected fields.

255A-255B. Seminar in Horticultural Science. (2-2) Yr.

The Staff

281A-281B. Research in Subtropical Horticulture. (2-6; 2-6) Yr. The Staff**HORTICULTURE**

For courses in horticulture, see under Floriculture and Oriental Horticulture, page 222, and Horticultural Science, page 269.

HUMANITIES

Pier-Maria Pasinetti, Ph.D., *Professor of Italian.*

Bonnie Thoman Culotta, M.A., *Assistant in the Humanities.*

Letters and Science List.—Course 1A-1B is included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

* Not to be given, 1961-1962.

1A-1B. World Literature. (3-3) Yr.

Mr. Pasinetti

A course in world literature for the general student. Recommended as a course to satisfy requirement (G) (1) in the College of Letters and Science.

RELATED COURSE IN ANOTHER DEPARTMENT

Integrated Arts 1A-1B. Man's Creative Experience in the Arts. (3-3)

INFECTIOUS DISEASES

(Department Office, 33-241 Medical Center)

Ruth A. Boak, M.D., *Professor of Infectious Diseases and Pediatrics.*

Charles M. Carpenter, M.D., *Professor of Infectious Diseases (Chairman of the Department).*

John F. Kessel, Ph.D., *Professor of Infectious Diseases (Parasitology and Tropic Diseases).*

A. F. Rasmussen, Jr., M.D., *Professor of Infectious Diseases (Virology).*

David L. McVickar, M.D., *Associate Professor of Infectious Diseases (Mycology).*

Henry E. Weimer, Ph.D., *Associate Professor of Infectious Diseases (Immunochemistry).*

William H. Hildemann, Ph.D., *Assistant Professor of Infectious Diseases (Virology).*

Dexter H. Howard, Ph.D., *Assistant Professor of Infectious Diseases (Mycology).*

James N. Miller, Ph.D., *Assistant Professor of Infectious Diseases (Bacteriology).*

Margret I. Sellers, Ph.D., *Assistant Professor of Infectious Diseases (Virology).*

Jerrold A. Turner, M.D., *Assistant Professor of Infectious Diseases (Parasitology and Tropic Diseases).*

Marietta Voge, Ph.D., *Assistant Professor of Infectious Diseases (Parasitology and Tropic Diseases).*

The Department of Infectious Diseases offers advanced study, leading to the M.S. and Ph.D. degrees in infectious diseases. The department is composed of the divisions of Bacteriology, Immunochemistry, Microbiologic Cytology, Mycology, Parasitology and Tropic Diseases, and Virology. The graduate program, however, is designed for the student whose primary interest is in the field of infectious agents as related to medicine and host-parasite relations, rather than for students seeking advanced training in one of the specialized fields.

Admission to Graduate Status

For admission to graduate status, a student must meet the requirement of the Graduate Division, and must hold an approved bachelor's degree with a major in a field related to infectious diseases. Enrollment in the department is limited, and it will not be possible to accept a number of applicants who might qualify for admission were the laboratory facilities greater. Candidates will be selected on the basis of the following considerations:

1. Undergraduate and, where applicable, graduate scholastic record.
2. The results of an interview with members of the department.
3. Evaluation of the applicant's scientific potential and character by writers of letters of recommendation.

Requirements for the Master's Degree

1. The general Graduate Division requirements (pages 69-71).
2. Chemistry 108A and 108B, Infectious Diseases 201.
3. A thesis (Plan I).

Requirements for the Doctor's Degree

1. The general Graduate Division requirements (pages 71-74).
2. Infectious Diseases 201, Microscopic Anatomy 101 (Histology), Pathology 231.

In addition to the formal requirements stated above, every student must pass, by the end of his third semester in graduate status, a written departmental examination testing his general knowledge in the field of infectious diseases.

GRADUATE COURSES

201. Infectious Diseases. (10) I. Mr. Carpenter and the Staff

Lectures and laboratory. Identification of the infectious agents of man usually presented in medical bacteriology, mycology, parasitology and tropic diseases, and virology, but with special emphasis on host-parasite relationships including immunity, epidemiology, prevention, and laboratory diagnosis.

208. Infectious Diseases (Medical Virology). (4) II. Mr. Rasmussen

A study of viruses and rickettsiae causing human disease. It includes an introduction to methodology; virus-host cell relationships in representative experimental infections in animals, embryonated eggs and tissue cultures; pathogenesis, principles of immunity applicable to the control of disease in man.

209. Infectious Diseases (Principles of Immunochemistry). (4) I.

Mr. Weimer
A study of the chemistry of antigens, antibodies, and complement, and the mechanism of their interaction. The methods for their detection and measurement, as well as of the chemical basis of immunity and resistance to disease is considered. Techniques and methods involved in the study of antigen-antibody reactions are presented with emphasis on the quantitative aspects of serologic reactions.

251A-251B. Seminar in Infectious Diseases. (1-5) Yr.

Mr. Carpenter and the Staff
Consideration of the history of infectious diseases, their host-parasite relationships, etiology, pathogenesis, epidemiology, diagnosis, and immunity.

252. Seminar in Medical Virology. (1) II.

Miss Sellers
Review of current literature in the field of medical virology emphasizing fundamental host-cell interrelationships in human disease of viral origin. Selected topics will be discussed and results interpreted; conclusions and experimental methods will be evaluated.

253. Seminar in Medical Parasitology. (1) II.

Mr. Kessel, Mrs. Voge
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 standpoints of experimental methods, results, their interpretation and their evaluation.

254. Seminar in Immunogenetics. (1) II.

Mr. Hildemann
Review of current and recent 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.

291A-291B. Research in Infectious Diseases. (2-5) Yr.

Mr. Carpenter and the Staff
A limited number of qualified graduate students may be admitted with the approval of the staff of the Department of Infectious Diseases.

RELATED COURSES IN OTHER DEPARTMENTS

Anatomy 101. Microscopic Anatomy. (5) I.	Mr. Pease, Mr. Green
Bacteriology 103. Advanced Bacteriology. (5) I.	Mr. Pickett
Bacteriology 105. Serology. (4) II.	Mrs. Ball
Bacteriology 106. Metabolism of Bacteria. (2) I.	Mr. Jann
Bacteriology 106C. Metabolism of Bacteria Laboratory. (2) I.	Mr. Jann
Bacteriology 107. Public Health Bacteriology. (4) I.	Mrs. Ball
Bacteriology 108. Hematology. (2) II.	Mr. Fishkin
Bacteriology 120. Bacterial Genetics. (2) II.	Mr. Romig
Bacteriology 120C. Bacterial Genetics Laboratory. (2) II.	Mr. Romig
Bacteriology 130. Immunochemistry. (4) II.	Mr. Nelson
Bacteriology 199. Special Studies in Bacteriology. (2-5) I, II.	The Staff
Botany 126. Medical Mycology. (4) II.	Mr. Plunkett
Chemistry 107. Amino Acids and Proteins. (3) I.	Mr. Dunn
Chemistry 108A-108B. General Biochemistry. (3-3) Yr.	Mr. Atkinson, Mr. West
Chemistry 137. Chemistry of Bacterial Nutrition. (2) II.	Mr. Dunn
Chemistry 261. Seminar in Biochemistry. (1) I, II.	Mr. Dunn in charge
Microbiology 251A-251B. Seminar in Microbiology. (1-1) Yr.	Mrs. Ball, Mr. Ball, Mr. Plunkett
Pathology 231. Pathological Anatomy and Physiology. (10) I.	The Staff
Physiology 101. Mammalian Physiology. (8) II.	Mr. Field and Staff
Zoology 107. Microanatomy. (4) I.	Mr. Reeder
Zoology 110. Protozoology. (4) II.	Mr. Ball
Zoology 111. Parasitology. (2) I.	Mr. Ball
Zoology. 111C. Parasitology Laboratory. (2) I.	Mr. Ball
Zoology 151. Medical Entomology. (4) II.	Mr. Belkin

INTEGRATED ARTS

Letters and Science List.—Course 1A-1B is included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

1A-1B. Man's Creative Experience in the Arts. (3-3) Yr. Mr. Davidson

The most significant aspects of the arts through the ages, from primitive art to modern mass communication, literature excluded. A nontechnical presentation for the general student.

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.

Behavioral Sciences

Committee in charge: Jacob Marschak, Business Administration (Chairman); Norman H. Anderson, Psychology; Leo Breiman, Mathematics; George W. Brown, Engineering; Karl Brunner, Economics; Charles B. Tompkins, Mathematics.

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.

INTERNATIONAL RELATIONS

For requirements for the degree of Bachelor of Arts in International Relations see pages 1-6 and page 12 of this bulletin. For requirements for the degree of Master of Arts in International Relations see page 396.

IRRIGATION AND SOIL SCIENCE

(Department Office, 97 Physics-Biology Building)

David Appleman, Ph.D., *Professor of Plant Nutrition.*

Arthur F. Pillsbury, Engr., *Professor of Irrigation (Chairman of the Department).*

Owen R. Lunt, Ph.D., *Associate Professor of Soil Science.*

John Letey, Jr., Ph.D., *Assistant Professor of Soil Physics.*

Johann J. Oertli, Ph.D., *Assistant Professor of Soil Science.*

Completion of the curriculum in irrigation science is possible only on the Davis campus and for the soil science curriculum only on the Berkeley and Davis campuses. See the BULLETIN OF THE COLLEGE OF AGRICULTURE and consult the appropriate advisers.

Graduate Study.—Graduate work may be undertaken in aspects of irrigation and soil science that relate to plant science. See page 391 of this bulletin for description.

UPPER DIVISION COURSES

101. **Introduction to Water and Soil.** (4) I. Mr. Lunt, Mr. Pillsbury

Lecture, three hours; laboratory, three hours. Prerequisite: introductory college chemistry and physics.

Introduction to soil and water management, including soil morphology, soil physics, soil chemistry, soil-plant-water relations, irrigation practices and design, and reclamation.

*102. **The Soil as a Natural Resource.** (3) I.

Lecture, three hours. Prerequisite: Chemistry 1A or 2A.

Designed for students who desire a general knowledge of soils, soil resources and soil conservation. Cannot be used for credit in the soil science major.

* Not to be given, 1961-1962.

110A. The Soil as a Medium for Plant Growth. (3) II. Mr. Appleman
Lecture, three hours. Prerequisite: Chemistry 1A-1B and 8, or the equivalent.

Nutritional requirements of plants; studies of the absorption of mineral elements by plants, and related processes; chemical composition of soils; current views of the soil solution and the base exchange; factors determining productivity of soils; soil and plant interrelations.

199. Special Studies. (2-4) I, II. The Staff
Prerequisite: senior standing and consent of the instructor.

GRADUATE COURSE

280A-280B. Research in Irrigation and Soils. (2-6; 2-6) Yr.
The Staff (Mr. Pillsbury in charge)

ITALIAN

(Department Office, 342 Royce Hall)

Carlo L. Golino, Ph.D., *Professor of Italian (Chairman of the Department)*.

Pier-Maria Pasinetti, Ph.D., *Professor of Italian*.

Charles Speroni, Ph.D., *Professor of Italian*.

Dante Della Terza, Dottore in Lettere, *Assistant Professor of Italian*.

Giuseppe Velli, Dottore in Lettere, *Assistant Professor of Italian*.

Maria Simonelli-Sampoli, Dottore in Lettere, *Lecturer in Italian*.

Franca Schettino, M.A., *Associate in Italian*.

Althea Soli, M.A., *Associate in Italian*.

Bonnie Thoman Culotta, M.A., *Assistant in the Humanities*.

Letters and Science List.—All undergraduate courses in Italian are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

Preparation for the Major.—Italian 1, 2, 3, 4, 102A-102B, or the equivalent to be tested by examination; Latin 1 or two years of high school Latin. Recommended: History 1A-1B; Philosophy 6A-6B, and an additional foreign language.

The Major.—Twenty-four units of upper division courses, of which at least 20 must be in Italian. Four units may be taken in French, German, Greek, Latin, Portuguese, or Spanish literature.

As electives the department recommends courses in (1) European history, anthropology, geography, political institutions, and international relations, particularly as they relate to Italy; (2) English literature; (3) French, German, Greek, Latin, Portuguese, and Spanish language and literature.

Requirements for Admission to Graduate Status.—Students who have completed the undergraduate major in Italian, or the equivalent, will be recommended for graduate work in Italian provided they meet the general requirements for admission to regular graduate status.

Requirements for the General Secondary Credential

Consult the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES.

Requirements for the Master's Degree

For the general requirements, see pages 69-71. Two years of high school Latin, or the equivalent, are a departmental prerequisite for the master's degree in Italian. A reading knowledge of one other foreign language is also required of each candidate.

The department usually follows the comprehensive examination plan, but under certain conditions the thesis plan may be approved. The master's com-

prehensive examination consists of two three-hour written examinations. The student will be expected to show: (1) a fair knowledge of the history of Italian civilization, and (2) a more thorough acquaintance with the history of Italian literature from the thirteenth century to the present time. In a final oral examination the student will be examined on his general preparation and background.

Students who are accepted on the thesis plan do not take the written final examinations but will take an oral examination on the field of the thesis, as provided on page 70.

Requirements for the Doctor's Degree

The major for the Ph.D. degree in Romance Languages and Literature is described on page 432 of this bulletin.

LOWER DIVISION COURSES

1. **Elementary Italian—Beginning.** (4) I, II. Mrs. Soli in charge
This course corresponds to the first two years of high school Italian.
2. **Elementary Italian—Continued.** (4) I, II. Mrs. Soli in charge
Prerequisite: course 1 or two years of high school Italian.
3. **Intermediate Italian.** (4) I, II. Mr. Velli in charge
Prerequisite: course 2 or three years of high school Italian.
4. **Intermediate Italian—Continued.** (4) I, II. Mr. Velli
Prerequisite: course 3 or four years of high school Italian.
- 8A-8B-8C. **Italian Conversation.** (1-1-1) Yr. Mrs. Soli in charge
The class meets two hours weekly. Open to students who have completed course 3. Those with grade A or B in course 2 may be admitted.

UPPER DIVISION COURSES

Sixteen units of lower division courses in Italian, or the equivalent, are required for admission to any upper division course. All upper division courses, with the exception of 102A-102B, 109A-109B and 152, are conducted mainly in Italian.

- *100. **Readings in the Italian Theater.** (3) II. Mr. Golino
The Italian theater from the Commedia dell'Arte to the present.
- 101A-101B. **Composition, Oral and Written.** (3-3) Yr. Mr. Della Terza
- 102A-102B. **Italian Culture and Institutions.** (2-2) Yr. Mr. Golino
A study in the growth and development of Italian culture in the various fields. There are no prerequisite for this course. Lectures in English, reading in Italian or English.
- 103A-103B. **Survey of Italian Literature.** (3-3) Yr. Mr. Speroni
- 104A-104B. **Introduction to the Study of Italian Literature.** (2-2) Yr.
Mr. Della Terza
- *105. **Italian Folklore.** (3) II. Mr. Speroni
A survey of Italian folklore, with emphasis on its cultural background and literary connections.
106. **Contemporary Italian Literature.** (2) I, II. Mr. Golino
- *107. **Petrarch and Italian Lyric Poetry.** (2) I, II. Mr. Della Terza

* Not to be given, 1961-1962.

- *109A-109B. *Dante's Divina Commedia*. (3-3) Yr. Mr. Speroni
 With the consent of the instructor this course may also be taken by students who have a thorough preparation in French, Spanish, or Portuguese.
- 130A-130B. *Advanced Grammar and Composition*. (2-2) Yr. Mr. Velli
 Prerequisite: course 101A-101B.
152. *Italian Literature in English Translation*. (3) I. Mr. Pasinetti
 Master works of Italian literature from Dante to the present.
199. *Special Studies in Italian*. (1-3) I, II. The Staff
 Prerequisite: senior standing and consent of the instructor.

GRADUATE COURSES

200. *Bibliography and Methods of Literary Research*. (3) I. Mrs. Sampoli
- 201A-201B. *Medieval Italian Literature*. (2-2) Yr. Mr. Della Terza
- *202. *The Italian Novella*. (2) II. Mr. Speroni
- 222A-222B. *The Renaissance*. (3-3) Yr. Mr. Speroni
- *225. *The Italian Epic: Ariosto and Tasso*. (3) I. Mr. Speroni
226. *Studies in Seventeenth-Century Italian Literature*. (2) I, II. Mr. Golino
- *228. *Studies in Eighteenth-Century Italian Literature*. (2) I. Mr. Pasinetti
- 229A-229B. *Italian Romanticism*. (2-2) Yr. Mr. Pasinetti
- *230A-230B. *Modern Italian Literature*. (2-2) Yr. Mr. Pasinetti
- 240A-240B. *Italian Philology*. (2-2) Yr. Mr. Velli
- 290: *Research in Italian*. (1-6) I, II. The Staff
 Prerequisite: consent of the department.

JAPANESE

For courses in Japanese see under Department of Oriental Languages.

JOURNALISM

(Department Office, 11 Building 1H)

- Joseph A. Brandt, B.Litt. (Oxon.), M.A. (Oxon.), LL.D., *Professor of Journalism*.
- Robert E. G. Harris, M.A., *Professor of Journalism*.
- William W. Johnson, M.A., *Professor of Journalism*.
- Walter Wilcox, Ph.D., *Associate Professor of Journalism (Chairman of the Department)*.
- William S. Caldwell, Ph.D., *Assistant Professor of Journalism*.
- Jack Lyle, Ph.D., *Assistant Professor of Journalism*.
- Robert A. Rutland, Ph.D., *Assistant Professor of Journalism*.
- Lewis Rex Miller, M.A., *Lecturer in Journalism*.

The graduate program in journalism prepares students for careers on the newspaper or magazine, in broadcasting, or in the communicative aspects of public information. Students may qualify for one of three plans: *Plan 1*: For students who have completed an undergraduate major in journalism or who are able to demonstrate, through examination, mastery of the content of 101 and 102—28 semester hours, divided as follows: 191 (2 semester hours), 204 (2), 252 (1), 260 (3), 268 (3), 274 (2), 400 (2), 401 (2), electives (11). *Plan 2*: For students who have little or no background in journalism—33 semester hours, including all of the courses listed under Plan 1 (above), plus 101 and 102. *Plan 3*: For students who present significant journalism experience—24 semester hours, including courses listed under Plan 1 with the exception of 400 and 401. Qualification for admission to a plan is determined by the faculty. *Thesis*: Students may elect a thesis in lieu of four semester hours of elective course work. *Comprehensive examination*: Students who do not elect a thesis must qualify by passing a written and oral comprehensive examination. *Degrees*: Students who pass a foreign language examination may elect to receive the Master of Arts degree; others will receive the Master of Science degree.

The undergraduate program in journalism includes a core series of courses for undergraduate students who wish to prepare for graduate training leading to a career in journalism. This series consists of 101 (3), 102 (2) and 7 semester hours selected from among undergraduate journalism course offerings with the counsel of a journalism adviser. See page 24 for additional information concerning the core series. Undergraduate courses are included in the Letters and Science List of Courses, as set forth on page 2. Further information may be obtained from the Department.

LOWER DIVISION COURSE

- 2. Fundamentals of Journalism.** (3) I, II. Mr. Lyle, Mr. Rutland
Lectures, field trips and workshops.
Survey of journalism principles and techniques.

UPPER DIVISION COURSES

- 101. Reporting.** (3) I, II. Mr. Wilcox
Lecture, two hours; laboratory, two hours.
Fundamentals of the news communication process, including communications theory, media analysis and audience analysis. Style, structure and organization of the news story. Readability formulas. Laboratory: Exercises and experiments in news communication.

- 102. Editing.** (2) I, II. Mr. Caldwell
Lecture, one and one-half hours; laboratory, one hour.

The news evaluation-packaging-projection process. News flow, including study of the news gathering agencies, syndicates and public information sources. Principles and aesthetics of newspaper and magazine formats. Laboratory: Exercises and experiments in news evaluation, copy processing, headlines, and makeup.

- 112. The News Media.** (3) I, II. Mr. Rutland
History and principles of the news and information 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.** (3) I, II. Mr. Wilcox
Lecture, two hours; laboratory, two 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. (3) II. Mr. Harris
Prerequisite: course 2 or equivalent.

Reporting governmental functions with emphasis upon judicial, legislative, and administrative procedures at the city and county level.

182. Magazine Writing. (3) I, II. Mr. Brandt

Writing nonfiction articles for general magazines, specialized publications, and newspaper feature sections. Style, structure and organization. Research methods. Marketing procedures.

183. Fundamentals of Public Relations. (3) I, II. Mr. Caldwell

Industrial and institutional public relations. Procedures, including analysis of institutional policy, definition of publics, attitude measurement, communications, and evaluation of results. Emphasis upon use of mass media in public relations communications.

190. World News Channels. (3) I. Mr. Harris

Analysis and discussion of the four theories of the press. Study of the flow of international news. Analysis of the foreign media. Problems of propaganda, governmental control, language, and economic support.

191. Law of Mass Communications. (2) I, II. Mr. Caldwell

Basic laws affecting the press: First and Fourteenth amendments; laws concerning libel, copyright, postal regulations and sedition. Special laws affecting broadcasting. Legal aspects of freedom of information.

195. The Critical Function of the Press. (3) II. Mr. Brandt

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.

GRADUATE COURSES

204. Ethics and Responsibility in Mass Communications. (2) I, II.

Mr. Brandt
Critical evaluation of the mass media with respect to ethical practices and responsibility. Required for the master's degree.

207. Graphic Arts in Mass Communications. (3) I, II. Mr. Rutland

Principles and theory of the graphic arts in journalism, including photography, typography, and charts and graphs; basic printing processes.

241. Editorial Function of the Mass Media. (2) II. Mr. Brandt

Critical analysis of the editorial function of the mass media; study of the editorial, the editorial column, and the editorial campaign.

252. Seminar in Editing the Newspaper. (1) I, II. Mr. Caldwell

Study of editing problems with some emphasis upon role of special editorial divisions (urban, finance, science, etc.); guest lecturers.

253. Seminar in the History of Mass Communications. (2) II. Mr. Rutland

Study of historical trends in the development of the mass media.

260. Seminar in Issues in the News. (3) I, II. Mr. Brandt

Study of media responsibility and performance with reference to selected basic issues affecting the human condition. Required for the master's degree.

268. Seminar in the Reporter and Society. (3) I, II. Mr. Harris

Study of media performance in relation to main forces in the contemporary cultural pattern; emphasis upon the role of interpretive reporting. Required for the master's degree.

274. **Seminar in Theories of Mass Communications.** (2) I, II. Mr. Lyle
Study of the mass communications process in terms of source, message, medium, context, audience, and response. Required for the master's degree.
275. **Seminar in Mass Communications Research.** (2) II. Mr. Lyle
Theory and techniques of mass communications research methods.
297. **Individual Studies in Mass Communications.** (1-4) I, II.
Mr. Lyle and the Staff
Supervised research projects in mass communications. May be repeated for a total of four semester hours.

PROFESSIONAL COURSES

400. **News Communication I.** (2) I, II. Mr. Johnson
Laboratory and field work in journalism.
401. **News Communication II.** (2) I, II. Mr. Johnson
Continuation of News Communication I; media internship.

LATIN

For courses in Latin, see under Department of Classics.

LATIN-AMERICAN STUDIES

Curriculum in Latin-American Studies

For details of the curriculum leading to the degree of Bachelor of Arts, see page 13 of this bulletin.

Master of Arts in Latin American Studies

The degree of Master of Arts in Latin-American studies is designed to provide systematic advanced training for (a) those who wish it for semiprofessional purposes, and (b) those wanting a further extension of a general cultural education dealing with the Latin-American area. It is not intended as a complete vocational preparation. Nor is a doctor's degree in Latin-American studies granted, on the assumption that at such a level the optimum training program for one interested in Latin America involves a degree granted by an academic department (on the basis of its own requirements) with such emphasis on Latin-American studies as departmental requirements permit.

The degree of Master of Arts in Latin-American studies is administered by the Committee on Latin-American Studies.

Requirements for the Master's Degree

1. *General Requirements.*—See pages 69-71.
2. *Preparation.*—The degree of Bachelor of Arts in Latin-American studies, or its equivalent, constitutes the preparation for admission. In exceptional cases graduate students with other backgrounds may be admitted at the discretion of the committee.
3. *Language Requirement.*—A reading knowledge of Spanish and Portuguese is required for admission to the program leading to the degree.
4. *Plan.*—The comprehensive examination plan (Plan II) is followed.
5. *Course Requirements.*—Twenty-four units of upper division and graduate work are required; these must be in courses of Latin-American content taken in at least three departments, with a minimum of at least 6 units in each of the three departments. At least 12 of the required 24 units must be in the 200 series, including a minimum of 3 units of graduate work in each of at least three departments. The proposed program must be approved by the committee in charge, which may authorize minor modifications in the course requirements, provided they are consistent with the objectives of the degree.

The following courses pertaining to Latin-American Studies are offered by the departments listed below.

Anthropology and Sociology.

- Anthropology 107. Indians of South America. (3)
- Anthropology 140. Ancient Civilizations of Middle America. (3)
- Anthropology 141. Indians of Modern Mexico. (3)
- Anthropology 142. Ancient Civilizations of Andean South America. (3)
- Anthropology 265A-265B. Cultures of Latin America. (2-2)
- Sociology 150. Latin-American Societies. (3)

Art 110B. Pre-Columbian Art. (3)

Geography 122A. The Geography of Middle America. (3)

- 122B. The Geography of South America. (3)
- 199. Special Studies in Geography. (1-5)
- 257. Seminar in the Geography of Latin-America. (3)

History 8A-8B. History of the Americas. (3-3)

- 148. History of Spain and Portugal. (3)
- 160. History of the Caribbean. (3)
- 162A-162B. Hispanic America from the Discovery to the Present. (3-3)
- 166. History of Mexico. (3)
- 169. History of Inter-American Relations. (3)
- 199. Section 9. Special Studies in History (Hispanic-American History). (3)

202E. Advanced Historiography (Latin-American). (3)

265A-265B. Seminar in Hispanic-American History. (3-3)

Political Science 126. Latin-American International Relations. (3)

- 150A-150B. The Governments of Latin America. (3-3)
- 198. Section 7. Special Courses. (Problems in Latin-American Political Institutions.)
- 199. Special Studies (1-5).

250A. Seminars in Regional and Area Political Studies—Latin-American Studies. (3)

Spanish and Portuguese. Spanish 44. Latin-American Civilization. (3)

Spanish 104A-104B. Introduction to Spanish-American Literature. From the Beginnings to the Present. (3-3)

Spanish 108. The Folk Song in Spain and Spanish America. (1)

Spanish 120. Literary Criticism in Spain and Spanish America. (3)

Spanish 130. Main Literary Currents in Spanish America. (3)

Spanish 132. The Spanish-American Novel. (3)

Spanish 134. The Spanish-American Short Story. (2)

Spanish 136. The Spanish-American Essay. (2)

Spanish 150B. Spanish American Literature in English Translation. (2)

Spanish 199. Special Studies in Spanish. (1-3)

Spanish 220. The Spanish Chroniclers of the Americas. (2)

Spanish 240. Studies in the Contemporary Novelists of Spanish America. (2)

Spanish 241. Studies in the Spanish-American Short Story. (2)

Spanish 242. Studies in the Contemporary Poets of Spanish America. (2)

Spanish 243A-243B. The Modernista Movement in Spanish America. (2-2)

Spanish 245. The Contemporary Mexican Novel. (2)

Spanish 246. Argentine Literature. (2)

Spanish 247. The Gaucho Epic. (2)

Spanish 248. Studies in Major Figures of Spanish-American Literature. (2)

Spanish 249. Mexican Literature. (2)

Spanish 290A-290B. Special Study and Research. (2-6; 2-6)

Portuguese 123. Survey of Brazilian Literature. (3)

Portuguese 199. Special Studies in Portuguese. (1-3)

LAW

- Richard C. Maxwell, B.S.L., LL.B., *Dean of the School of Law and Professor of Law (Chairman of the Department)*.
 John A. Bauman, B.S.L., LL.B., LL.M., J.S.D., *Professor of Law*.
 †James H. Chadbourn, A.B., J.D., *Connell Professor of Law*.
 L. Dale Coffman, A.B., J.D., LL.M., S.J.D., *Professor of Law*.
 Edgar A. Jones, Jr., A.B., LL.B., *Professor of Law*.
 Harold Marsh, Jr., A.B., LL.B., LL.M., Jur.Sc.D., *Professor of Law*.
 Addison Mueller, A.B., LL.B., *Professor of Law*.
 †George E. Palmer, A.B., J.D., LL.M., *Visiting Professor of Law*.
 Paul O. Proehl, A.B., M.A., J.D., *Professor of Law*.
 Ralph S. Rice, B.S., LL.B., LL.M., *Professor of Law*.
 Murray L. Schwartz, B.S., LL.B., *Assistant Dean of the School of Law and Professor of Law*.
 James D. Sumner, Jr., A.B., LL.B., LL.M., J.S.D., *Professor of Law*.
 Arvo Van Alstyne, A.B., LL.B., *Professor of Law*.
 Harold E. Verrall, A.B., M.A., LL.B., J.S.D., *Professor of Law*.
 William D. Warren, A.B., J.D., J.S.D., *Professor of Law*.
 Kenneth H. York, A.B., LL.B., *Professor of Law*.
 Rollin M. Perkins, A.B., J.D., S.J.D., *Connell Professor of Law, Emeritus*.
 Norman Abrams, A.B., J.D., *Acting Associate Professor of Law*.
 William Cohen, A.B., LL.B., *Associate Professor of Law*.
 Robert L. Jordan, A.B., LL.B., *Acting Associate Professor of Law*.
 Edwin F. Franke, A.B., LL.B., *Lecturer in Charge of Legal Aid Instruction*.
 William C. Mathes, A.B., LL.B., *Lecturer on Trial Practice and Judge of the Practice Court*.
 Herbert Morris, A.B., LL.B., D.Phil. (Oxon.), *Lecturer in Law and Assistant Professor of Philosophy*.
 Louis Piacenza, *Law Librarian*.

LIBRARY SERVICE

(Department Office, 322 Library)

- Lawrence Clark Powell, Ph.D., Litt.D., *Dean of the School of Library Service and Professor of Library Service (Chairman of the Department)*.
 Seymour Lubetzky, M.A., *Professor of Library Service*.
 Robert G. Vosper, M.A., *Professor of Library Service*.
 Andrew H. Horn, Ph.D., *Associate Professor of Library Service*.
 Barbara Gray Boyd, M.P.A., *Lecturer in Library Service*.
 Tatiana P. Keatinge, M.S. in L.S., *Lecturer in Library Service*.
 Frances Clarke Sayers, C.L., *Lecturer in Library Service and Lecturer in English*.
 Johanna E. Tallman, A.B., C.L., *Lecturer in Library Service and Lecturer in Engineering Bibliography*.

GRADUATE COURSES

- 200. Method and Theory of Bibliography. (2) I.** Mr. Horn
 Introduction to the history, theory and methods of bibliographical research. Analytical or critical bibliography and enumerative or systematic bibliography. Lectures, discussions, and a written report on a bibliographical problem.

† Absent on leave, 1961-1962.

¹ In residence fall semester only, 1961-1962.

- 201A-201B. Introduction to Cataloging and Classification.** (3-3) Yr.
 (Former numbers, 201 and 214.) Mr. Lubetzky
 Lectures and discussions, three hours; laboratory, three hours.
 Objectives and methods of cataloging and classification; principles and rules of entry and description of library materials; subject analysis, subject headings, and classification; treatment of special types of library materials; organization of library catalogs.
- 202A-202B. Reference Service and Materials.** (3-3) Yr.
 (Former numbers, 202 and 212.) Miss Boyd, Mr. Horn, Mrs. Keatinge
 Methods and materials of reference service; national and trade bibliography; general reference works, encyclopedias, etc.; government publications; introduction to subject bibliography and information sources. Lectures, discussions, and reports on assigned problems.
- 203. Introduction to Librarianship.** (3) I. Mr. Powell
 Introductory survey of the evolution of libraries and basic information about the principal fields of library service, with emphasis on major trends and problems. Introduction to administrative theory and practice as applied to libraries. Readings and written reports.
- 204. Selection and Acquisition of Library Materials.** (3) I. Miss Boyd
 Theories, principles, and practice of selecting books and other library materials. Techniques of acquisition by public, school, academic and special libraries. Lectures, discussions, reports.
- 205. Special Problems in the Selection of Materials and Evaluation of Collections.** (2) II. Mr. Powell
 Problems in selecting recordings, films, maps, and other library materials in special format; special problems in selecting material in particular subject fields; methods of evaluating library collections and the effectiveness of the selection process.
- 206. School Libraries.** (2) I, II. Mrs. Keatinge
 A general survey of elementary and secondary school libraries. Emphasis on the function, administration, organization, services, materials, and the planning and equipment of school libraries in relation to the modern school.
- 207. Municipal, County and Regional Libraries.** (2) II. Miss Boyd
 Government, organization, administration, and problems of municipal, county, and regional public libraries. Library books, special materials and service programs in relation to varying community patterns. Lectures, readings, reports, field trips.
- 208. College, University and Research Libraries.** (2) II. Mr. Powell
 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.
- 209. Library Work with Children.** (2) I, II. Mrs. Sayers
 General survey of children's books and reading preferences. Historical backgrounds and development; types of children's literature; levels of interest; criticism and evaluation; illustration; trends; book selection; story telling; organization and administration of a children's room in a public library.
- 211. History of Books and Libraries.** (2) I. Mr. Horn
 Prerequisite: course 200 or consent of the instructor.
 Early records and the manuscript period; history of the printed book, including materials and methods; parallel history of libraries in ancient,

medieval and modern western civilization; oriental influences upon western books and libraries.

215. Reading and Reading Interests. (2) I, II. Miss Boyd

Prerequisite: course 204.

Reading interests, habits, and needs of different types and groups of readers. The nature of reading, problems of reading, selection of reading by children, young people, college students, and public library patrons. The role of the library in adult education.

217. Bibliography of Science, Engineering and Technology. (2) II.

Prerequisite: consent of the instructor.

Mrs. Tallman

Scientific and technical literature with emphasis on reference and bibliographical aids. Periodical and serial literature in the physical sciences, and its use and control through abstracts and indexes.

218. Bibliography of the Medical and Life Sciences. (2) I. _____

Prerequisite: consent of the instructor.

Literature of the life sciences, pure and applied, with emphasis on reference and bibliographical aids. Periodical and serial literature; abstracts and indexes; notable books in the history of biological sciences.

219. Bibliography of the Social Sciences. (2) II.

Mr. Horn

Prerequisite: consent of the instructor.

Literature of the social sciences, including monumental source collections, periodicals, bibliographies, catalogs, indexes, abstracts, etc. Libraries notable for holdings in the social sciences.

220. Bibliography of the Humanities and Fine Arts. (2) I. Mrs. Keatinge

Prerequisite: consent of the instructor.

Literature of the humanities and fine arts, with special emphasis on reference materials, bibliographies, indexes, and so forth. Notable special collections on the humanities and fine arts.

240. Theory and Practice of Interlibrary Cooperation. (2) II. Mr. Vosper

(Former number, 250.)

Prerequisite: consent of the instructor.

Special readings, reports, and discussions on the reasons for interlibrary cooperation, the extent to which it is practiced, and the problems involved.

241. Libraries of the Southwest. (2) I.

Mr. Powell

(Former number, 251.)

Prerequisite: consent of the instructor.

Special readings, reports, and discussions on the history, resources, and problems of libraries in the southwestern United States and northwestern Mexico. Literature of the Southwest.

242. Special Collections and Documentation. (2) II.

Mr. Horn

(Former number, 252.)

Prerequisite: consent of the instructor.

Special collections and special libraries. Methods of handling nonbook materials. Notable collections of maps, manuscripts, pamphlets, music, photocopies, etc. Materials of scientific and professional libraries. Current trends in information storage and retrieval; implications to general library work.

298. Special Studies. (1-4) I, II.

The Staff

Prerequisite: consent of the Dean of the School of Library Service.

Directed special study and written report on the bibliography, library history, or library problems of a political or cultural area; or, an original investigation and report on an aspect of library functions and services. Reports must be submitted for publication.

PROFESSIONAL COURSE

349-M. Medical Library Internship. (4) I, II. The Staff

Prerequisites: M.L.S. degree or equivalent, graduate status, and consent of the Dean of the School of Library Service.

Supervised library service, at a professional level, in the UCLA Biomedical Library for a minimum of 180 hours per semester, including weekly critiques of bibliographical, administrative and service problems. Field trips, written reports, final oral examination. May be repeated once.

LIFE SCIENCES

For courses in Life Sciences, see under Department of Zoology.

LINGUISTICS AND PHILOLOGY

- James Richard Andrews, Ph.D., *Assistant Professor of Spanish.*
 Joseph R. Applegate, Ph.D., *Visiting Assistant Professor of Berber.*
 Samuel G. Armistead, Ph.D., *Assistant Professor of Spanish.*
 Franz H. Bäuml, Ph.D., *Assistant Professor of German.*
 William Bright, Ph.D., *Assistant Professor of Anthropology.*
 William E. Bull, Ph.D., *Professor of Spanish.*
 Kenneth K. S. Ch'en, Ph.D., *Professor of Oriental Languages.*
 Kenneth G. Chapman, Ph.D., *Assistant Professor of Scandinavian Languages.*
 Michael J. D'Asaro, Ph.D., *Assistant Professor of Speech.*
 Alfred Karl Dolch, Ph.D., *Professor of German.*
 Jonas C. Greenfield, Ph.D., *Assistant Professor of Hebrew.*
 Donald Erwin Hargis, Ph.D., *Associate Professor of Speech.*
 Harry Hoijer, Ph.D., *Professor of Anthropology (Chairman, Committee on the Linguistic Program).*
 Wolf Leslau, Docteur ès Lettres, *Professor of Hebrew and Semitic Linguistics.*
 William Matthews, Ph.D., *Professor of English.*
 Evelyn Venable Mohr, M.A., *Associate in Classics.*
 Clifford Holmes Prator, Ph.D., *Professor of English.*
 Jaan Puhvel, Ph.D., *Assistant Professor of Classics and Indo-European Linguistics.*
 Stanley L. Robe, Ph.D., *Associate Professor of Spanish.*
 Joseph H. Silverman, Ph.D., *Assistant Professor of Spanish.*
 Robert Paul Stockwell, Ph.D., *Associate Professor of English.*
 Kiril Taranovski, Ph.D., *Professor of Slavic Languages.*
 Giuseppe Velli, Dottore in Lettere, *Assistant in Italian.*
 Erik Wahlgren, Ph.D., *Professor of Scandinavian Languages.*
 William E. Welmers, Ph.D., *Professor of African Languages.*
 Terence Harrison Wilbur, Ph.D., *Assistant Professor of German.*
 Harry F. Williams, Ph.D., *Associate Professor of French.*
 Dean S. Worth, Ph.D., *Assistant Professor of Slavic Languages.*
 Marion Albert Zeitlin, Ph.D., *Professor of Spanish and Portuguese.*

Letters and Science List.—All undergraduate courses in Linguistics and Philology are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

Master of Arts Degree in Linguistics

The program for the Master of Arts degree in linguistics is administered by the Committee on the Linguistics Program. It is open to graduate students in the language and social science fields who are interested in the theory and methods of structural and historical linguistics.

Admission to the Program

After filing with the Graduate Division an application for admission to graduate status, the candidate must apply separately to the Chairman, Committee on the Linguistics Program. Applicants are advised to secure from the chairman a description of the program and information on recommended preparation.

Requirements for the Master's Degree

General Requirements (as throughout the Graduate Division).

Plan and Language Requirements.—Candidates for the Master of Arts degree in linguistics will be required to take a comprehensive examination in accordance with Plan II. A reading examination in French or German is required unless, by petition to the Committee on the Linguistics Program, the candidate receives permission to substitute another language.

Program.—First semester: Linguistics 201, 202, 203, 204; second semester: Linguistics 172, 250, one course from 210–213, and one course from 214–217. Substitution for courses 172 and 210–213 may be allowed by petition to the committee.

UPPER DIVISION COURSES

170. *Introduction to Linguistics.* (3) I, II. Mr. Hoijer, Mr. Bright

A beginning course in the descriptive and historical study of language: linguistic analysis; linguistic structures; language classification; language families of the world; language in its social and cultural setting.

172. *Linguistics in Relation to Other Disciplines.* (3) II.

Mr. Bull, Mr. Prator, Mr. Stockwell, Mr. Wilbur

Prerequisite: course 170 or the equivalent.

GRADUATE COURSES

201. *Theory and Methods of Descriptive Linguistics.* (3) I.

Prerequisite: course 170 or consent of instructor. Mr. Hoijer, Mr. Bright

Theory and methods in phonetics, phonemics, morphemics, syntax, lexicography. Comparison of different theories and methods in each area. Close reading of technical books and articles in the field.

202. *Theory and Methods of Historical Linguistics.* (3) I.

Mr. Hoijer, Mr. Bright

Theory and methods of comparative linguistics, historical reconstruction, sound change, semantic change, internal and external borrowing, dialectology as mechanism of change. In general, examples selected from non-Indo-European languages.

203. *Phonetics and Phonemics.* (3) I.

Mr. Stockwell

Prerequisite or corequisite: course 201 or consent of instructor.

A problems course in which students work out phonetic and phonemic solutions of a wide variety of language data, and survey the kinds of phonological systems that exist among languages of the world.

204. *Morphology and Syntax.* (3) I.

Mr. Hoijer, Mr. Bright

Prerequisite or corequisite: course 201 or consent of instructor.

A problems course in which students work out morphemic and syntactic solutions of a wide variety of language data, and survey the kinds of grammatical systems that exist among languages of the world.

*210. *Indo-European Linguistics.* (3) II.

Mr. Puhvel

Recommended preparation: Sanskrit 190.

Comparative study of phonology, morphology, and syntax, with an analysis of selected texts.

* Not to be given, 1961–1962.

- 214. Typology of American Indian Languages.** (3) II. Mr. Hoijer, Mr. Bright
Prerequisite: course 170 or 201, or consent of instructor.
Studies of selected American Indian languages, with emphasis on the diversity of linguistic structure in the Americas.
- 216. Typology of African Languages.** (3) II. Mr. Welmers
Prerequisite: courses 170 or 201, or consent of instructor.
Descriptive and comparative survey of the languages of Africa with particular emphasis on tonal structures and systems of noun classification and concord; illustration of a variety of individual languages.
- 218. Typology of South Asian Languages.** (3) II. Mr. Bright
Prerequisite: course 170 or 201, or consent of the instructor.
Descriptive and historical survey of the languages of India, Pakistan, and Ceylon; detailed study of a selected language.
- 250. Field Methods.** (3) II. Mr. Hoijer, Mr. Bright
Prerequisite: course 201 or consent of instructor.
A language unknown to members of the class to be analyzed from data elicited from an informant. The seminar papers will be relatively full descriptive sketches of the language of the informant.

RELATED COURSES IN OTHER DEPARTMENTS

LOWER DIVISION COURSES

- Greek 40. The Greek Element in English.** (2) II. Mrs. Mohr
- Latin 40. The Latin Element in English.** (2) I. Mrs. Mohr

UPPER DIVISION COURSES

- Anthropology 110. Language and Culture.** (3) II. Mr. Hoijer
- English 110. Introduction to the English Language.** (3) I. Mr. Matthews, Mr. Stockwell
- English 111. The English Language in America.** (3) II. Mr. Matthews, Mr. Stockwell
- French 107. Phonetics.** (3) I, II. _____
- German 107. Phonetics of the German Language.** (2) I. Mr. Wilbur
- German 117. History of the German Language.** (3) II. Mr. Wilbur
- German 119. Middle High German.** (3) I. Mr. Bäuml
- Hebrew 145A-145B. Survey of Hebrew Grammar.** (2-2) Yr. Mr. Leslau
- *Sanskrit 190. The Elements of Sanskrit.** (3) I. Mr. Puhvel
- *Sanskrit 191. Advanced Sanskrit.** (3) II. Mr. Puhvel
- Semitics 101A-101B. Elementary Amharic.** (2-2) Yr. Mr. Leslau
- Spanish 119. Readings in Spanish Literature of the Middle Ages.** (2) I. Mr. Andrews
- Spanish 148. Phonetics.** (1) I, II. Mr. Robe
- Spanish 149. Introduction to the History of the Spanish Language.** (1) I. Mr. Armistead, Mr. Silverman

* Not to be given, 1961-1962.

Speech 103. Phonetics. (3) II.	Mr. Hargis
Speech 103K. Phonetics for Foreign Students. (3) I.	Mr. Prator
Speech 122. Scientific Bases of Speech. (3) I.	Mr. D'Asaro

GRADUATE COURSES

English 211. Old English. (3) I.	Mr. Matthews, Mr. Stockwell
English 212. Middle English. (3) II.	Mr. Matthews, Mr. Stockwell
English 213. The Development of Modern English. (3) I.	Mr. Matthews, Mr. Stockwell
English 250A-*250B. English Linguistics. Seminar. (3-3) Yr.	Mr. Matthews, Mr. Stockwell
English 260A, 260B, 260C. Studies in Old and Middle English. Seminar. (3-3-3)	Mr. Matthews
French 201. History of the French Language. (3) I, II.	Mr. Williams
French 202. Old French. (3) I, II.	Mr. Williams
French 205. Contemporary French Linguistics. (3) II.	————
German 230. Survey of Germanic Philology. (3) I.	Mr. Wilbur
German 231. Gothic. (3) I.	Mr. Dolch
German 232. Old High German. (3) II.	Mr. Dolch
German 233. Old Saxon. (3) I.	Mr. Dolch
German 239. Readings in Middle High German Literature. (3) II.	Mr. Bäuml
German 259. Seminar in Germanic Linguistics. (1-3) II.	Mr. Dolch
Italian 240A-240B. Italian Philology. (2-2) Yr.	Mr. Velli
Latin 220. Vulgar Latin. (3) I.	Mr. Puhvel
Oriental Languages 164A-164B. Tibetan. (2-2) Yr.	————
Scandinavian 243. Old Icelandic. (3) I.	Mr. Wahlgren
Scandinavian 244. Old Norse-Icelandic Prose and Poetry. (2) II.	Mr. Wahlgren
Semitics 211A-211B. Ethiopic. (2-2) Yr.	Mr. Leslau
Semitics 220A-220B. Comparative Ethiopic. (2-2) Yr.	Mr. Leslau
Semitics 231. Ancient Aramaic. (2) II.	Mr. Greenfield
Semitics 235. Ugaritic. (2) I.	Mr. Greenfield
Semitics 280A-280B. Seminar in Comparative Semitics. (2-2) Yr.	Mr. Leslau
Semitics 290A-290B. Comparative Morphology of the Semitic Languages. (2-2) Yr.	Mr. Leslau

* Not to be given, 1961-1962.

Slavic 220. Old Church Slavic. (3) I.	Mr. Worth
Slavic 222. Comparative Slavic Linguistics. (3) II.	Mr. Taranovski
Slavic 225A, 225B, 225C. Structure of Modern Russian. (2-2-2)	Mr. Taranovski, Mr. Worth
Slavic 227. Eastern Slavic Languages. (3) I.	Mr. Taranovski
Slavic 229. History of the Russian Language. (3) I.	Mr. Taranovski, Mr. Worth
Slavic 270. Seminar in Structural Analysis. (3) II.	Mr. Worth
Slavic 271. Seminar in Historical Linguistics. (3) I.	Mr. Taranovski
Spanish 255. Contemporary Spanish Linguistics. (2) II.	Mr. Bull
Spanish 256. Spanish Historical Grammar. (3) II.	Mr. Zeitlin
Speech 240B. Cerebral Palsy and Aphasia. (3) II.	Mr. D'Asaro

MATHEMATICS

(Department Office, 6115 Mathematical Sciences Building)

- ¹Richard Arens, Ph.D., *Professor of Mathematics*.
 Edwin F. Beckenbach, Ph.D., *Professor of Mathematics*.
 Clifford Bell, Ph.D., *Professor of Mathematics*.
 Earl A. Coddington, Ph.D., *Professor of Mathematics*.
 Henry A. Dye, Ph.D., *Professor of Mathematics*.
 John W. Green, Ph.D., *Professor of Mathematics*.
 Peter Henrici, Ph.D., *Professor of Mathematics*.
 †Magnus R. Hestenes, Ph.D., *Professor of Mathematics*.
 Paul G. Hoel, Ph.D., *Professor of Mathematics*.
 Alfred Horn, Ph.D., *Professor of Mathematics*.
 S. T. Hu, Ph.D., *Professor of Mathematics*.
 T. S. Motzkin, Ph.D., *Professor of Mathematics*.
 Rolf H. Nevanlinna, Ph.D., *Visiting Professor of Mathematics*.
 †Raymond M. Redheffer, Ph.D., *Professor of Mathematics*.
 †Leo Sario, Ph.D., *Professor of Mathematics*.
 I. S. Sokolnikoff, Ph.D., *Professor of Mathematics*.
 Ernst G. Straus, Ph.D., *Professor of Mathematics*.
 †Angus E. Taylor, Ph.D., *Professor of Mathematics (Chairman of the Department)*.
 Charles B. Tompkins, Ph.D., *Professor of Mathematics (Director of Numerical Analysis Research)*.
 Frederick A. Valentine, Ph.D., *Professor of Mathematics*.
 Paul H. Daus, Ph.D., *Professor of Mathematics, Emeritus*.
 G. E. F. Sherwood, Ph.D., *Professor of Mathematics, Emeritus*.
 C. C. Chang, Ph.D., *Associate Professor of Mathematics*.
 Paul B. Johnson, Ph.D., *Associate Professor of Mathematics*.
 Barrett O'Neill, Ph.D., *Associate Professor of Mathematics*.
 †Lowell J. Paige, Ph.D., *Associate Professor of Mathematics*.
 William T. Puckett, Ph.D., *Associate Professor of Mathematics*.

¹ In residence fall semester only, 1961-1962.

† Absent on leave, 1961-1962.

- Robert H. Sorgenfrey, Ph.D., *Associate Professor of Mathematics.*
 †Robert Steinberg, Ph.D., *Associate Professor of Mathematics.*
 †J. Dean Swift, Ph.D., *Associate Professor of Mathematics.*
 Glenn James, Ph.D., *Associate Professor of Mathematics, Emeritus.*
 †Robert J. Blattner, Ph.D., *Assistant Professor of Mathematics.*
 Leo Breiman, Ph.D., *Assistant Professor of Mathematics.*
 Y. H. Clitron, Ph.D., *Assistant Professor of Mathematics.*
 Philip C. Curtis, Jr., Ph.D., *Assistant Professor of Mathematics.*
 Basil Gordon, Ph.D., *Assistant Professor of Mathematics.*
 Tilla Klotz, Ph.D., *Assistant Professor of Mathematics.*
 Kenneth Rogers, Ph.D., *Assistant Professor of Mathematics.*
 John W. Smith, Ph.D., *Assistant Professor of Mathematics.*
 Guy H. Hunt, C.E., *Assistant Professor of Applied Mathematics, Emeritus.*
 Euphemia R. Worthington, Ph.D., *Assistant Professor of Mathematics, Emeritus.*
 Earl R. Berkson, Ph.D., *Instructor in Mathematics.*
 L. J. Adams, M.A., *Lecturer in Mathematics.*
 Robert Herrera, M.A., *Lecturer in Mathematics.*



- Frederick H. Hollander, M.A., *Associate Research Mathematician.*
 †Michel A. Melkanoff, Ph.D., *Associate Research Physicist.*

Letters and Science List.—All undergraduate courses in mathematics and statistics except Mathematics 38, 41, and 370 are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

Courses C and D will be offered for the last time in the fall semester, 1961.

Preparation for the Major.—Required: courses C (or the equivalent), 1, 3A, 3B, 4A, 4B (no additional credit will be allowed for courses in the 5A, 5B, 6A, 6B sequence), with an average grade of C or higher, except that students who have completed two years of high school algebra and also trigonometry may be excused, upon examination, from course 1. Recommended: physics, astronomy, and a reading knowledge of French and German.

The Major.—Courses 108, 119A, and one of 100, 112A, 112B, together with enough additional upper division units, approved by the upper division adviser, to total 24 units; not all three of 101A, 101B, 114 may be taken for credit. A student who has credit for a course containing more than one but less than 3 units of differential equations, may, to satisfy the 119A requirement, present credit for a reading course (199) containing material supplementing his previous work. At most, 3 of the 24 units required for graduation may be taken in related courses in other departments, provided approval has been obtained in advance from a departmental adviser. Candidates for a teaching credential must include Mathematics 370 in the required 24 units. The student must maintain an average grade of at least C in upper division courses in mathematics.

Students who are preparing to teach mathematics in high school are advised to elect courses 101A and 101B. All other mathematics majors are strongly advised to elect courses 111A and 122A-122B.

Teaching Minor.—Mathematics 370 and not less than 20 units in the Department of Mathematics, including two 3-unit courses in the 100 sequence.† The recommended minor for non-science majors working for the general secondary credential is Statistics 1, Mathematics C, 32A, 37, 38, 101A, 101B, and the required Mathematics 370.

† Absent on leave, 1961-1962

‡ Mathematics 4B may apply toward the teaching minor in lieu of an upper division course in the 100 series.

Business Administration.—Students preparing for this School ordinarily are required to take Mathematics 32A–32B during their sophomore year. This requirement may be satisfied by the Mathematics 1, 3A, 3B sequence (or its equivalent), which should be begun during the freshman year.

Engineering.—Lower division students in this College are required to take courses 5A, 5B, 6A, 6B. No additional credit will be allowed for courses in the 3A, 3B, 4A, 4B sequence.

Undergraduate Qualifying Examinations.—Examinations covering trigonometry and two years of high school algebra are given each semester at 9 a.m. on the Wednesday of registration week to allow qualified students to modify their programs as described under courses 1, 3A, 3H, 5A, 32A and 32B below. An additional examination on analytic geometry and calculus will be given to allow qualified students to enter course 3B directly. Prior arrangement to take such an examination must be made with the department secretary in Room 6115, Mathematical Sciences Building.

A student entering from high school who believes that he has had the equivalent of a course offered by the Department of Mathematics (e.g., analytic geometry and calculus) may demonstrate his proficiency in this course by examination. If, in the opinion of the department, his level of achievement is sufficiently high, he will be permitted to enter the next course in the sequence. No University credit is earned by passing such an examination. Arrangements for such an examination must be made with the department secretary in Room 6115, Mathematical Sciences Building, on or before the Monday of registration week.

Requirements for the Master's Degree

Candidates for the degree of Master of Arts in mathematics must qualify under Plan II, comprehensive examination plan. For the general requirements, see pages 69–71. Under this plan either one of two requirements must be satisfied. One of these is 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. The other is the presentation of a program containing at least 18 units of graduate courses in mathematics instead of the usual required 12. The candidate must pass a set of qualifying written examinations, one in basic analysis and one in basic algebra.

Requirements for the Doctor's Degree

The requirements are, in general, in accordance with those listed under general requirements for the doctor's degree, pages 71–74. At present, the qualifying examinations which must be taken within the department before the student is advanced to candidacy are three in number: one in analysis, one in algebra, and one in geometry-topology. (Students specializing in statistics and probability may substitute for the latter examination one in their speciality.) These are written examinations, which are given once each semester, and the student must pass all three within a span of five semesters.

LOWER DIVISION COURSES†

C. Trigonometry. (2) I.

Mr. Horn in charge

(Course C will be discontinued after the fall semester, 1961.)

Prerequisite: plane geometry and one and one-half years of high school algebra or course D. Students with one year of high school algebra may enroll in course C concurrently with course D. Students taking course C who have had trigonometry in high school will be limited to 1 unit of credit.

Plane trigonometry, with special emphasis on trigonometric analysis.

† Students who have credit for courses in the 3A, 3B, 4A, 4B sequence will not be allowed additional credit for courses in the 5A, 5B, 6A, 6B sequence; and vice versa.

D. Intermediate Algebra. (3) I.

Mr. Steinberg in charge

(Course D will be discontinued after the fall semester, 1961.)

Prerequisite: at least one year of high school algebra. Not open for credit to students who have received credit for two years of high school algebra, or trigonometry and one and one-half years of high school algebra, or any one of the following: courses 1, 3A, 32A, or 32B. Students who need extra review and drill will be required to attend the class four times a week.

Simultaneous linear and quadratic equations, binomial theorem, progressions and logarithms.

1. College Algebra. (2) I, II.

Mr. Chang in charge

Prerequisite: trigonometry and one and one-half years of high school algebra or two years of high school algebra and course C concurrently. A student who has had trigonometry may enroll in courses 1 and 3A concurrently, but he will not be permitted to drop course 1 and continue with course 3A. A student may enroll in course 3A without taking course 1 by passing a qualifying examination (see above). Not open for credit to students who have received credit for course D, 3A, 32A, or 32B.

The topics in course D and determinants, inequalities, complex numbers, theory of equations, permutations, combinations and probability.

3A. Analytic Geometry and Calculus, First Course. (3) I, II.

Mr. Beckenbach in charge

Prerequisite: trigonometry and one of the following: course D, course 1, course 1 concurrently, or the passing of a qualifying examination (see page 291).

Elements of analytic geometry, differentiation of algebraic and trigonometric functions, inverse of differentiation.

3B. Analytic Geometry and Calculus, Second Course. (3) I, II.

Prerequisite: course 3A or the passing of a qualifying examination. (See page 291.)

Continuation of 3A. Further topics in analytic geometry, exponential and logarithmic functions, the definite integral, techniques of integration.

3H. First Honors Course in Calculus. (3) I, II.

Mr. Blattner in charge

Prerequisite: students will be admitted by passing a qualifying examination given each semester. (See announcement, page 291.)

Fundamental concepts, techniques, and applications of differential and integral calculus. This course places more emphasis on logical development of the ideas of calculus than course 3A and is designed to permit exceptionally able students to progress at a pace commensurate with their abilities.

4A. Analytic Geometry and Calculus, Third Course. (3) I, II.

Prerequisite: course 3B.

Mr. Motzkin in charge

Continuation of 3B. Applications, study of limits, infinite series.

4G. Second Honors Course in Calculus. (3) I, II.

Mr. Arens in charge

Prerequisite: course 3H, or course 3A with grade A or B and permission of the instructor.

Continuation of course 3H.

†4B. Third Course in Calculus. (3) I.

Mr. Blattner in charge

Prerequisite: course 4A. Upper division credit will be allowed to students who are not majors in mathematics, engineering, or meteorology, who take the course while in upper division.

† The fall semester, 1961, will be the last semester this course will be given. Beginning in the spring semester, 1962, and thereafter, the course will be given as listed in the next entry.

Infinite series, continued; solid analytic geometry; partial differentiation; multiple integration with applications.

4B. Analytic Geometry and Calculus, Fourth Course. (3) II.

Prerequisite: course 4A.

Mr. Blattner in charge

Continuation of 4A. Solid analytic geometry, partial differentiation, multiple integration, first order differential equations.

4H. Third Honors Course in Calculus. (3) I, II.

Mr. Curtis in charge

Prerequisite: course 4G.

Continuation of 4G.

5A. Analytic Geometry and Calculus. (5) I, II.

Mr. Curtis in charge

Prerequisite: satisfactory passing of the lower division engineering qualifying examination in mathematics or of the qualifying examination described on page 291.

A unified course in analytic geometry and differential calculus, and an introduction to integration of algebraic functions.

5B. Analytic Geometry and Calculus. (3) I, II.

Mr. O'Neill in charge

Prerequisite: course 5A.

A unified course in analytic geometry and differential calculus, and an introduction to integration of transcendental functions.

6A. Differential and Integral Calculus. (3) I, II.

Mr. Straus in charge

Prerequisite: course 5B.

Techniques and applications of integration; infinite series and expansion of functions.

6B. Differential and Integral Calculus. (3) I, II.

Mr. Beckenbach in charge

Prerequisite: course 6A. Upper division credit will be allowed to students who are not majors in mathematics, engineering, or meteorology, who take the course while in upper division.

Solid analytic geometry, partial differentiation and multiple integration, with applications; ordinary differential equations through simple applications involving damped oscillations.

32A. Introductory Mathematical Analysis for Business. (3) I, II.

Mr. Breiman in charge

Prerequisite: sophomore standing. Not open for credit to students who have received credit for course D, or I. A student may enroll in course 32B without taking course 32A by passing a qualifying examination (see page 291).

Algebra, including quadratics, logarithms, progressions, and the binomial theorem; graphical representation; simple and compound interest; ordinary annuities. Students who need extra review and drill will be required to attend the class four times a week.

32B. Introductory Mathematical Analysis for Business. (3) I, II.

Lecture, two hours; problem laboratory, one hour. Mr. Breiman in charge

Prerequisite: course 32A or the equivalent or the passing of a qualifying examination (see page 291).

Elementary differential and integral calculus and curve fitting, with applications to business and economics.

37. Mathematics for Social and Life Sciences. (3) I, II.

Mr. Valentine

Prerequisite: course C, and one of D, 32A, I, or the equivalent.

This course gives in brief form an introduction to analytic geometry and

calculus, and other mathematical material particularly designed for students of the social and life sciences.

38. Fundamentals of Arithmetic. (3) I, II. Mr. Bell in charge

Prerequisite: sophomore standing.

Designed primarily for prospective teachers of arithmetic. The study of the fundamental operations on integers and fractions is stressed, together with suitable visual aids. Although efficiency in arithmetical skills is required, the emphasis is on the understanding of arithmetical procedures.

41. Introduction to Coding for Automatic Digital Computers. (1) I, II.

Not open for credit to those having credit for either course 139 or 140.

Prerequisite: one year of college mathematics.

Binary arithmetic; standard machine operations; coding commands, iterations of most frequent use; applications to computers on campus.

UPPER DIVISION COURSES

100. College Geometry. (3) I. Mr. Johnson

Prerequisite: course 4A.

Selected topics in geometry, with particular emphasis on recent developments.

101A. Fundamental Concepts of Mathematics. Algebra. (3) I, II. Mr. Bell

Prerequisite: course 37 or the equivalent.

A course designed especially for teachers and prospective teachers of secondary mathematics. Selected topics in algebra; number system; logical concepts; elementary functions; determinants and matrices.

101B. Fundamental Concepts of Mathematics. Geometry. (3) I, II.

Mr. Johnson

Prerequisite: course 37 or the equivalent (course 101A not a prerequisite).

A course designed especially for teachers and prospective teachers of secondary mathematics. Selected topics in elementary geometry; deductive geometry; axiomatic approach; various axiomatic systems for Euclidean geometry; non-Euclidean geometry; projective, metric, and affine geometry.

108. Linear Algebra. (3) I, II. Mr. Blattner in charge

Prerequisite: course 4A.

Vector spaces; linear transformations and matrices; matrix algebra; determinants and solutions of systems of equations.

110A-110B. Advanced Engineering Mathematics. (2-2) I, II.

A year course. See course 110AB for description.

110AB. Advanced Engineering Mathematics. (4) I, II. Mr. Henrici in charge

Prerequisite: course 4B. Not open to students who have taken course 6B or any course containing 1 unit of work in differential equations; such students should take course 110C. Students in the engineering curriculum are required to take course 110AB or 110C, depending upon the prerequisite. Students who have credit for 119A will be limited to 2 units of credit.

Ordinary differential equations and orthogonal functions, partial differential equations, line integrals, Green's theorems, vector analysis, solution of equations.

110C. Advanced Engineering Mathematics. (3) I, II.

Mr. Sokolnikoff in charge

Prerequisite: course 6B, or an equivalent course containing at least 1 unit of differential equations. Students who have credit for course 119A will be limited to 2 units of credit.

This course covers all the material in Mathematics 110AB with the exception of unit of differential equations.

110D. Advanced Engineering Mathematics. (3) II. Mr. Sokolnikoff
 Prerequisite: course 110AB or 110C.
 Complex variable, probability, curve fitting.

111A. Introduction to Higher Algebra. (3) I, II. Mr. Straus
 Prerequisite: course 108.
 Integral domains, fields, polynomial domains, factorization theory, groups, vector spaces and linear transformations, rational and Jordan canonical forms, quadratic and hermitian forms.

111B. Introduction to Higher Algebra. (3) I, II. Mr. Gordon
 Prerequisite: course 111A.
 Rings and ideals, linear algebras, field extensions, algebraic numbers, Galois theory.

112A. Introduction to Higher Geometry. (3) I, II. Mr. Straus
 Prerequisite: course 108.
 Homogenous point and line coordinates, cross ratio, one- and two-dimensional projective geometry, point and line conics.

112B. Introduction to Metric Differential Geometry. (3) I, II. Mrs. Klotz
 Prerequisite: course 119A or consent of the instructor.
 Classical differential geometry of curves and surfaces; special problems.

114. Mathematical Ideas. (3) II. Mr. Valentine
 Prerequisite: upper division standing.
 The mathematical method; sets, equivalence, cardinals; numbers, integers, rationals, complex numbers; geometry, Euclid's axioms, axiomatic method; analytic geometry, dimension, functions, curves; idea of a limit; topology, convex sets, convex functions.

115A. Theory of Numbers. (3) I. Mr. Gordon
 Prerequisite: course 4A or consent of the instructor.
 Divisibility, congruences, diophantine analysis.

115B. Theory of Numbers. (3) II. Mr. Gordon
 Prerequisite: course 115A.
 Selected topics in the theory of primes, algebraic number theory, and diophantine equations.

119A. Differential Equations. (3) I, II. Mr. Coddington
 Not open for full credit to students having credit for another course containing differential equations (for example, 110A-110B).
 Prerequisite: course 4B. Not open to students who have credit for course 110AB or 110C.

Linear equations with constant coefficients and analytic coefficients. Regular singular points. Method of successive approximations. Systems.

119B. Differential Equations. (3) II. Mr. Coddington
 Prerequisite: course 119A, or the equivalent.
 Advanced topics in ordinary differential equations, including geometric theory of autonomous systems and boundary value problems. Second order linear partial differential equations with constant coefficients. Separation of variables technique.

120. Probability.
 See Statistics 120A-120B.

122A-122B. Advanced Calculus. (3-3) Yr. Beginning either semester.

Prerequisite: course 108, or 110C, or 119A.

Mr. Berkson

Fundamentals of calculus from a more advanced point of view. The real number system; continuous functions. General theory and application of partial differentiation. Implicit function theorems. Vector fields. Line and surface integrals. Point set theory. Theory of integration. Infinite series. Uniform convergence. Improper integrals.

124. Vector Analysis and Potential Theory. (3) I, II.

Mr. Green

Prerequisite: course 4B. Recommended: one year of college physics.

Vector algebra, fields, calculus. Stokes' and Green's theorems. Application to potential theory. Harmonic functions.

125. Analytic Mechanics. (3) II.

Mr. Valentine

Prerequisite: course 119A or 110C, and one of 122A, 124 Physics 105, or consent of the instructor.

Foundations of Newtonian mechanics; kinematics and dynamics of a rigid body; variational principles and Lagrange's equations.

127A-127B. Foundations of Mathematics. (3-3) Yr.

Mr. Chang

Prerequisite: senior standing in mathematics. Juniors with exceptional ability may be admitted with special consent of the instructor.

Course 127A covers the basic logical ideas by means of symbolic logic.

Course 127B covers set theory, theory of relations, the logical background of function theory, the number system, and induction.

135. Numerical Mathematical Analysis. (3) I, II.

Mr. Henrici

Prerequisite: course 119A or consent of the instructor.

Computation with numbers of fixed precision—accuracy, round off, checking. Choice and use of tables. Applications involving approximations with polynomials—finite differences, interpolation, extrapolation, numerical differentiation and integration. Computation with continued fractions. Numerical approximation to solutions of equations.

136. Numerical Methods in Algebraic Problems. (3) I, II.

Mr. Tompkins

Prerequisite: course 108 and some knowledge of coding for automatic digital computers, or consent of the instructor.

Spectral theory of finite matrices. Direct and iterative methods for inverting matrices and solving linear equations and inequalities. Various methods for obtaining characteristic values and vectors of matrices. Numerical solution of systems of nonlinear equations.

137. Numerical Methods in Differential Equations. (3) II.

Mr. Henrici

Prerequisite: courses 119A and 122A.

Forward integration; error analysis; Milne, Runge-Kutta, and difference methods; systems of equations; higher order and nonlinear equations; two-point boundary conditions.

138. Numerical Methods of Approximation. (3) I.

Mr. Motzkin

Prerequisite: course 135, or consent of the instructor.

Polynomial approximation of functions of one or more variables in the senses of least-squares. Orthogonal polynomials. Continued fractions and rational approximation. Approximation by other function families. Gaussian quadrature. Emphasis throughout on numerical methods for use with automatic digital computing machinery.

139. Automatic Digital Computers. (3) I, II.

Mr. Hollander

Prerequisite: course 119A (may be taken concurrently), or consent of the instructor.

† Such knowledge may be obtained by taking either course 41 or course 139 or by suitable experience

Idealized description of electronic components suitable for digital computing; Boolean algebra; organization and logic of large digital computers; coding and other means of applying these components effectively to the solution of extensive problems.

140. Logic of Applications of Automatic Digital Computers. (3) II.

Mr. Tompkins

Prerequisite: courses 119A and 139, or consent of the instructor.

The logic of coding automatic digital computers; parts of a code; automatic coding; coding symbolisms and logic; microcoding; iterative routines, approximations, and other techniques for effective exploitation of automatic computers. Examples of codes will be prepared by each student.

142. Introduction to Linear Programming. (3) I, II.

Mr. Tompkins

Prerequisite: courses 4B and 108, or the equivalent.

A basic course in the principles of linear programming together with applications to industry, business and other fields. Simplex methods and alternative methods for solving linear inequality systems will be stressed. Use of electronic computers for linear programming work.

185. Introduction to Complex Analysis. (3) I, II.

Mr. Coddington

Prerequisite: courses 110A-110B, 110C, or 119A.

Complex numbers, functions, differentiability, series, extensions of elementary functions, integrals, calculus of residues, conformal maps and mapping functions with applications.

197. Directed Group Studies for Advanced Students. (2-4) I, II.

Prerequisite: consent of the instructor.

Mr. Valentine in charge

199. Special Studies in Mathematics. (1-3) I, II.

The Staff

Prerequisite: senior standing and consent of the department.

GRADUATE COURSES

(Open only to students who have graduate status.)

205. Analytic Number Theory. (3) I.

Mr. Rogers

Prerequisite: courses 111A, 115A, and 122A, completed or taken concurrently.

Domain of real integers, additive and multiplicative theory, integral domains, partitions, special series, prime number theory.

***206. Algebraic Number Theory.** (3) I.

Mr. Straus

Prerequisite: course 221A and 122B or consent of instructor.

Ideals, valued rings, ideal classes, quadratic and cyclotomic fields, applications to Diophantine equations, elements of class field theory, prime ideal theorem, Thue-Siegel-Roth and related theorems.

209A-209B. Real Analysis. (3-3) Yr.

Mr. Dye

(Replaces the former 209, 242AB.)

Prerequisite: course 122A-122B or the equivalent.

Point-set topology in Euclidean space. More general spaces. Continuous functions. Convergence and approximation theorems. Functions of bounded variation. Integrals and measures. Multiple integrals and the Fubini theorem. Absolutely continuous functions. Set functions. Differentiation and integration. The L^p spaces.

210A-210B. Differential Geometry. (3-3) Yr.

Mr. O'Neill

Prerequisite: course 112B or consent of the instructor.

Application of techniques of algebra, analysis, topology to study geometric

* Not to be given, 1961-1962.

objects. Smooth manifolds, their local properties, their global properties and relations between global and local properties. Fiber bundles and their geometric applications.

212. Algebraic Geometry. (3) II.

Prerequisite: courses 111A, 112A.

Algebraic preliminaries, projective space, Grassmann coordinates, colineations and correlations.

214. Topics in the Theory of Convex Sets. (3) I.

Mr. Valentine

Prerequisite: either one of the courses 209A, 224A, 226A, or the consent of the instructor.

Basic theorems for convex sets in topological linear spaces; separation theorems and support properties; local convexity; families of convex sets and isoperimetric problems; characterizations of convex sets; convex functions; Helly type theorems.

***215. Non-Euclidean Geometry. (3) II.**

Mr. Steinberg

Prerequisite: consent of the instructor. Recommended: course 208.

220A-220B. Advanced Probability. (3-3) Yr.

Mr. Breiman

Prerequisite: course 209A.

Review of essential material in measure and integration. Probability distributions, independence and convergence, characteristic functions, the continuity theorem, central limit theorem, laws of large numbers. The Borel zero-one law, Glivenko-Cantelli theorem and other topics.

221A-221B. Higher Algebra. (3-3) Yr.

Mr. Steinberg

Prerequisite: course 111A.

222. Theory of Groups. (3) I.

Mr. Steinberg

Prerequisite: course 221A-221B or 111A and consent of the instructor.

Classical theorems of general group theory, permutation groups, group representations, basic facts on topological and Lie groups.

224A. Complex Analysis. (3) I, 1f.

Mr. Beckenbach

Prerequisite: courses 122A-122B.

Students with facility for mathematics may take courses 224A-B in their senior year. These courses include the theory in course 185. Students who have credit for course 224B will not be given credit for course 224A. Course 224A covers the approximate equivalent of Ch. I-III of Ahlfors' "Complex Analysis." Introduction to and rigorous treatment of the theory of complex numbers and functions, linear transformations, conformal mappings, Cauchy's theorem and its consequences, residue calculus.

224B. Complex Analysis. (3) I, II.

Mr. Horn

Prerequisite: course 224A.

This course covers the approximate equivalent of Ch. IV-VI of Ahlfors' "Complex Analysis." Taylor and Laurent series, Mittag-Leffler and Weierstrass theorems, normal families, Poisson's formula, Harnack's principle, Jensen's formula, subharmonic functions, canonical mappings, analytic continuation, the monodromy theorem, and algebraic functions.

224C. Topics in Higher Complex Analysis. (3) II.

Mr. Sario

Prerequisite: courses 224A, 224B, the latter previously or concurrently.

Introduction to a special field of higher complex analysis, e.g., univalent functions, boundary correspondence, meromorphic functions, automorphic functions, subharmonic functions, several complex variables, kernel functions,

* Not to be given, 1961-1962.

variational methods, special functions. The content of the course varies from semester to semester.

225A-225B. Mechanics of Continua. (3-3) Yr. Mr. Sokolnikoff

Prerequisite: course 122A-122B or consent of the instructor.

Course 225A deals with the theory of mechanics of deformable media, analysis of stress, analysis of strain, stress-strain relations, energy theorems, fundamental boundary value problems of mechanics of continua.

Course 225B deals with the variational methods of solution of problems of elasticity, uses of the analytic function theory in two-dimensional problems, theory of plates and shells.

226A-226B Topology. (3-3) Yr. Mr. Hu

Prerequisite: course 209A, taken previously or concurrently, or consent of the instructor.

Properties of topological spaces: separation axioms, compactness, connectedness; metrizable; further topics selected from general and algebraic topology.

***227. Infinite Series.** (3) II. Mr. Redheffer

Prerequisite: course 224A or 209A, 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.

228A-228B. Introduction to Functional Analysis. (3-3) Yr. Mr. Dye

Prerequisite: courses 209A, 224A, or consent of instructor.

Linear spaces, especially with topology or norm. Dual space. The standard theorems on linear operators. Introduction to spectral theory in Hilbert space. Analysis of vector valued functions. Operational calculus. Commutative normed rings. Spectral representation and multiplicity.

229A-229B. Applied Complex Analysis. (3-3) Yr. Mr. Henrici

Prerequisite: course 122A, or 110C, or 110AB. Students who have credit for course 224A will not be given credit for course 229A.

The course covers the equivalent of Copson's "Theory of Functions" with applications to engineering and physics. Complex numbers, infinite series, Cauchy's theorem, residue calculus, various methods of conformal representation, the Gamma function, hypergeometric functions, Legendre functions, Bessel functions, elliptic functions, and orthogonal polynomials.

233A-233B. Mathematical Logic. (3-3) Yr. Mr. Chang

Prerequisite: courses 127A-127B and 221A-221B, or consent of instructor.

Gödel's incompleteness theorem and related results, recursive functions and sets; axiomatic set-theories, problems of axiomatization, independence, and consistency; theory of models, arithmetical classes and their algebraic properties; higher order functional calculi; generalizations of Gödel's completeness theorem; many valued logics.

234A-*234B. Riemann Surfaces. (3-3) Yr. Mr. Sario

Prerequisite: courses 111A, 224A, or consent of the instructor.

Course covers the book "Riemann Surfaces" by L. Ahlfors and L. Sario. Topological spaces, covering surfaces, simplicial homology, singular homology, harmonic and subharmonic functions, Dirichlet's problem, normal operators, conformal mappings, capacities, classification theory, extremal length, method of orthogonal projection, kernel functions, Abel's and Riemann-Roch's theorems.

* Not to be given, 1961-1962.

***235. Lie Groups. (3) I.** Mr. Arens

Prerequisite: course 209A or 226A, or consent of the instructor.

Real and complex analytic manifolds of several dimensions, the analysis of covering manifolds, and the monodromy principle. Infinitesimal transformations, Lie groups and Lie algebras, and the correspondence between the analytic subgroups of a Lie group, and the subalgebras of its algebra.

***236. Topological Groups. (3) II.** Mr. Blattner

Prerequisite: courses 224A, 226A, or consent of the instructor.

Invariant integration, group algebras, representation of Abelian and compact groups.

***237A-237B. Calculus of Variations. (3-3) Yr.** Mr. Hestenes

Prerequisite: courses 224A, 209A, or consent of the instructor.

The differential equation of a curve minimizing a definite integral. Other properties of a minimizing curve analogous to those deduced by Legendre, Weierstrass, and Jacobi. Conditions which insure the existence of a minimum, extensions to multiple integrals.

238. Algebras of Operators in Hilbert Space. (3) I. Mr. Blattner

Prerequisite: courses 228A-228B, 209A, or consent of instructor.

Convergence of operators; weakly closed (Von Neumann) algebras. Density theorems; algebraic and unitary invariants; classification of projections. Dimension function.

***239. Boolean Algebras. (3) II.** Mr. Horn

Prerequisite: course 226A or consent of the instructor.

Axioms and elementary properties, completeness properties, distributivity laws, ideal theory, sub-algebras and quotient algebras, representation theory, applications to topology, Boolean algebras with operators, closure algebras.

240. Topological Linear Algebras. (3) II. Mr. Curtis

Prerequisite: courses 226A and 228A-228B.

Representation of, and approximation in, certain Banach algebras. Operational calculus for several elements. Extension problems. Analytic function algebras. Inverse limits of Banach algebras.

241. Semigroups of Operators. (3) I.

Prerequisite: course 228A-228B.

Theory of semigroups of operators, with applications to the Cauchy problem in partial differential equations.

***243A-243B. Ordinary Differential Equations. (3-3) Yr.** Mr. Henrici

Prerequisite: courses 224A, 209A, or consent of instructor.

Existence and uniqueness theorems, linear systems, systems with isolated singularities of the first and second kind, regular and singular boundary value problems, perturbation theory, Poincare-Bendixson theory, stability, asymptotic behavior, and spectral theory of symmetric differential operators. Will normally be offered every other year.

***244. Partial Differential Operators. (3) II.** Mr. Coddington

Prerequisite: course 228A-228B and consent of instructor.

Linear partial differential operators of all orders, emphasizing functional analysis. Boundary value problems, expansions. Weak, strong, and distribution-solutions.

246A-246B. Partial Differential Equations. (3-3) Yr. Mr. Redheffer

Prerequisite: course 224A or 209A or Engineering 181A, or consent of instructor.

* Not to be given, 1961-1962.

The Cauchy-Kowalewski theorem. Characteristics. Formulation and rigorous classical analysis of elliptic, hyperbolic and parabolic equations of second order. Aspects of applications of current interest and augmentation of material to attack these problems.

***247A-247B. Tensor Analysis. (3-3) Yr.** Mr. Sokolnikoff

Prerequisite: course 122A-122B or consent of the instructor.

247A. Vectors in n -dimensional and infinitely dimensional manifolds. Linear transformations. Algebra and calculus of tensors. Applications to geometry.

247B. Applications to differential geometry of curves and surfaces. First and second differential forms, geodesics in Riemannian manifolds. Equations of Gauss and Codazzi. Applications to various branches of applied mathematics, including the theory of relativity.

251. Computational Aspects of Linear Problems. (3) II. Mr. Henrici

Prerequisite: courses 111A or 136, and 139, or consent of the instructor.

Analysis of numerical methods for inverting matrices, solving systems of linear equations and inequalities, computing eigenvalues and eigenvectors of finite matrices, solving and evaluating linear games. Special attention to suitability of methods for electronic digital computers.

252. Computational Aspects of Partial Differential Equations. (3) I. Mr. Henrici

Prerequisite: courses 122AB, 139, or consent of the instructor.

Finite difference methods: convergence, stability, error analysis, relaxation techniques. Methods based on minimum principles. Solutions in series form. Numerical solution of integral equations. Role of Digital computing machines.

253. Approximation Theory. (3) II. Mr. Motzkin

Prerequisite: course 138 or consent of the instructor.

Approximation problems and relevant spaces. Existence, uniqueness and oscillation of best approximations. Least p^{th} power and least maximum approximation. Infrafunctions. Unisolvence. Related problems in the complex domain and in geometry. Incompatible systems. Inequalities. Numerical methods. Estimates of the measure of approximation, characteristic for classes of approximees: theorems of Weierstrass and Bernstein.

260. Seminars in Mathematics. (3) I, II. The Staff

Topics in various branches of mathematics and their applications, by means of lectures and informal conferences with members of the staff. Seminars for 1960-1961 will include:

Fall Semester

- | | |
|---------------------------------------|----------------|
| Sec. 1. Seminar for Master's Essay. | Mr. Straus |
| Sec. 2. Seminar in Homotopy Theory. | Mr. Hu |
| Sec. 3. Seminar in Ergodic Theory. | Mr. Dye |
| Sec. 4. Seminar in Absolute Analysis. | Mr. Nevanlinna |

Spring Semester

- | | |
|--|----------------|
| Sec. 1. Seminar for Master's Essay. | Mr. Valentine |
| Sec. 2. Seminar in Class Field Theory. | Mr. Rogers |
| Sec. 3. Seminar in Convexity. | Mr. Beckenbach |
| Sec. 4. Seminar in Game Theory. | Mr. Ferguson |
| Sec. 5. Seminar in Applied Statistics. | Mr. Hoel |

290. Research in Mathematics. (1 to 6) I, II. The Staff

* Not to be given, 1961-1962.

PROFESSIONAL COURSE IN METHOD

370. The Teaching of Mathematics. (3) II.

Mr. Johnson

Prerequisite: course 4A or 37 and senior standing.

A critical inquiry into present-day tendencies in the teaching of mathematics.

STATISTICS

LOWER DIVISION COURSE

1. Elementary Statistics. (3) I, II.

Mr. Ferguson in charge

Emphasis is placed on the understanding of statistical methods. Topics covered are empirical and theoretical frequency distributions, sampling, estimation, hypothesis testing, correlation, regression, modern techniques.

UPPER DIVISION COURSES

120A-120B. Probability and Statistics. (3-3) Yr.

Mr. Breiman

(Replaces former Mathematics 120.)

Prerequisite: senior standing in mathematics, or consent of instructor. Designed for a student who desires to learn probability, and also theoretical statistics. Students with credit in Statistics 131A-131B will not receive credit for Statistics 120B.

First semester: basic laws of probability, discrete and continuous random variables, expectation, distribution, limit theorems. Second semester: basic distributions of statistics, sampling theory, estimation, hypothesis testing.

131A-131B. Statistics. (3-3) Yr.

Mr. Ferguson

Prerequisite: course 4B. Students with credit in Statistics 120B will not receive credit for Statistics 131A. Students with credit for Engineering 83 will receive one unit of credit for Statistics 131A.

A basic introductory course in the theory and applications of statistical methods. This course is designed for students who wish to learn statistical methods without first taking a course in probability and who are interested in applications.

GRADUATE COURSES

231. Multivariate Analysis. (3) I.

Mr. Hoel

Prerequisite: Statistics 131A-131B; recommended: Mathematics 122A.

Multivariate normal distribution. Analysis of variance. Distribution of product moments. Normal correlation and regression. Chi-square distribution.

232. Theory of Estimation and Testing Hypotheses. (3) I.

Mr. Ferguson

Prerequisite: Statistics 131A-131B; recommended: Mathematics 122A.

Estimates. Asymptotic efficiency and normality. Neyman-Pearson theory of tests.

233. Stochastic Processes. (3) I.

Mr. Breiman

Prerequisite: an upper division course in probability or mathematical statistics, or consent of the instructor.

Elements of Markoff processes, with applications to physics, biology, and engineering. Stationary processes, with applications to electronics and other fields.

240. Mathematical Theory of Design of Experiments. (3) II.

Mr. Massey

Prerequisite: Statistics 131A-131B, Mathematics 108, and consent of instructor.

Advanced statistical theory basic to the construction of experimental designs. Criteria for optimum designs. Methods of application to typical research problems.

260. Seminars. Prerequisite: Statistics 231 or 232.

Theoretical Statistics. (3) II.

Mr. Ferguson, Mr. Breiman

Topics will be selected from distribution theory, advanced probability, theory of inference, theory of experimental design, multivariate analysis, sequential analysis, nonparametric methods.

Applied Statistics. (3) II.

Mr. Hoel

Topics will be selected from those listed under Theoretical Statistics but the emphasis will be on applications.

NUMERICAL ANALYSIS RESEARCH

Numerical Analysis Research is a part of the Department of Mathematics of the University of California. It continues work formerly carried out on the campus by the Institute for Numerical Analysis of the National Bureau of Standards, which was replaced by this project on June 30, 1954. The group carries on basic research and training in numerical analysis and the efficient use of electronic digital computers for scientific and related purposes. It operates the SWAC, a fast electronic digital computing machine designed and built by the National Bureau of Standards with the financial support of the United States Air Force. The project provides facilities for large computation, which are available to University departments. With the cooperation of Numerical Analysis Research, the Department of Mathematics offers a series of courses and seminars to provide training in modern numerical analysis.

The research program of Numerical Analysis Research has been underwritten by the Office of Naval Research, United States Navy, and the Office of Ordnance Research, United States Army. The SWAC, library, and other equipment of the project are furnished by the United States Navy.

METEOROLOGY

(Department Office, 7127 Mathematical Sciences Building)

¹Jacob Bjerknes, Ph.D., *Professor of Meteorology.*

¹Jörgen Holmboe, M.Sc., *Professor of Meteorology.*

Joanne Malkus, Ph.D., *Professor of Meteorology.*

Morris Neiburger, Ph.D., *Professor of Meteorology (Chairman of the Department).*

Zdenek Sekera, Ph.D., *Professor of Meteorology.*

W. Lawrence Gates, Sc.D., *Associate Professor of Meteorology.*

Yale Mintz, Ph.D., *Associate Professor of Meteorology.*

²Morton G. Wurtele, Ph.D., *Associate Professor of Meteorology.*

James G. Edinger, Ph.D., *Assistant Professor of Meteorology.*

———, *Assistant Professor of Meteorology.*



Robert E. Holzer, Ph.D., *Professor of Geophysics.*

Clarence E. Palmer, D.Sc., *Professor of Geophysics.*

Letters and Science List.—All undergraduate courses in this department are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

Preparation for the Major.—Course 4A; Physics 1A, 1B, 1C, 1D, or Physics 1A, 1B, 2B, or Physics 2A, 2B; Mathematics 1, 3A, 3B, 4A, 4B, or Mathematics 5A, 5B, 6A, 6B. Chemistry 1A is strongly recommended. Mathematics 4B may be taken during the junior year.

¹ In residence fall semester only, 1961–1962.

² In residence spring semester only, 1961–1962.

131A. Thermodynamics, Hydrostatics and Elementary Dynamics of the Atmosphere. (5) I. Mrs. Malkus

Lecture, four hours; laboratory, three hours. Prerequisite: course 4A. Prerequisite or concurrent: Mathematics 110A and 110B, or 119A or 110C; Physics 112.

Thermal properties of air and water vapor. Adiabatic processes. Atmospheric soundings and hydrostatic stability. The equations of motion relative to the earth. Geostrophic and gradient flow. Frontogenesis and frontal equilibrium. Variation of wind with height. Vertical motion and convection.

131B. Dynamics of the Atmosphere. (5) II. Mr. Gates

Lecture, two hours; laboratory, twelve hours. Prerequisite: course 131A.

Differential properties of the velocity field: divergence, vorticity. The equation of continuity; the vorticity equation. Waves in zonal flow; long waves in the westerlies. Frontal waves and cyclones. Baroclinic processes. Energy conversions. Relations of cloud and weather to the field of motion.

140. Radiation Processes in the Atmosphere. (3) II. Mr. Sekera

Prerequisite: course 104 or Physics 108B and 110.

Radiative transfer in a planetary atmosphere, with application to the solar, sky, and heat radiation of the earth and atmosphere. Radio wave propagation in the atmosphere; principles and methods of radar meteorology.

141. Physics of the Upper Atmosphere. (3) II. Mr. Holzer

Prerequisite: course 104, or Physics 108B or 113.

Direct and indirect methods of the study of upper atmospheric layers. Physical properties of the upper atmosphere; composition, temperature and pressure; ozone layer; aurora and airglow; ionosphere.

151. Principles of Weather Analysis and Forecasting. (5) I.

Prerequisite: courses 131A-131B.

Mr. Bjerknes, Mr. Mintz

Advanced laboratory exercises in the analysis of the structure of wind and weather systems and the laws of their development and motion. Forecasting temperature, clouds, precipitation, fog, icing, turbulence, and severe storms.

199. Special Studies in Meteorology. (1-3) I, II. Mr. Edinger, Mr. Neiburger

Prerequisite: senior standing and consent of the instructor.

GRADUATE COURSES

201. Advanced Synoptic Meteorology. (3) I. Mr. Bjerknes

Prerequisite: courses 131A-131B and 108.

217. Meteorological Hydrodynamics. (3) II. Mr. Wurtele

Prerequisite: course 121.

230A-B-C-D. Advanced Topics in Numerical Weather Prediction.

(2-2-2-2) I.

Mr. Gates

Prerequisite: course 130.

231A-B-C-D. Advanced Topics on the Higher Atmosphere. (2-2-2-2) I.*232A-B-C-D. Advanced Topics in Dynamic Meteorology. (3-3-3-3) I.**

Mr. Holmboe

233A. Advanced Topics in Synoptic Meteorology and Physical Climatology. (2) II.

Mr. Mintz

In 1962 course 233A will be devoted to a review of present knowledge of the atmospheres of other planets.

* Not to be given, 1961-1962.

- *233B. Advanced Topics in Synoptic Meteorology and Physical Climatology. (2) II.
- 234A-B-C-D. Advanced Topics in Physical Meteorology. (2-2-2-2) I, II.
Mr. Neiburger, Mr. Sekera
260. Seminar in Meteorology. (2) I, II. Mr. Neiburger
281. Seminar in Cloud Physics. (2) I. Mr. Neiburger
262. Seminar in Meteorological Hydrodynamics. (2) I, II.
Mr. Holmboe, Mr. Wurtele
263. Seminar in Synoptic Meteorology and Climatology. (2) I. Mr. Mintz
264. Seminar in Physical Meteorology. (2) I, II. Mr. Holzer, Mr. Sekera
297. Individual Studies for Graduate Students. (1-4) I, II. Mr. Neiburger
299. Research on Doctoral Dissertation. (1-6) I, II. Mr. Mintz

MICROBIOLOGY

Requirements for the Master's Degree

1. For the general requirements, see pages 69-71. Plan I is followed.
2. Microbiology is classed as a series of offerings in a field rather than in a department. For admission to this field, completion of an approved undergraduate major in bacteriology, biochemistry, botany, microbiology, or zoology is demanded.

3. A reading knowledge of French or German is essential. In exceptional cases proper substitution may be permitted with the approval of the department and the Dean of the Graduate Division.

The requirements for the master's degree ordinarily are met on the campus in Los Angeles, but if occasion demands, courses properly selected at other campuses of the University, will be accepted for partial fulfillment.

Requirements for the Doctor's Degree

1. For the general requirements, see pages 71-74.
2. The particular requirements of the group include the following: (a) Completion of an appropriate undergraduate major. (b) An effective reading knowledge of French and German. (c) General chemistry, organic chemistry, biochemistry, and quantitative analysis. (d) A year course in physics with appropriate laboratory. This must be Physics 2A-2B of the Los Angeles campus or its equivalent. (e) Sufficient training in mathematics to enable the student to handle simple statistical methods. (f) One semester course in each of the following: bacteriology, botany, and zoology. (g) Upper division work in at least two of the following fields: bacteriology, biochemistry, cytology, histology, mycology, zoology, fresh water and marine microbiology. (h) In addition, the executive committee of the group in microbiology will hold the student responsible for other work according to the particular field chosen. For example, a student working toward a degree in marine microbiology at the Scripps Institution of Oceanography would be obliged to comply with the prescribed preliminary requirement for a degree in oceanography or marine sciences.

Instructional and course facilities for selected graduate students in the field of microbiology are available on the campuses at Riverside, San Diego, and Los Angeles.

* Not to be given, 1961-1962.

Graduate students in the department with majors in bacteriology should consult the chairman of the Department of Bacteriology concerning a recommended program for completion of requirements and the deadlines for satisfying these requirements.

The campus or campuses on which the student resides while working for a doctor's degree in microbiology will be determined by the nature of his work and by the general requirements.

Research in microbiology may be in the fields of agricultural bacteriology, bacteriology, biochemistry, cryptogamic botany, marine or fresh-water microbiology, mycology, phytoplankton, zoology and zooplankton.

Teaching Assistantships.—The staff considers teaching assistantships an important part of predoctoral training. Therefore, and regardless of other financial support which may be available, each graduate student, as one of the requirements for the doctorate, should serve not less than two semesters as a teaching assistant.

MILITARY SCIENCE AND TACTICS

(Department Office, 127 Men's Gymnasium)

Paul Burns, B.S., Colonel, Artillery, *Professor of Military Science (Chairman of the Department)*.

Vernon C. Devan, Major, Infantry, *Associate Professor of Military Science*.

George W. Schilling, Jr., A.B., Lieutenant Colonel, Infantry, *Associate Professor of Military Science*.

Richard V. Atkinson, A.B., Captain, Infantry, *Assistant Professor of Military Science*.

William C. De Lapp, III, A.B., Captain, Military Police Corps, *Assistant Professor of Military Science*.

Ishmael Pack, B.S., Captain, Infantry, *Assistant Professor of Military Science*.

Francis M. Sargent, B.S., Captain, Chemical Corps, *Assistant Professor of Military Science*.

Ernest B. de Silva, A.B., Captain, Infantry, *Assistant Professor of Military Science*.

Letters and Science List.—All undergraduate courses in this department up to a total of 12 units are included in the Letters and Science List of Courses. Note: This in no way prejudices counting additional military science courses up to the 12 units of non-Letters and Science credit accepted toward the degree. For regulations governing this list, see page 2.

College of Engineering.—Lower division: 6 units are acceptable toward the baccalaureate. Upper division: 6 units of nonmajor field electives and the 3 units of optional electives, a total of 9, may be applied toward the baccalaureate.

ARMY RESERVE OFFICERS' TRAINING CORPS

The Army R.O.T.C. course provides college-level training in the general military science curriculum leading to a commission in the Army. Students in all academic fields are eligible for admission in the general military science program. The purpose of the course is to provide a general type of training to produce officers who may serve in any arm of service of the Army after further basic training in the appropriate service school. The length of such service is to be a period of six months to two years, contingent upon the requirements of the service and/or the desires of the individual, as prescribed by the Armed Forces Reserve Act of 1955. It is the continuing effort of the Department of the Army to assign graduates to the arm or service most closely aligned with the individual's capabilities, professional training, and preference.

The course is divided into two general parts: (1) the two-year Basic Course for all qualified male students who select Army R.O.T.C. for completion of the two-year military training requirements prescribed by the University for graduation 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. Successful completion of the four-year R.O.T.C. branch general curriculum qualifies graduates for a commission in any arm of service. The interests, aptitudes, and educational accomplishments of the student are given careful consideration in order that he may be recommended for a commission in the arm of service for which he is best qualified.

The Universal Military Training and Service Act (65 Stat. 75; 50 U.S.C. App. 451-467) as amended, and as further amended by the Reserve Forces Act of 1955 (PL305, 84th Congress; DA Bul. 12, 1955) provides for deferment from the draft of regularly enrolled students currently pursuing a course in military science who meet the standards for acceptance and who agree to complete the Advanced Course training upon completion of the Basic Course. The purpose of deferring a student's active military service until completion of the R.O.T.C. course of instruction is to permit him to complete the entire four-year R.O.T.C. program prior to undertaking his active military service obligations. Additional information may be obtained from the department.

BASIC COURSE (LOWER DIVISION)

The Basic Course is required by University regulations for all qualified lower division male students. Students claiming exemption from all or part of the Basic Course because of non-citizenship, physical disability, age (over twenty-four years of age at time of initial enrollment in the Basic Course), active service in the Armed Forces, or previous R.O.T.C. training may petition the University for exemption. However, a student petitioning for exemption must enroll in the appropriate R.O.T.C. course pending completion of official action on his petition.

The objective of the two-year Basic Course R.O.T.C. curriculum is to acquaint the student with the fundamental principles of national security through the study of the military history of our country, to introduce the techniques and principles of modern warfare, and to develop the traits of character and leadership necessary to prepare him to discharge his citizenship obligations. These courses prepare the student for the Advanced Course. Draft deferments may be granted to qualified Basic Course students who intend to pursue the four-year R.O.T.C. training program.

All necessary equipment, uniforms, and textbooks are provided free of charge to students.

1A-1B. First-Year Basic Military Science. (1-1) Yr. The Staff

One hour of classwork and one hour of leadership laboratory.

Organization of the Army R.O.T.C., U. S. Army and National Security, individual weapons and marksmanship, leadership laboratory.

In addition, the student must complete a two unit elective in one of the following fields: effective communication, science comprehension, general psychology, political development and political institutions.

20A-20B. Second-Year Basic Military Science. (2-2) Yr. The Staff

Prerequisite: course 1A-1B. Two hours of classwork and one hour of leadership laboratory.

American military history, map and aerial photography reading, introduction to basic tactics and techniques, leadership laboratory.

THE ADVANCED COURSE (UPPER DIVISION)

The Advanced Course of instruction is designed to produce junior officers who by their education, training, and inherent qualities are suitable for continued development as officers in any arm or service of the United States Army. 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. Advanced Course students pursuing courses in basic science and engineering are fully qualified for commissions in the arms or service related to their academic course of study.

Admission to the Advanced Course is by selection from among qualified regularly enrolled students who meet the academic and physical requirements and who have demonstrated positive interest and leadership potential. Students may apply who have successfully completed one year of the Basic Course who have the credit for the Basic Course from other institutions authorized to present the equivalent instruction or who present evidence of satisfactory service in the Armed Forces. A student must qualify for appointment as second lieutenant prior to reaching twenty-eight years of age. All students accepted for entrance into the Advanced Course must have at least two more academic years remaining in either the graduate or undergraduate course before qualifying for their first baccalaureate degree.

Students accepted for admission to the Advanced Course receive approximately \$535 in pay during the two-year period (exclusive of summer camp) in addition to the use of all necessary equipment and textbooks free of charge. The officer-type uniform provided each student becomes his personal property upon successful completion of the Advanced Course.

Advanced Course students are required to attend a six-week course of training at R.O.T.C. Summer Camp during the summer vacation period following the completion of the first year of the Advanced Course; this Summer Camp is attended by Advanced Course R.O.T.C. students from several universities. The training at camp is designed to provide the broad background necessary for a junior officer and stresses practical work in leadership, physical development, and knowledge of the important roles played by all branches of the service in the military team. Supervised social and recreational activities are provided. The student is furnished uniforms, equipment, and receives \$78 per month and travel expenses to and from camp. Academic credit of 3 units for the six weeks of camp is granted by the University.

103A-103B. First-Year Advanced Military Science. (2-3) Yr. The Staff

Two hours of class work 103A, three hours of class work 103B, and one hour of leadership laboratory each week.

Leadership, military teaching principles, branches of the Army, small-unit tactics and communications, precamp orientation, leadership laboratory.

In addition, the student must complete a three unit elective in one of the following fields: effective communications, science comprehension, general psychology, political development and political institutions.

104A-104B. Second-Year Advanced Military Science. (2-3) Yr. The Staff

Prerequisite: Basic Course and course 103A-103B.

Two hours of classwork 104A, three hours of classwork 104B, and one hour of leadership laboratory each week.

Operations, logistics, army administration, military law, the role of the United States in world affairs, service orientation, leadership laboratory.

In addition, the student must complete a three unit elective in one of the following fields: effective communications, science comprehension, general psychology, political development and political institutions.

MUSIC

(Department Office, 2449 Music Building)

Lukas Foss, *Professor of Music.*Boris A. Kremenliev, Ph.D., *Professor of Music.*Robert U. Nelson, Ph.D., *Professor of Music.*Laurence A. Petran, Ph.D., F.A.G.O., *Professor of Music and University Organist.*H. Jan Popper, Ph.D., *Professor of Music.*Feri Roth, Mus.Doc., *Professor of Music.*Walter H. Rubsam, Ph.D., *Professor of Music.*Clarence Sawhill, M.M., *Professor of Music.*Charles A. Seeger, *Begents Professor of Music.*John N. Vincent, Jr., Ph.D., *Professor of Music.*_____, *Professor of Music.*Mantle Hood, Ph.D., *Associate Professor of Music.*W. Thomas Marrocco, Ph.D., *Associate Professor of Music.*Raymond Moremen, M.S.M., *Associate Professor of Music.*Robert M. Stevenson, Ph.D., *Associate Professor of Music.*Frances Wright, *Associate Professor of Music, Emeritus.*Paul E. Des Marais, M.A., *Assistant Professor of Music.*Maurice Gerow, M.M., *Assistant Professor of Music.*Edwin H. Hanley, A.B., *Acting Assistant Professor of Music.*Paul J. Revitt, Ph.D., *Assistant Professor of Music.*Roy E. Travis, M.A., *Assistant Professor of Music.*Robert M. Trotter, Ph.D., *Assistant Professor of Music.*Harry R. Edwall, M.M., *Acting Assistant Professor of Music.*Donn Weiss, M.A., *Acting Assistant Professor of Music.*_____, *Assistant Professor of Music.*_____, *Assistant Professor of Music.*William B. Hutchinson, Ph.D., *Instructor in Music.*Irving Beckman, M.A., *Lecturer in Music.*Robert L. DiVall, A.B., *Lecturer in Music.*George Drexler, *Lecturer in Music.*Charles DeLancey, M.A., *Lecturer in Music.*Richard J. Dufallo, M.A., *Lecturer in Music.*Arthur Edwards, Ph.D., *Lecturer in Music.*Bert Gassman, *Lecturer in Music.**Albert Goldberg, Mus.M., *Lecturer in Music.*Freeman K. James, *Lecturer in Music.*Sinclair R. Lott, A.B., *Lecturer in Music.*Mitchell Lurie, *Lecturer in Music.*Frederick W. Moritz, *Lecturer in Music.*Peter Mercurio, M.A., *Lecturer in Music.*Stanley E. Plummer, *Lecturer in Music.*Gilbert Reaney, M.A., *Lecturer in Music.*Leo Smit, *Lecturer in Music.*Paul O. W. Tanner, A.B., *Lecturer in Music.*Pauline Turrill, M.A., *Lecturer in Music.*Erwin Windward, A.B., *Lecturer in Music.*Waldo Winger, M.A., *Lecturer in Music.*Roger Wagner, Mus.Doc., *Lecturer in Music.*

* In residence spring semester only, 1961-1962.

Natalie Limonick, A.B., *Associate in Music.*

Pauline Turrill, M.A., *Associate in Music.*

Charles A. Seeger, *Research Associate in Ethnomusicology.*

———, *Lecturer in Music.*

———, *Lecturer in Music.*

———, *Lecturer in Music.*

———, *Associate in Music.*



Virginia J. Whitfield, *Supervisor of Training, Music.*

Requirements for Entering Music Students.—Specialization in music presupposes some knowledge of the fundamentals of music and some ability in sight reading at the piano. Therefore, every new undergraduate student entering with less than 12 units of music theory (Music 1ABC and 3ABC) must, if he wishes to complete a major or teaching minor in music, take certain tests prior to his enrollment in classes. These examinations are given during registration week and, for fall applicants, at the end of the previous spring semester during the University examination period.

Students transferring 12 or more units of music theory credits (Music 1ABC and 3ABC or the equivalent) are not held for the examinations, and are eligible to take upper division courses having Music 1ABC and/or 3ABC as prerequisites.

Advanced Standing Examination.—Students transferring with credit for part of the 12 unit requirement in music theory (Music 1ABC and 3ABC) must take the Advanced Standing Examination in harmony and musicianship to determine their placement within the 1ABC and 3ABC sequence. If, as a result of the examination, a student is required to take a course for which he already has credit, he retains that credit but receives no further unit credit for the work repeated.

Basic Music Test.—Students entering without previous college credit in music theory must demonstrate literacy in basic music grammar by passing a test covering the following materials:

1. Recognizing notes in the treble and bass clefs, including leger lines.
2. Recognizing and writing notes involving all types of accidentals.
3. Identifying and writing key signatures for all major and minor scales.
4. Identifying time signatures and defining the significance of the fractions used for their notation.
5. Defining the mathematical relationships among whole, half, quarter, eighth, and sixteenth notes, as well as the significance of the so-called augmentation dot used to increase the length of a note.
6. Matching a given note, rhythmic pattern, or phrase by singing, humming, or whistling.

Enrollment in Music 1A and 3A depends upon passing the Basic Music Test.

Piano Sight Reading Test.—Students failing the Piano Sight Reading Test must immediately enroll in Music B (Sight Reading). Any student subsequently failing the course will be required to repeat it in the next semester of his residence in the University.

Further information concerning the Advanced Standing Examination, the Basic Music Test, or the Piano Sight Reading Test may be obtained from the office of the Department of Music.

The student may select a major in music in either the College of Letters and Science or in the College of Fine Arts; these majors lead to the degree of Bachelor of Arts in both instances. For information concerning teaching credentials, consult the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES.

College of Letters and Science

Letters and Science List.—All courses included in the series 1A to 30B; 100A to 115D, 118, 121A to 177, 197, and 199. For regulations governing this list, see page 2.

Preparation for the Major.—Courses 1A-1B-1C, 3A-3B-3C, 20A-20B, two semesters from the series 40A-K, and a year of University work in French, German, or Italian (or its high-school equivalent). Recommended: History 1A-1B and Physics 2A-2B or 10.

The Major.—Twenty-four units of upper division courses, distributed as follows: (a) course 100A-100B, (b) at least 4 units chosen from courses 121A to 177, (c) courses 104A-104B, 107A, and 109A, and (d) additional upper division courses in music, including four semesters from the series 190A-K.

College of Fine Arts

Distribution of Units.—The total number of units in Music Department courses which may be included in the 120 units required for the Bachelor of Arts degree may not exceed 54. Only 16 units from courses 40A-K, 41A-W, 190A-K, 191A-W, 192A-W, and 193 may be applied towards the bachelor's degree.

Preparation for the Major.—Courses 1A-1B-1C, 3A-3B-3C, 20A-20B, two semesters from the series 40A-K, and a year of University work in French, German, or Italian (or its high-school equivalent). Recommended: Physics 2A-2B or 10.

The Major.—Thirty-six units of upper division courses, distributed as follows: (a) course 100A-100B, (b) at least 4 units chosen from courses 121 to 177, (c) courses 104A-104B, 107A, and 109A, (d) four semesters from the series 190A-K, and (e) electives from upper division music courses to bring the total to 36 units.

Requirements for Teaching Credentials.—Within the 36 units required for the major, the candidates for a teaching credential must fulfill requirement (e) by including courses 110, 111, 115A-B-C-D. In addition he must take courses 41A or 191A (4 units) and 41E or 191E (4 units). For further information on teaching credentials, consult the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES.

Graduate Division

All students planning to become candidates for the Master of Arts or Doctor of Philosophy degrees in music are required to take Placement Examinations in the following subjects during their first semester of residence: *harmony, counterpoint, history and literature of music* (part I, before 1750; part II, after 1750), *formal analysis and identification of styles* (part I, before 1750; part II, after 1750), *score reading* (including *basic piano*) and *solo performance* in the student's principal medium. The student's transcript of credits must show at least a grade B average in each of the following subjects: *dictation, sight singing, keyboard harmony, orchestration, and conducting*. Deficiencies in the record must be removed by examination or formal course work. The completion of these requirements in their entirety is prerequisite to the final examinations for the M.A. degree and the qualifying examination for the Ph.D. degree; they also function as guidance examinations which point out to the student possible weaknesses or gaps in his undergraduate work. These examinations are given in the fall and spring semester during the fourth week of instruction; some portion of the examinations may also be given during the summer sessions. The student will be allowed to take each examination no more than three times and all must be passed within a two-year period. As soon as possible, and in any case before being assigned

a committee to guide his studies for a higher degree, the student must demonstrate his ability to write with insight on a musical subject in clear English, or to compose music showing definite promise.

A. Requirement for the General Secondary Credential.—Consult the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES.

B. Requirements for Admission to Graduate Courses.—

1. *As a candidate for the general secondary credential:* ordinarily the undergraduate major in music, or its equivalent, including courses 41A or 191A (4 units), 41E or 191E (4 units), 100A-100B, 104A-104B, 107A, 109A, 110, 111, 115A-115B-115C-115D, 4 units chosen from courses 121A, 177.

2. *As a candidate for the master's degree:* ordinarily the undergraduate major of 24 upper division units of music.

C. Requirements for the Master's Degree.—

For the general requirements, see page 69. In addition, candidates for the Master of Arts degree in music must satisfy the following:

1. *Admission:* the candidate must have the bachelor's degree with a major in music (or equivalent) as stated in this bulletin.

2. *Thesis:* the thesis plan (page 70, Plan I) is favored. A musical composition in large form is acceptable as a thesis.

3. *Course of Study:* the planning of the course of study will be done under the guidance of the graduate adviser. The candidate may place emphasis upon composition, musicology, or music education. He is expected to attend a seminar appropriate to his discipline during each semester of residence: *historical musicology*, courses 250, 256, 260A-260B; *composition*, courses 251A-251B, 252A-252B; *ethnomusicology*, course 280A-280B; *systematic musicology*; course 269; *music education*, course 270A-270B.

4. *Foreign Language:* a reading knowledge of French, German or Italian is required of all candidates for the degree.

5. *Course requirements:* all candidates are required to complete course 200A (Research Methods and Bibliography); all candidates save those whose field of specialization is composition must also complete course 200B.

6. *Examinations:* all candidates must take the *Placement Examinations* and pass them completely before taking the *Final Examination*.

D. Requirements for the Doctor's Degree.—

1. *General requirements:* candidates for the Ph.D. degree in music must fulfill the general requirements of the Graduate Division (see page 71). These include the completion of the undergraduate major in music in the College of Fine Arts or the College of Letters and Science, or an equivalent major completed elsewhere.

2. *The placement examinations:* passing the placement examinations described above is prerequisite to the qualifying examinations.

3. *Foreign language and other tools:* all candidates are expected to have a command of French and German, and of such other languages (Italian, Latin, Russian, Spanish) and skills (notation, statistics) as the field of specialization may require.

4. *Course requirements:* the candidate is required to complete course 200A-200B (Research Methods and Bibliography). He is also expected to attend a seminar appropriate to his discipline during each semester of residence (until the Ph.D. qualifying examinations have been passed): *historical musicology*, courses 250, 256, 260A-260B; *ethnomusicology*, course 280A-280B; *systematic musicology*, course 269; *music education*, course 270A-270B. Course 299 serves to guide the preparation of the dissertation and

should normally be taken for two semesters after the completion of the qualifying examinations.

5. Qualifying examinations: before he is admitted to candidacy, the student must pass a series of qualifying examinations, both written and oral. The general written examinations required of all candidates consist of the following: an orchestral composition (the student will use specified musical materials and complete the assignment within one month); an intensive examination in the analysis of musical form and style; two comprehensive examinations in the history and literature of western art music, one on music before 1750 and one on music since that date; an examination to demonstrate a basic knowledge of the music of other cultures; and an examination to demonstrate a basic knowledge of acoustics, aesthetics, and psychology of music. In the field of specialization, further written examinations are required in two areas. Among possible fields of specialization are the following: *the history and theory of western art music*, one area to be selected from ancient, medieval, renaissance, or baroque music, and one from classic-romantic or twentieth-century music; *the music of other cultures*, two areas, not contiguous, to be selected from Africa, the Americas (exclusive of art music), Europe (exclusive of art music), the Far East, the Near and Middle East, Oceania, and Southeast Asia; *music education*, one area comprising its historical, philosophical, and psychological bases, the other to be selected from music education on the early childhood-elementary, secondary, college-university, or adult level; *systematic musicology*, two areas to be selected from acoustics, psychology of music, aesthetics of music, and physiology of the voice together with construction and technique of instruments. To conclude the qualifying examinations, an oral examination covering all the special and general fields chosen from the above will be given by the entire doctoral committee.

LOWER DIVISION COURSES

Theory and Literature

B. Sight Reading. (No credit) I, II.

Mrs. Turrill

Two hours weekly. Although this course yields no credit, it displaces 2 units on the student's program. Every student failing the Sight Reading Test is required to take course B in the semester immediately following this failure.

Development of facility in sight reading at the piano. Preparatory exercises; accompaniments of the difficulty of Schubert's "Who Is Sylvia?"; simple four-part chorale harmonizations.

1A-1B-1C. Musicianship. (2-2-2) Three semesters. Beginning either semester.

Mr. Des Marais, Mr. Travis, Mr. Trotter

Three hours weekly, including one laboratory hour. Prerequisite: passing the Basic Music Test and concurrent registration in course 3A-3B-3C except as excused by the Advanced Standing Examination in Harmony.

Ear training, sight singing, dictation, and keyboard harmony correlated with the corresponding semester of course 3A-3B-3C.

3A-3B-3C. Harmony. (2-2-2) Three semesters. Beginning either semester.

Mr. Des Marais, Mr. Travis, Mr. Trotter

Two hours weekly. Prerequisite: passing the Sight Reading Test and concurrent registration in course 1A-1B-1C except as excused by the Advanced Standing Examination in Musicianship.

The harmonization of figured basses and of given and original melodies; 3A deals with triads and passing and auxiliary tones; 3B continues with the addition of seventh chords, elementary modulation, and the remaining non-chord tones; 3C deals with chromatic harmony.

20A-20B. Survey of Musical Literature. (2-2) Yr. Beginning either semester. Mr. Hanley

Three hours weekly, including one listening hour. Prerequisite: course 3A or concurrent registration in 3B. 20A is prerequisite to 20B.

Designed for the major and teaching minor in music. (Course 30A-30B is for general University students.) The study of representative musical masterworks and their background.

30A-30B. Introduction to the Literature of Music. (2-2) Yr. Beginning either semester. Mr. Des Marais, Mr. Hanley, Mr. Revitt, Mr. Travis, Mr. Trotter

Two hours lecture, one hour discussion, and one hour listening weekly. Course 30A is prerequisite to 30B. Designed for the general University student. Course 20A-20B is for the major and teaching minor in music.

A general survey of music literature, with emphasis on music from Bach's time to the present, including an introduction to technical and formal principles.

31. Fundamentals of Music. (3) I, II. Mr. Edvial

Three class meetings and one laboratory period weekly. May not be applied toward the degree by the student whose major is music.

Singing, ear training, music reading, elementary harmony, transposition, and conducting.

Performance

Courses in this series may be repeated for credit. Prerequisite: audition for consent of the instructor.

40A-K. Organizations. I, II.

40A. University Symphony Orchestra. (1) Mr. Foss
(Replaces former course 60.)
Four hours of rehearsal each week.
The study and performance of symphonic literature.

40B. University Concert Band. (1) Mr. Sawhill
(Replaces former course 61.)
Four hours of rehearsal each week.

40C. University Chorus. (1) No Audition. _____
(Replaces former course 62.)
Three hours of rehearsal each week.

40D. University A Cappella Choir. (1) Mr. Wagner
(Replaces former course 63.)
Three hours of rehearsal each week.
The study and performance of choral literature.

40E. University Glee Club. (1) Mr. Gerow
(Replaces former course 64.)
Three hours of rehearsal each week.

40F. Madrigal Singers. (1) Mr. Moremen
Three hours of rehearsal each week.
The study and performance of significant music of the madrigal school.

40G. Chamber Music Ensemble. (1) Mr. Roth
Three hours of rehearsal each week.
The study and interpretation of chamber music literature.

- 40H. Opera Workshop. (2)** Mrs. Limonick, Mr. Popper
 (Replaces former course 59.)
 Eight hours of rehearsal each week.
 The study of the musical, dramatic, and language techniques in opera through the performance of representative scenes and acts.
- 40J. Collegium Musicum. (1)** Mr. Rubsamen
 Three hours of rehearsal each week.
 The study and performance of instrumental and vocal music of the Medieval, Renaissance, and Baroque periods, using the original instruments wherever possible.
- 40K. University Marching, Varsity, and Cadet Band. (1)** Mr. Sawhill
 Four hours of rehearsal each week.
- 41A-W. Classes in Applied Music. (2) I, II.**
- 41A. Voice.** Mr. Moremen, Mr. Windward, Mr. Winger
 (Replaces former course 40.)
- 41E. Piano.** Mrs. Turrill
 (Replaces former course 41.)
- 41J. Organ.** Mr. Petran
 (Replaces former course 57.)
- 41K. Violin.** Mr. Roth
 (Replaces former course 42.)
- 41L. Viola.** Mr. Plummer
 (Replaces former course 43.)
- 41M. Cello.** _____
 (Replaces former course 44.)
- 41N. Bass Viol.** _____
 (Replaces former course 45.)
- 41P. Flute.** Mr. Drexler
 (Replaces former course 46.)
- 41Q. Oboe.** Mr. Gassman
 (Replaces former course 47.)
- 41R. Clarinet.** _____
 (Replaces former course 48.)
- 41S. Bassoon.** Mr. Moritz
 (Replaces former course 50.)
- 41T. French Horn.** Mr. Lott
 (Replaces former course 51.)
- 41U. Trumpet.** Mr. DiVall
 (Replaces former course 52.)
- 41V. Trombone.** Mr. Tanner
 (Replaces former course 53.)
- 41W. Percussion.** Mr. DeLancey
 (Replaces former course 55.)

UPPER DIVISION COURSES

100A-100B. History and Analysis of Music. (4-4) Yr. Beginning either semester. Mr. Marrocco, Mr. Rubsamen, Mr. Stevenson

Five hours weekly, including one listening hour. Prerequisite: courses 3A-3B-3C, 20A-20B, or their equivalent. Course 100A (from antiquity to 1750) is not prerequisite to course 100B (from 1750 to the present).

A study of the development of music; lectures, listening, technical analysis, and written reports.

Theory

101. Advanced Keyboard Harmony. (2) I. Mr. Des Marais, Mr. Trotter
Three hours weekly, including one laboratory hour. Prerequisite: course 3A-3B-3C.

The reading of figured bass; sequences, modulations, etc., in the harmonic vocabulary of the eighteenth and nineteenth centuries.

102. Score Reading. (2) II. Mr. Des Marais, Mr. Trotter
Three hours weekly, including one laboratory hour. Prerequisite: course 101 or consent of the instructor.

Reading at the piano of several staves, the various C clefs, and parts for transposing instruments; chamber music and simple orchestral scores.

103A-103B. Advanced Harmony. (2-2) Yr. Mr. Travis
Prerequisite: course 3A-3B-3C.

Modes and new scales. Freer concepts of modulation. Chords built on fourths. Bitonality and polytonality. The Hindemith, the 12-tone, and other systems. Modern uses of rhythm. Analysis of contemporary works.

104A-104B. Counterpoint. (2-2) Yr. Beginning either semester. Mr. Edwall, Mrs. Limonick, Mr. Revitt

(Replaces the former course 5A-5B.)

Prerequisite: course 3A-3B or consent of the instructor.

Two-voice writing and analysis of representative contrapuntal works in two and more voices. Course 104A, modal counterpoint, with emphasis on the motet; 104B, tonal counterpoint, with emphasis on the invention.

105. Advanced Modal Counterpoint. (3) II. _____
Prerequisite: course 104A and consent of the instructor.

Writing in three and more voices, with emphasis on the motet.

106. Advanced Tonal Counterpoint. (3) I. Mr. Nelson
Prerequisite: course 104A-104B and consent of the instructor.

Writing in three and more voices, with emphasis on the fugue.

†107A-107B. Composition. (2-2) Yr. Mr. Kremenliev, Mr. Vincent
Prerequisite: courses 3A-3B-3C, 104A-104B, 100A-100B, and consent of the instructor; 100A-100B may be taken concurrently

Vocal and instrumental composition in the smaller forms.

108A-108B. Studies in Musical Analysis. (2-2) Yr. Mr. Foss, Mr. Kremenliev

Prerequisite: courses 3A-3B-3C, 20A-20B, 100A-100B, or consent of the instructor.

The application of a broad analytical approach to compositions in widely divergent styles.

109A-109B. Orchestration.
Prerequisite: course 3A-3B-3C.

† Course 107A given I and II; course 107B, II only.

- 109A. sec. 1, and 109B. (2-2) Yr.** Mr. Foss
For regular music majors.
Ranges and properties of orchestral instruments. Scoring for full orchestra. Problems of balance and sonority. Analysis of orchestral scores.
- 109A, sec. 2. (2) I, II.** Mr. Vincent
For candidates for the special secondary teaching credential.
Theory and practice of writing for instrumental ensembles. The study of orchestral scores and an introduction to symphonic orchestration.
- 110. Choral Conducting. (2) I, II.** Mr. Moremen
Prerequisite: courses 1A-1B, 3A-3B, and 4 units of course 40.
The theory and practice of conducting choral organizations.
- 111. Instrumental Conducting. (2) I, II.** Mr. Sawhill
Prerequisite: courses 1A-1B, 3A-3B.
The theory and practice of conducting instrumental organizations.
- 115A-B-C-D. Instrumental Technique.**
Mr. Edwards, Mr. DeLancey, Mr. Tanner, Mr. Sawhill
A practical and theoretical study of the technique of orchestra and band instruments, including the principles of arranging music for representative combinations. Appropriate literature for instrumental ensembles.
- 115A. Strings. (2) I, II.**
- 115B. Woodwind. (2) I, II.**
- 115C. Brass. (2) I, II.**
- 115D. Percussion and Ensemble. (2) I, II.**
- *116. Composition for Motion Pictures, Radio, and Television. (2)**
Prerequisite: consent of the instructor. Mr. Kremenliev
Survey and analysis of contemporary usage of music in dramatic productions. Microphone technique; problems of acoustics, recording and editing. Composition of background music.
- 118. Acoustics of Music. (2) I, II.** Mr. Petran
Prerequisite: one year of high school physics, Physics 10, or the equivalent.
A course covering the physical basis of musical sounds, including a discussion of the objective cause of consonance and dissonance, together with a treatment of the generation and the analysis of the tones produced by the various musical instruments and the voice. Illustrated lectures and class discussions.

History and Literature

- 121A-121B. Music of the Americas. (2-2 Yr.)** Mr. Stevenson, Mr. Marrocco
(Replaces former course 121.)
No prerequisite. Course 121A is not prerequisite to 121B.
First semester: a survey of music from pre-Columbian times to the present in the countries lying south of the United States. Second semester: a survey of music from colonial times to the present in the United States and Canada.
- *122. Music of Indonesia. (3) I.** Mr. Hood
Prerequisite: course 136A-136B or consent of the instructor.
Study of the diverse musical cultures of Indonesia, with emphasis on the music, dance, theater, literature and historical background of Java and Bali, including a laboratory in gamelan performance. Two hours lecture and three hours supervised study in gamelan performance weekly.

* Offered in alternate years; not to be given, 1961-1962.

- 123. Music in the Middle Ages, 900-1400. (3) I.** Mr. Marrocco
Prerequisite: courses 3A-3B-3C, 20A-20B.
A detailed study of the musical forms and the notation of sacred and secular music from the beginnings of polyphony to the end of the fourteenth century.
- 124. Music in the Renaissance Period, 1400-1600. (3) II.** _____
Prerequisite: courses 3A-3B-3C, 20A-20B.
The meaning of the Renaissance as it applies to music. A study of musical forms, techniques, and aesthetic attitudes from the pre-Renaissance to Palestrina.
- *125. Music in the Baroque Period, 1600-1750. (3) I.** Mr. Hanley
Prerequisite: courses 3A-3B-3C, 20A-20B.
The music of the baroque period from Monteverdi to Handel and J. S. Bach.
- *126. Music in the Classic Period, 1730-1827. (3) II.** Mr. Edwall
Prerequisite: courses 3A-3B-3C, 20A-20B.
The music of the early classic schools and of Haydn, Mozart, and Beethoven.
- 127. Music in the Romantic Period, 1820-1900. (3) I.** Mr. Revitt
Prerequisite: courses 3A-3B-3C, 20A-20B.
The music of the romantic period from Weber and Schubert to the end of the nineteenth century.
- 128. Music of the Twentieth Century. (3) I.** Mr. Trotter
Prerequisite: courses 3A-3B-3C, 20A-20B.
A study of form, style, and idiom in music from 1900 to the present.
- 129. Music of the Balkans. (3) I.** Mr. Kremenliev
Prerequisite: course 136A-136B, or consent of the instructor.
A survey of the music of the Balkan countries, including a study of Eastern and Western elements; performance on representative instruments. Two hours lecture and three hours supervised study in performance weekly.
- 130. Bach. (2) I.** Mr. Both
No prerequisite.
Primarily for the general University student. May not be applied toward the major in music.
- 131. Beethoven. (2) II.** Mr. Both
Primarily for the general University student. May not be applied toward the major in music.
- 132. Opera in the Classic Period. (2) II.** Mr. Popper
Prerequisite: course 170 or its equivalent.
A study of eighteenth-century opera, with special concentration on the dramatic works of Gluck, Haydn, Mozart, and Beethoven.
- *133. The Operas of Wagner. (2) I.** Mr. Popper
Prerequisite: course 170 or its equivalent.
- *134. The Operas of Verdi. (2) II.** Mr. Popper
Prerequisite: course 170 or its equivalent.
- 135. Opera of the Twentieth Century. (2) I.** Mr. Popper
Prerequisite: course 170 or its equivalent.
The history of opera from Debussy and Richard Strauss to the present. Analysis of representative masterworks.

* Offered in alternate years; not to be given, 1961-1962.

136A-136B. Musical Cultures of the World. (3-3) Yr. Mr. Hood, Mr. Petran

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.

137. Music for the Legitimate Drama, Screen, and Radio. (2) II.

Mr. Rubsamen

A history and analysis of incidental music for the theater from ancient Greece to the present. The place and function of background or mood music, overtures, entr'actes, and music that serves the action or locale.

***138. Political Influences on Music.** (2) II.

Mr. Rubsamen

The influence of revolution and dictatorship upon music and its allied arts from antiquity to the present.

139. Aesthetics of Music. (2) II.

Mr. Marrocco

A survey of the literature of music aesthetics from Plato to the present.

170. History of the Opera. (3) I.

Mr. Popper

A survey of operatic music from its inception to the present day.

171. History and Literature of Church Music. (2) I.

Mr. Stevenson

Prerequisite: courses 3A-3B-3C, 20A-20B.

A study of the history and development of church music, including worship forms and liturgies.

***172. Oratorio Literature.** (2) II.

Mr. Petran, Mr. Stevenson

Prerequisite: courses 3A-3B-3C, 20A-20B.

A survey of oratorio music from its inception to the present day.

173. The Concerto. (2) II.

Mr. Edwall

Prerequisite: courses 3A-3B-3C, 20A-20B, or consent of the instructor.

Origins and development of the concerto, with emphasis on the classic period.

***174. History of the Sonata.** (2) I.

Mr. Des Marais, Mr. Edwall

Prerequisite: courses 3A-3B-3C, 20A-20B, or consent of the instructor.

The development of the sonata from its beginnings to the close of the romantic period.

175. Music Criticism. (2) II.

Mr. Goldberg

A study of factors in critical evaluation of musical works in performance.

***177. The Art Song.** (2) II.

Mr. Trotter

Prerequisite: courses 3A-3B-3C, 20A-20B, or consent of the instructor.

The study of the literature of the art song from its origins to the present day.

179A-179B. Instrumental and Choral Literature. (2-2) Yr.

(Replaces former course 179.)

Mr. Sawhill, Mr. Gerow, Mr. Morcmen

Course 179A is not prerequisite to 179B.

First semester: a study of instrumental works for string and wind ensembles. Second semester: a study of choral works from the Renaissance to the present day. In both semesters attention will be given to music suitable for use in the secondary schools.

* Offered in alternate years; not to be given, 1961-1962.

Performance

Courses in this series may be repeated for credit. Prerequisite: audition for consent of the instructor.

190A-K. Organizations. I, II.

- 190A. University Symphony Orchestra. (1)** Mr. Foss
(Replaces former course 160.)
Four hours of rehearsal each week.
The study and performance of symphonic literature.
- 190B. University Concert Band. (1)** Mr. Sawhill
(Replaces former course 161.)
Four hours of rehearsal each week.
- 190C. University Chorus. (1) No audition.** _____
(Replaces former course 162.)
Three hours of rehearsal each week.
- 190D. University A Cappella Choir. (1)** Mr. Wagner
(Replaces former course 163.)
Three hours of rehearsal each week.
The study and performance of choral literature.
- 190E. University Glee Club. (1)** Mr. Gerow
(Replaces former course 164.)
Three hours of rehearsal each week.
- 190F. Madrigal Singers. (1)** Mr. Moremen
(Replaces former course 165.)
Three hours of rehearsal each week.
The study and performance of significant music of the madrigal school.
- 190G. Chamber Music Ensemble. (1)** Mr. Roth
(Replaces former course 166.)
Three hours of rehearsal each week.
The study and interpretation of chamber music literature.
- 190H. Opera Workshop. (2)** Mrs. Limonick, Mr. Popper
(Replaces former course 159.)
Eight hours of rehearsal each week.
The study of the musical, dramatic, and language techniques in opera through the performance of representative scenes and acts.
- 190J. Collegium Musicum. (1)** Mr. Rubsamen
Three hours of rehearsal each week.
The study and performance of instrumental and vocal music of the Medieval, Renaissance, and Baroque periods, using the original instruments wherever possible.
- 190K. University Marching, Varsity, and Cadet Band. (1)** Mr. Sawhill
Four hours of rehearsal each week.

191A-W. Classes in Applied Music. (2) I, II.

- 191A. Advanced Voice.** Mr. Moremen, Mr. Windward, Mr. Winger
(Replaces former course 140.)
Prerequisite: 4 units of course 41A.

191E. Advanced Piano. (Replaces former course 141.)	Mr. Smit, Mrs. Turrill
191J. Organ. (Replaces former course 157.)	Mr. Petran
191K. Advanced Violin. (Replaces former course 142.)	Mr. Roth
191L. Viola. (Replaces former course 143.)	Mr. Plummer
191M. Cello. (Replaces former course 144.)	_____
191N. Bass Viol. (Replaces former course 145.)	_____
191P. Flute. (Replaces former course 146.)	Mr. Drexler
191Q. Oboe. (Replaces former course 147.)	Mr. Gassman
191R. Clarinet. (Replaces former course 148.)	_____
191S. Bassoon. (Replaces former course 150.)	Mr. Moritz
191T. French Horn. (Replaces former course 151.)	Mr. Lott
191U. Trumpet. (Replaces former course 152.)	Mr. DiVall
191V. Trombone. (Replaces former course 153.)	Mr. Tanner
191W. Percussion. (Replaces former course 155.)	Mr. DeLancey
192A-W. Master Classes. (2) I, II.	
192A. Voice (Replaces former course 180.)	Mr. Moremen, Mr. Windward, Mr. Winger
192E. Piano (Replaces former course 181.)	Mr. Smit
192J. Organ.	Mr. Petran
192K. Violin. (Replaces former course 182.)	Mr. Roth
192L. Viola. (Replaces former course 183.)	Mr. Plummer
192M. Cello. (Replaces former course 184.)	_____
192N. Bass Viol. (Replaces former course 185.)	_____

- 192P. Flute. Mr. Drexler
(Replaces former course 186.)
- 192Q. Oboe. Mr. Gassman
(Replaces former course 187.)
- 192R. Clarinet. _____
(Replaces former course 188.)
- 192S. Bassoon. Mr. Moritz
(Replaces former course 190.)
- 192T. French Horn. Mr. Lott
(Replaces former course 191.)
- 192U. Trumpet. Mr. DiVall
(Replaces former course 192.)
- 192V. Trombone. Mr. Tanner
(Replaces former course 193.)
- 192W. Percussion. Mr. DeLancey
(Replaces former course 195.)
193. Studies in Accompanying. (1) II. Mrs. Limonick, Mr. Popper
(Replaces former course 158.)
Open to qualified pianists; other instrumentalists and singers desiring
work in repertoire and interpretation may also enroll.

Seminars and Special Studies

197. Pro-Seminar in Ethnomusicology. (3) II. Mr. Hood
Prerequisite: course 136A-136B or consent of the instructor.
198. Special Course. (2) I, II. Mr. Foss
The topic for 1961-1962 is *The Technique of Ensemble Improvisation*.
Four hours weekly. Prerequisite: audition for consent of instructor.
199. Special Studies in Music. (1-4) I, II. The Staff
Prerequisite: senior standing and consent of the instructor.

GRADUATE COURSES

- 200A-200B. Research Methods and Bibliography. (3-3) Yr. The Staff
- 210A-210B. Early Notation. (3-3) Yr. Mr. Marrocco, Mr. Popper
(Formerly numbered 254A-254B.)
Prerequisite: course 100A-100B, or the equivalent.
250. Seminar in the History of Music Theory. (3) II. _____
(Formerly numbered 263.)
Prerequisite: consent of the instructor.
- 251A-251B. Seminar in Orchestration. (3-3) Yr. Mr. Kremenliev
(Formerly numbered 202A-202B.)
Prerequisite: courses 107A-107B, 109A-109B, or the equivalents.
- 252A-252B. Seminar in Composition. (3-3) Yr. Mr. Foss, Mr. Vincent
(Formerly numbered 201A-201B.)
Prerequisite: course 107A-107B, 109A-109B, and either 105 or 106, or the
equivalents. This course may be repeated for credit.

253. Seminar: Notation and Transcription in Ethnomusicology. (3) I. Mr. Hood
Prerequisite: course 136A-136B and 197, which may be taken concurrently.
254. Seminar: Field and Laboratory Methods in Ethnomusicology. (3) II. Mr. Hood
Prerequisite: Music 136A-136B and 197, which may be taken concurrently.
- †255. Seminar in Musical Instruments of the World. (3) Mr. Hood
Prerequisite: Music 136A-136B; course 118 recommended.
256. Seminar in Musical Form. (3) I. Mr. Nelson and the Staff
Prerequisite: course 100A-100B or the equivalent.
- 260A-260B. Seminar in Historical Musicology. (3-3) Yr. Mr. Rubsamen
(Formerly numbered 253A-253B.)
Prerequisite: course 100A-100B or the equivalent and course 200A-200B,
which may be taken concurrently.
- *266. Seminar in the Music of the Twentieth Century. (3) II. The Staff
Prerequisite: consent of the instructor.
269. Seminar in the History of Instruments. (3) II. Mr. Petran
Prerequisite: consent of the instructor.
- 270A-270B. Seminar in Music Education. (2-2) Yr. _____
Prerequisite: consent of the instructor.
- *275. Seminar in the Aesthetics of Music. (3) I. Mr. Marrocco
(Formerly numbered 268.)
Prerequisite: course 139 or the equivalent.
- 280A-280B. Seminar in Ethnomusicology. (3-3) Yr. Mr. Hood
(Formerly numbered 264A-264B.)
Prerequisite: course 136A-136B or the equivalent and course 200A-200B,
which may be taken concurrently.
296. Individual Studies in Orchestration and Composition. (1-4) I, II. The Staff
297. Individual Reading and Research. (1-4) I, II. The Staff
299. Guidance of Master's Thesis or Doctoral Dissertation. (1-4) I, II. The Staff

PROFESSIONAL COURSES IN METHOD

330. Music Education for Classroom Teachers. (3) I, II. Mr. Gerow
Four hours weekly, including one laboratory hour. Prerequisite: junior standing and course 31 or the equivalent. Required of candidates for the general elementary credential whose major is not music. *Not open to students whose major is music.*
Sections 3 and 4 are for kindergarten-primary majors only. Should be taken concurrently with Education 128B.
A professionalized course to equip the student to teach many phases of music in the modern school. Emphasis is placed upon exploring musical literature and interpretive activities.

* Offered in alternate years; not to be given, 1961-1962.

† Offered every three semesters; not to be given 1961-1962.

370. The Teaching of Music. (3) I, II.

Mr. Gerow

Prerequisite: senior standing and the approval of the Department by interview and examination. Required of music majors who are candidates for the general secondary credential.

A study of the place and function of general music in secondary education, with some attention to the elementary curriculum. Three class meetings and one laboratory period weekly.

RELATED COURSES IN OTHER DEPARTMENTS

Integrated Arts 1A-1B. Man's Creative Experience in the Arts. (3-3) Yr.

Mr. With

Psychology 172A-172B. Psychology of Music. (3-3) Yr.

Mr. Petran

NAVAL SCIENCE

(Department Office, 123 Men's Gymnasium)

Franklin G. Hess, B.S., Captain, U. S. Navy, *Professor of Naval Science*
(*Chairman of the Department*).

J. E. Gould, B.S., Cdr., U. S. Navy, *Associate Professor of Naval Science.*

A. C. Beverly, B.S., Maj., U. S. Marine Corps, *Assistant Professor of Naval Science.*

J. C. Froid, B.S., M.S., Lt., U. S. Navy, *Assistant Professor of Naval Science.*

R. H. Frye, A.B., Lt., U. S. Navy, *Assistant Professor of Naval Science.*

W. J. Harper, B.S., Lt. Cdr., U. S. Navy, *Assistant Professor of Naval Science.*

P. A. Pisano, A.B., Lt. (jg), U. S. Navy, *Assistant Professor of Naval Science.*

Letters and Science List.—All undergraduate courses in this department up to a total of 12 units are included in the Letters and Science List of Courses. Note: This in no way prejudices counting additional Naval Science courses up to the 12 units of non-Letters and Science credit accepted toward the degree. For regulations governing this list, see page 2.

College of Engineering.—Credit for Naval Science:

Lower Division: 6 units are acceptable toward the baccalaureate.

Upper Division: 6 units of nonmajor field electives and the 3 units of optional electives, a total of 9, may be applied.

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.

The primary object of the Naval Reserve Officers' Training Corps is to provide at civil institutions systematic instruction and training which will qualify selected students of such institutions for appointment as officers in the Regular Navy, Naval Reserve, Marine Corps, and Marine Corps Reserve. The Naval Reserve Officers' Training Corps is expected to train junior officers for the Regular Navy, Naval Reserve, Marine Corps, and Marine Corps Reserve.

Courses in naval science are given for those who intend to complete the four years of training for a commission in the Regular Navy, Naval Reserve, Marine Corps, and Marine Corps Reserve. While only students signifying such a purpose will be admitted, students who for sufficient reasons are forced to discontinue their training before their commission is granted, will be permitted, at the end of two years, to count such training in lieu of the military training prescribed by the University. All courses in naval science described

herein include infantry drill and laboratory sessions for two hours weekly for all Naval R.O.T.C. students.

Initial enrollment is restricted to able-bodied male students who are citizens of the United States, between the ages of seventeen and twenty-one years, never have been married, and agree to remain unmarried until commissioned or disenrolled. Students must pass the same physical examination as is required for all candidates for admission to the Naval Academy.

All courses listed are those prescribed by the Navy Department for the Naval Reserve Officers' Training Corps. The United States furnishes, on loan to the individual, arms, equipment, uniforms, and naval science textbooks for the use of these students. Upon satisfactory completion of the course, a uniform becomes the property of the student who was enrolled in the Regular or Contract status.

Types of N.R.O.T.C. Students.—Officer candidates in the N.R.O.T.C. will be of three types:

(a) *Regular N.R.O.T.C. students* are appointed Midshipmen, U.S.N.R., and receive retainer pay at a rate of \$600 per year for a maximum period of four years while under instruction at the N.R.O.T.C. institution or during summer training periods. Their tuition, fees, books, and laboratory expenses are paid by the U. S. government during the above period. These students assume an obligation to make all required summer practice cruises (three) and to remain a member of a regular or reserve component of the U. S. Naval Service until the sixth anniversary of receipt of original commission in that service, four years of which will be on active duty after commissioning as Ensigns, U. S. Navy, or Second Lieutenants, U. S. Marine Corps. Students enrolled in this status are selected by nation-wide examination and selection commencing in early December of the year preceding the student's entrance into the University in the fall.

(b) *Contract N.R.O.T.C. students* have the status of civilians who have entered into a mutual contract with the Navy. For administrative purposes, they are styled Midshipmen. During their junior and senior years they are entitled to commutation of subsistence from the first day during an academic term until they complete the course at the institution or their connection with the Naval Reserve Officers' Training Corps is severed in accordance with the regulations prescribed, except that subsistence in kind will be furnished in lieu of commutation of subsistence for any periods devoted to cruises. The amount allowed for subsistence, which will be fixed from time to time by the Secretary of the Navy, will not exceed the value prescribed by law for a commuted ration in the Navy. Contract N.R.O.T.C. students agree to accept a commission in the Naval Reserve or in the Marine Corps Reserve to remain a member of a reserve component of the U. S. Naval Service until the sixth anniversary of receipt of original commission in that service and to serve not less than two years on active duty if ordered, or if a Marine Corps option student, three years on active duty if ordered. Contract N.R.O.T.C. students are required to make one summer practice cruise.

Regular and contract students are deferred from induction until after completion or termination of their courses of instruction and so long as they continue in a regular or reserve status upon being commissioned.

(c) *Naval Science Students*

(1) With the approval of the academic authorities, and the Professor of Naval Science, students may be permitted to pursue naval science courses for college credit only. They are not eligible to make N.R.O.T.C. practice cruises nor to be paid any compensation or benefits.

(2) Naval science students may become eligible for enrollment in N.R.O.T.C. as candidates for commissions provided they comply in every respect with the requirements for original enrollment, when vacancies occur in the unit quota.

Credit may be allowed for work completed during practice cruises and sum-

mer camps at the rate of $\frac{1}{2}$ unit per each two weeks' duty performed, not to exceed a total of 6 units.

Freshman Year

1A. Naval Orientation. (3) I.

Mr. Harper

A course in fundamentals of the naval science, its mission, ideals, standards, traditions, customs and duties required of the midshipmen. This orientation is vital in developing a common naval background and in stimulation an interest in the study of sea power.

1B. Evolution of Sea Power. (3) II.

Mr. Harper

The course in sea power concentrates in six broad and interlocked areas: (1) the influence of sea power on history; (2) the evolution of tactics; (3) the rationale of strategic decisions; (4) the development of ships; (5) the evolution of weapons; and (6) the qualities of character and professional competence which have made great naval leaders.

Sophomore Year

2A. Naval Weapons. (3) I, II.

Mr. Pisano

Major areas to be covered in the course include weapon delivery problems, basic gunnery, typical fire control problems, antisubmarine warfare, missiles, nuclear weapons, and space technology. Theoretical presentation will be supplemented by practical work in the laboratory sessions.

2D. Naval Science Drill. (0) I, II.

Mr. Pisano

Infantry drill under arms and classroom weapons systems demonstration. To be taken concurrently with Psychology 181. Professor of Naval Science approval required for substitution of other psychology courses.

Junior Year

101A. Naval Engineering. (3) I.

Mr. Froid

The first semester deals with naval machinery. Stress is on the basic steam cycle, including auxiliary equipment. Concepts of temperature, heat transfer, flow of fluids, gas turbine cycle, distillation and refrigeration are included. An introduction is made to physics of nuclear power, principles of nuclear reactors and problems of radiation shielding and instrumentation. Principles and application of marine stability.

101B. Navigation. (3) II.

Mr. Froid

During the second semester, navigation and nautical astronomy are studied. The problems of determining position, direction, and distance on the water. Development of methods, use of instruments, tables, and almanacs in problem solving. The field of navigation is studied in its four major divisions: dead reckoning; piloting; electronic navigation and celestial navigation.

***103A-103B. Basic Strategy and Tactics. (3-3) Yr.**

Mr. Beverly

The first year's study within the marine option concerns the evolution of the art of land warfare. Particular attention is given to military and foreign policies of the United States. The student gains a basic insight into the historical and sociological principles of national strategy and modern military tactics.

Senior Year

102A. Naval Operations. (3) I.

Mr. Frye

Solution of relative movement problems by application of radar and tactical information to the polar coordinate plot using vectors. Maneuvering instructions and tactics. Communication systems and introduction to cryptography. Types of electronics countermeasures. Aerology and typhoon evasion.

* These courses to be pursued by candidates for commissions in the Marine Corps or Marine Corps Reserve in lieu of courses 101A, 101B, 102A, and 102B.

102B. Principles and Problems of Naval Leadership. (3) II. Mr. Frye

Conceptual approaches to leadership, interpersonal relationships in Navy groups, motivational practices and counseling techniques, ethical and moral responsibilities of authority positions, extragroup relations as a representative of the Navy. Division Administration: function of the division officer, military law and courts.

***104A-104B. Amphibious Warfare. (3-3) Yr. Mr. Beverly**

The primary function of the Marine Corps is to conduct amphibious warfare. Attention is given to strategic decision and the tactical employment of amphibious weapons. The midshipman is also given indoctrination in military law, coordinated with the development of administrative and leadership qualities.

NEAR EASTERN AND AFRICAN LANGUAGES

(Department Office, 302 Royce Hall)

¹Wolf Leslau, *Docteur-ès-Lettres, Professor of Hebrew and Semitic Linguistics (Chairman of the Department).*

Andreas Tietze, Ph.D., *Professor of Turkish.*

William E. Welmers, Ph.D., *Visiting Professor of African Languages.*

———, *Professor of Arabic.*

Janos Eckmann, Ph.D., *Visiting Associate Professor of Turkish.*

Gilbert Lazard, Ph.D., *Visiting Associate Professor of Persian.*

Joseph R. Applegate, Ph.D., *Visiting Assistant Professor of Berber.*

Arnold J. Band, Ph.D., *Assistant Professor of Hebrew.*

Herbert A. Davidson, Ph.D., *Assistant Professor of Hebrew.*

Jonas C. Greenfield, Ph.D., *Assistant Professor of Hebrew.*

Irfan A. Kavar, Ph.D., *Assistant Professor of Arabic.*

———, *Lecturer in Armenian Studies.*

Ronald A. Snoxall, M.A., *Lecturer in Swahili.*

Letters and Science List.—All undergraduate courses in the department are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

Bachelor of Arts Degree.—The degree is offered in both Hebrew and Arabic. In each case the student must both meet the prerequisites and take the courses prescribed for majors.

1. For a Hebrew major the prerequisites are Hebrew 1A-1B, 102A-102B, 150A-150B or their equivalents. The student is required to take 24 upper division units in the department including: Hebrew 103A-103B or its equivalent; 6 units out of 120A-120B-120C-120D; 6 units out of 130A-130B, 140A-140B; Hebrew 190A-190B; 3 units out of History 138A-138B.

2. For an Arabic major the prerequisites are Arabic 1A-1B, 102A-102B, 150A-150B or their equivalents. The student is required to take 24 upper division units in the department: Arabic 103A-103B, 130A-130B, 140A-140B, 199 and 3 units out of History 134A-134B.

Requirements for the Master's Degree

1. For the general requirements, see pages 69-71.

2. Department program:

a) The master's degree is offered in three specialities: Hebrew, Arabic and Semitics. The candidate for the degree in Hebrew or Arabic will be re-

* These courses to be pursued by candidates for commissions in the Marine Corps or Marine Corps Reserve in lieu of courses 101A, 101B, 102A, and 102B.

¹ In residence fall semester only, 1961-1962.

quired to study another Semitic language, also. The candidate for the degree in Semitics will be required to study three Semitic languages. The student may concentrate on either language or literature but will be required to do work in the other discipline, also. In addition, all candidates will be required to have competent knowledge of the history of his major culture area.

- b) For admission to the program a bachelor's degree is required, taken in Hebrew, Arabic, or Semitics, depending on the field of specialization, or the equivalent. Equivalency is to be determined by the department.
- c) Course requirements: 24 units with a minimum of 12 graduate units taken within the department, the remaining 12 to be chosen after consultation with the department adviser. All candidates will be required to take Near Eastern Languages 200, Bibliography and Method.
- d) Examination: The department follows Plan II (Comprehensive Examination). A reading knowledge of two of the following languages is required of all candidates: French, German, Italian, Spanish.

Requirements for the Doctor of Philosophy Degree

1. For the general University requirements, see pages 71-74.

2. Requirements for admission to the program:

- a) A reading knowledge of two foreign languages chosen from French, German, Italian, Spanish and Russian, to be tested by a written and oral examination. The student is expected to take the examination in one of the two languages at the beginning of his first semester in residence; the examination of the second not later than at the beginning of his third semester. The choice of languages must be approved by the adviser.
- b) The candidates for the degree may concentrate either in language or in literature. In either case, upon entrance to the program he is required to demonstrate competence in the language of his main interest and to have sufficient knowledge of a second language in his field of concentration. In the case of a student specializing in language, the second language should be genetically related to the main language of his interest, e.g., a Semitist is expected to know two Semitic languages; a Turkologist, two Turkic languages; an Africanist, two related African languages. In the case of a student specializing in literature, the second language should be a literary language taken from the cultural area related to the main language of his interest, e.g., a Hebraist can choose Aramaic, Akkadian, or Arabic; an Arabist can choose Persian or Turkish; a Turkologist can choose Arabic or Persian. This competence is to be acquired either in the Graduate Division of the University of California or in another recognized Graduate School. In case of deficiencies, the student may be required to take additional work. The student is advised to take his M.A. degree prior to his Ph.D. degree.

3. Special Requirements for the degree:

- a) A candidate in languages is expected to take one year of general linguistics and one year of comparative grammar in his field of concentration, e.g., Semitics, Turkic or African. Moreover, he is required to achieve competence in three languages taken from 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 advised to acquaint himself with the historical, literary, religious, and social background of the various languages of his interest. His fields of examination will be three languages and the literary and historical background of at least two of them.

- b) The candidate interested in literature will be required to be familiar with the history of literary criticism and methods of literary research as offered by the various departments of the University, particularly the course in literary criticism offered by the English department. His field of examination will be 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.

ARABIC

LOWER DIVISION COURSE

1A-1B. Elementary Arabic. (4-4). Yr. _____

Sections meet five hours weekly. Not open to students with previous training.

UPPER DIVISION COURSES

102A-102B. Intermediate Arabic. (4-4). Yr. _____

Prerequisite: Arabic 1A-1B or consent of the instructor.

103A-103B. Advanced Arabic. (3-3). Yr.

Mr. Kawar

Prerequisite: Arabic 102A-102B or consent of the instructor.

110A-110B. Spoken Moroccan Arabic. (3-3) Yr.

Mr. Applegate

Prerequisite: consent of the instructor.

An introduction to the contemporary Arabic dialect of Morocco. Basic phonology, morphology and syntax will be presented with sufficient oral practice to insure fluency in the language.

130A-130B. Classical Arabic Texts. (3-3). Yr.

Mr. Kawar

Prerequisite: Arabic 103A-103B or consent of the instructor.

Reading and interpretation of texts from classical Arabic literature: Koran, historiography, biography, geography and travelogues, philosophy, poetry.

140A-140B. Modern Arabic Texts. (3-3). Yr. _____

Prerequisite: Arabic 103A-103B or consent of the instructor.

Reading and interpretation of modern Arabic texts: newspaper articles, modern fiction, poetry, folklore.

150A-150B. A Survey of Arabic Literature in English. (2-2). Yr.

Mr. Kawar

Knowledge of Arabic is not required. Courses 150A-150B may be taken independently for credit.

199. Special Studies in Arabic. (1-6). I, II.

The Staff

Prerequisite: consent of the instructor.

GRADUATE COURSES

230A-230B. Arabic Poetry. (2-2). Yr.

Mr. Kawar

Readings in Arabic poetry from various periods.

240A-240B. Arab Historians. (3-3). Yr. _____

(Formerly Arabic 231A-231B.)

Readings from the works of the most outstanding Arabian and Arabic-writing historians of the classical period of Islam.

297. Individual Studies for Graduate Students. (1-6). I, II.

The Staff

299. Research on Thesis or Dissertation. (1-6). I, II.

The Staff

HEBREW

LOWER DIVISION COURSES

- 1A-1B. Elementary Hebrew.** (4-4). Yr. Mr. Baud in charge
Sections meet five hours weekly.

UPPER DIVISION COURSES

- 102A-102B. Intermediate Hebrew.** (4-4). Yr. Mr. Greenfield
Prerequisite: Hebrew 1A-1B or the equivalent.
- 103A-103B. Advanced Hebrew.** (3-3). Yr. Mr. Davidson
Prerequisite: Hebrew 102A-102B or the equivalent.
Selected modern literary texts.
- 119. Hebrew Conversation and Composition.** (2). II. _____
(Formerly Hebrew 110.)
Prerequisite: Hebrew 102A-102B or consent of the instructor.
- *120A-120B. Selected Texts of the Bible.** (3-3) Yr. Mr. Greenfield
Prerequisite: Hebrew 102A-102B or the equivalent. Courses 120A and 120B may be taken independently for credit.
Translation and analysis of portions of the Old Testament. Special attention will be given to texts of primary literary and historical importance.
- 120C-120D. Selected Texts of the Bible.** (3-3). Yr. Mr. Greenfield
Prerequisite: Hebrew 102A-102B or the equivalent. Courses 120C and 120D may be taken independently for credit.
Further readings in Biblical texts.
- 130A-130B. Medieval Hebrew Literature.** (3-3). Yr. Mr. Davidson
Prerequisite: Hebrew 103A-103B or consent of the instructor.
A survey of the Hebrew poetry and prose of the "Golden Age" in Spain; the works of various historians, moralists, philosophers, linguists, commentators and travelers from many lands, writing in Hebrew, will be studied.
- *140A-140B. Modern Hebrew Poetry and Prose.** (3-3). Yr. Mr. Band
Prerequisite: Hebrew 103A-103B or consent of the instructor.
A study of the major Hebrew writers of the past hundred years: prose—Mendele, Ahad Ha'am, Agnon, Yizhar; poetry—Bialik, Tchernichovsky, Schneur, Greenberg, Shlonsky.
- 140C-140D. Modern Hebrew Poetry and Prose.** (3-3). Yr. Mr. Band
Prerequisite: Hebrew 103A-103B or consent of the instructor.
Further study of major Hebrew writers of the past one hundred years.
- 150A-150B. A Survey of Hebrew Literature in English.** (2-2). Yr. Mr. Band
Knowledge of Hebrew is not required. Courses 150A and 150B may be taken independently for credit.
150A. From Biblical period to 1300.
150B. From 1300 to the present day.
- *190A-190B. A Survey of Hebrew Grammar.** (2-2) Yr. Mr. Leslau
(Formerly Hebrew 145A-145B.)
Prerequisite: Hebrew 102A-102B or consent of the instructor.
Descriptive and comparative study of the Hebrew phonology and morphology.

* Not to be given, 1961-1962.

199. **Special Studies in Hebrew.** (1-6). I, II. The Staff
Prerequisite: consent of the instructor.
Studies in history, literature, and Semitic linguistics in accordance with the requirements of the student.

GRADUATE COURSES

- 210A-210B. **History of the Hebrew Language.** (2-2). Yr. The Staff
Prerequisite: Hebrew 103A-103B 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 will be studied; problems of language expansion in Israeli Hebrew will be treated.
297. **Individual Studies for Graduate Students.** (1-6). I, II. The Staff
299. **Research on Thesis or Dissertation.** (1-6). I, II. The Staff

SEMITICS

UPPER DIVISION COURSES

- †101A-101B. **Elementary Amharic (Ethiopic).** (3-3). Yr. Mr. Leslau
Elementals of Amharic, the national language of Ethiopia. Grammar and reading of texts.
- †102A-102B. **Advanced Amharic (Ethiopic).** (3-3). Yr. Mr. Leslau
Prerequisite: Semitics 101A-101B or consent of the instructor.
130. **Biblical Aramaic.** (2). I. Mr. Leslau
Prerequisite: Hebrew 102A-102B or the equivalent.
Grammar of Biblical Aramaic and reading of texts.

GRADUATE COURSES

- †201A-201B. **Ethiopic.** (2-2). Yr. Mr. Leslau
(Formerly Semitics 211A-211B.)
Grammar of Old Ethiopic and reading of texts.
- †202A-202B. **Readings in Ethiopic Literature.** (2-2). Yr. Mr. Leslau
(Formerly Semitics 212A-212B.)
Prerequisite: Semitics 201A-201B.
Special attention will be given to the reading of Geez manuscripts.
- †209A-209B. **Comparative Ethiopic.** (2-2). Yr. Mr. Leslau
(Formerly Semitics 220A-220B.)
Prerequisite: consent of the instructor.
Comparative study of the various Semitic Ethiopic languages: Geez, Tigrinya, Tigre, Amharic, Harari, Gurage, and Gafat.
210. **Ancient Aramaic.** (2). I. Mr. Greenfield
(Formerly Semitics 231.)
Prerequisite: Hebrew 103A-103B or the equivalent.
Study of the grammar and vocabulary of Ancient Aramaic and reading of the surviving inscriptions and texts.
211. **Readings in Aramaic Literature.** (2). II. Mr. Greenfield
(Formerly Semitics 232.)
Prerequisite: Semitics 130 or the equivalent.
Advanced readings in Aramaic papyri, inscriptions, literary and historical texts, and the Aramaic translations of the Bible.

† To be given fall semester only, 1961-1962.

- *220. Ugaritic. (2). I.** Mr. Greenfield
(Formerly Semitics 235.)
Prerequisite: Hebrew 103A-103B or the equivalent.
Study of the Ugaritic language and literature (found at Ras-Shamra in Syria) with special reference to the development of Hebrew literature.
- †**280A-280B. Seminar in Comparative Semitics. (2-2). Yr.** Mr. Leslau
- 290A-290B. Comparative Morphology of the Semitic Languages. (2-2). Yr.**
Prerequisite: Semitics 280A-280B or consent of the instructor. Mr. Leslau
Comparative study of the noun and verb of the various Semitic languages (Arabic, Hebrew, Ethiopic, Akkadian, and Aramaic).
- 297. Individual Studies for Graduate Students. (1-6). I, II.** The Staff
- 299. Research on Thesis or Dissertation. (1-6). I, II.** The Staff

AFRICAN LANGUAGES

UPPER DIVISION COURSES

- 101A-101B. Introductory Swahili. (3-3). Yr.** Mr. Snoxall
(Formerly African Languages 100A-100B.)
Prerequisite: consent of the instructor.
The major language of East Africa. Emphasis on oral competence, with careful attention to grammatical structure.
- 103A-103B. Introductory Ewe. (3-3). Yr.** Mr. Welmers
(Formerly African Languages 110A-110B.)
Prerequisite: consent of the instructor.
Language of Togo and Ghana. Emphasis on oral competence, particularly tonal accuracy, with careful attention to grammatical structure.
- 105A-105B. Introductory Bambara. (3-3). Yr.** Mr. Welmers
Prerequisite: consent of the instructor.
A major language of Mali and adjacent parts of West Africa. Emphasis on oral competence, particularly tonal accuracy, with careful attention to grammatical structure.
- 107A-107B. Introductory Kpelle. (3-3). Yr.** Mr. Welmers
Prerequisite: consent of the instructor.
Tribal language of Liberia and Guinea. Emphasis on oral competence, particularly tonal accuracy, with careful attention to grammatical structure.
- *109A-109B. Introductory Twi. (3-3). Yr.** _____
Prerequisite: consent of the instructor.
The major language of Ghana. Conversation, reading and grammatical analysis.

- 190. Survey of African Language Structures. (3). I.** Mr. Welmers
Prerequisite: consent of the instructor.
An introduction to the languages of Africa, their distribution and classification, and their phonological and grammatical structures; elementary practice in several languages. Linguistics 170 is recommended as a prior or concurrent course.

* Not to be given, 1961-1962.

† To be given fall semester only, 1961-1962.

***197A-197B. Pro-Seminar in African Linguistics. (2-2). Yr.**

Prerequisite: consent of the instructor.

Outline of the history of African language study; typical problems of phonologic analysis, grammatical analysis and structure of representative African languages.

198. Special Courses. (1-4). I, II.

Mr. Welmers

Prerequisite: Linguistics 170 or consent of the instructor.

Instruction or supervised research in any African language for which adequate materials or a competent speaker is available.

GRADUATE COURSES

297. Individual Studies for Graduate Students. (1-6). I, II.

The Staff

299. Research on Thesis or Dissertation. (1-6). I, II.

The Staff

RELATED COURSE IN ANOTHER DEPARTMENT

Linguistics and Philology 216. Typology of African Languages. (3) II.

Mr. Welmers

ARMENIAN

UPPER DIVISION COURSES

101A-101B. Elementary Armenian. (3-3). Yr.

Grammar, reading, conversation, elementary composition.

102A-102B. Intermediate Armenian. (3-3). Yr.

Prerequisite: Armenian 101A-101B or the equivalent.

BERBER LANGUAGES

UPPER DIVISION COURSES

101A-101B. Shilha. (3-3). Yr.

Mr. Applegate

Prerequisite: consent of the instructor.

Elements of Shilha, the language of the Berbers of southern Morocco. Grammar and conversation.

104A-104B. Kabyle. (3-3). Yr.

Mr. Applegate

Prerequisite: consent of the instructor.

A detailed study of the language of the Berbers in northern Algeria. The course will include a survey of the basic structural features and the analytic procedures used to prepare the structural descriptions.

199. Special Studies in Berber Languages. (1-6).

Mr. Applegate

Prerequisite: consent of the instructor.

Study based on the requirements of the individual student.

PERSIAN

UPPER DIVISION COURSES

101A-101B. Elementary Persian. (3-3). Yr.

Mr. Lazard

Not open to students with previous training.

102A-102B. Advanced Persian. (3-3). Yr.

Mr. Lazard

Prerequisite: Persian 101A-101B or the equivalent.

150A-150B. A Survey of Persian Literature in English. (2-2). Yr.

Mr. Lazard

Knowledge of Persian is not required. Courses 150A and 150B may be taken independently for credit.

* Not to be given, 1961-1962.

199. **Special Studies in Persian.** (1-6). I, II. The Staff
 Prerequisite: consent of the instructor.
 Historical and literary texts in accordance with the requirements of the students.

TURKISH

UPPER DIVISION COURSES

- 101A-101B. **Elementary Turkish.** (3-3). Yr. Mr. Tietze
 Not open to students with previous training.
- 102A-102B. **Advanced Turkish.** (3-3). Yr. Mr. Tietze
 Prerequisite: Turkish 101A-101B or the equivalent.
- 110A-110B. **Uzbek.** (3-3) Yr. Mr. Eckmann
 Prerequisite: consent of the instructor.
 Phonology, grammar, readings.
- 112A-112B. **Old Turkic (Uigur).** (3-3). Yr. Mr. Eckmann
 (Formerly Turkish 120A-120B.)
 Prerequisite: consent of the instructor.
 Grammar, readings in 8th to 10th century texts.
- *150A-150B. **A Survey of Turkish Literature in English.** (2-2). Yr. Mr. Eckmann
 Knowledge of Turkish is not required. Course 150A and 150B may be taken independently for credit.
- 190A-190B. **A Survey of the Turkic Languages.** (3-3). Yr. Mr. Tietze
 Prerequisite: consent of the instructor.
 Introduction to the historical grammar, classification, comparison of the linguistic features of the Turkic languages.
199. **Special Studies in Turkish.** (1-6). I, II. The Staff
 Prerequisite: consent of the instructor.

GRADUATE COURSES

- 210A-210B. **Old Ottoman.** (2-2). Yr. Mr. Tietze
 Prerequisite: Turkish 102A-102B or consent of the instructor.
 The texts for the readings will be selected from literature (prose and poetry).
297. **Individual Studies for Graduate Students.** (1-6). I, II. The Staff
299. **Research on Thesis or Dissertation.** (1-6). I, II. The Staff

ISLAMICS

299. **Research on Thesis or Dissertation.** (1-6). I, II. The Staff

NEAR EASTERN LANGUAGES

200. **Bibliography and Method of Near Eastern Languages and Literatures.**
 (2). I, II. The Staff
 Prerequisite: consent of the instructor.
 An introduction to the bibliography of all the Near Eastern Languages: morphology, lexicography, and literature.

* Not to be given, 1961-1962.

NEAR EASTERN STUDIES

The program for the Master of Arts in Near Eastern Studies provides specialized training primarily for the following classes of students: (1) students seeking a general education and desiring a special emphasis in this particular area; (2) students who plan to live and work in this area, whose careers will be aided by a knowledge of the peoples, languages, and institutions (such careers might be centered on teaching, research, business, engineering, journalism, librarianship, or government service); (3) students preparing for advanced study in the language, peoples, or institutions of the area. 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 Bachelor's Degree.—For details concerning the curriculum in Near Eastern Studies leading to the degree of Bachelor of Arts see page 15.

Requirements for the Master's Degree

1. General Requirements (as throughout the Graduate Division). See page 69.

2. Admission to the Program. The degree of Bachelor of Arts in Near Eastern Studies of the University of California, Los Angeles, or its equivalent is required. The Committee to Administer the Curriculum in Near Eastern Studies will pass on the application for admission to the program.

3. Plan. The program is offered under both Plan I (Thesis Plan) and Plan II (Comprehensive Examination Plan). The selection of a plan will be decided upon by the candidate and his adviser and approved by the committee.

4. Language Requirements. Candidates for the Degree of Master of Arts in Near Eastern Studies will be required to show proficiency in either French or German, in addition to the language or languages of their field of specialization. In view of the scholarly literature in the field, candidates are earnestly advised to acquaint themselves with a second European language in which relevant material for their studies is available.

5. Program. The program of each candidate will be especially prescribed by the Advisory Committee. The program should, wherever possible, be established before the candidate enters his first semester of work. The program will be planned to allow emphasis on Arabic, Persian or Turkish (Islamic) Studies and is intended for the student desiring a broad knowledge of the Arab (Islamic) world or to prepare for an academic career in this field. Courses of study which combine concentration on certain of the social sciences with a Near Eastern area specialization are also possible.

Program in Arabic, Persian or Turkish (Islamic) Studies.

The program of each candidate in Arabic, Persian or Turkish (Islamic) Studies will, in addition to Arabic, Persian or Turkish, include a full year's course in one of the remaining two languages. The additional required units will be chosen by the candidate from History 215A-215B, 268A-268B; Sociology 236, 237; political science, and at his option, courses in closely related fields, such as Indian history, anthropology, or geography of the area.

Other study arrangements in the Near Eastern field are available through the Department of Near Eastern and African Languages.

Requirements for the Ph.D. Degree in Islamic Studies

1. For the general University requirements, see pages 71-74.

2. Requirements for 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, in alphabetical order, history, political science and sociology, with some specialization in the Near East. The guidance committee may

require the student to take additional work to make good any deficiencies in his undergraduate program.

3. Requirements of the Program.

(a) Upon beginning his studies under this Program, the candidate will present to the Chairman of the Committee to Administer the Curriculum in Near Eastern Studies a written statement of his preparation in one of the two modern languages required by the University regulations (generally French and German) at the beginning of his first semester in residence. For work in some fields, a reading knowledge of Italian and/or Spanish is essential.

(b) In the first year (normally two semesters) 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. (See 5 above.)

(c) Normally the candidate will devote the second year to suitable courses and seminars in the departments affiliated with the Program, these courses to be determined by the candidate's special advisory committee (to be appointed by the Chairman of the Committee to Administer the Curriculum in Near Eastern Studies); after which he will complete his qualifying examinations and be advanced to candidacy. Of course, this period may be curtailed or expanded according to circumstances.

(d) A final year (which under University rules cannot be curtailed) 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 Islamic 299.

Qualifying Examination

The qualifying examination will, depending on the social science concentration elected by the student, consist (if, for example, his chosen field be history) in examinations on the whole range of Near Eastern history, one field of sociology (or political science) and the testing of the student's knowledge of his chosen Near Eastern languages and their literatures. Qualifying examinations for students with different concentrations will be constructed accordingly.

LOWER DIVISION COURSES†

Near Eastern Languages

Arabic 1A-1AB. Elementary Arabic. (4-4) Yr.

(Numbered 3A-3B prior to 1959-1960.)

Hebrew 1A-1B. Elementary Hebrew. (4-4) Yr.

(Numbered 5A-5B prior to 1959-1960.)

UPPER DIVISION COURSES†

Anthropology and Sociology. Anthropology 123. Nomadic Societies. (3)

Sociology 166. Population and Society in the Middle East. (3)

Sociology 167. Comparative Sociology of the Middle East. (3)

Art. 110C. Art of the Ancient Near East. (3)

111A. Indian Art. (3)

199. Special Studies in Art. (1-4)

Geography 126. The Geography of Africa. (3)

127. The Geography of the Middle East. (3)

History 117A-117B. History of Ancient Egypt. (3-3) Yr.

123A-123B. Byzantine History. (3-3) Yr.

134A-134B. Near and Middle East from 600 A.D. (3-3) Yr.

135. Introduction to Islamic Culture. (2)

† For additional courses, see relevant departments.

136. Islamic Institutions and Political Ideas. (2)
 137. The Near East in the Nineteenth and Twentieth Centuries. (3)
 138A-138B. Jewish History. (3-3)
 139. History of the Turks to 1687. (3) I, II

Near Eastern Languages

- African Languages** 101A-101B. Introductory Swahili. (3-3) Yr.
 103A-103B. Introductory Ewe. (3-3) Yr.
 107A-107B. Introductory Kpelle. (3-3) Yr.
 150A-150B. Introductory Bambara. (3-3) Yr.
 190. Survey of African Language Structure. (3)
 197A-197B. Pro-Seminar in African Linguistics. (2-2) Yr.
 198. Special Courses. (1-4)
- Arabic** 102A-102B. Intermediate Arabic. (4-4) Yr.
 (Numbered 103A-103B prior to 1959-1960.)
 103A-103B. Advanced Arabic. (4-4) Yr.
 (Numbered 120A-120B prior to 1959-1960.)
 110A-110B. Spoken Moroccan Arabic. (3-3) Yr.
 130A-130B. Classical Arabic Texts. (3-3) Yr.
 140A-140B. Modern Arabic Texts. (3-3) Yr.
 150A-150B. A Survey of Arabic Literature in English. (2-2) Yr.
 (Numbered 142A-142B prior to 1959-1960.)
 199. Special Studies in Berber Languages. (1-6)
- Armenian** 101A-101B. Elementary Armenian. (3-3) Yr.
 102A-102B. Intermediate Armenian. (3-3) Yr.
- Berber Languages** 101A-101B. Shilha. (3-3) Yr.
 104A-104B. Kabyle. (3-3) Yr.
 199. Special Studies in Berber Languages. (1-6)
- Hebrew** 102A-102B. Intermediate Hebrew. (4-4) Yr.
 (Numbered 105A-105B prior to 1959-1960.)
 103A-103B. Advanced Hebrew. (3-3) Yr.
 (Numbered 110A-110B prior to 1959-1960.)
 119. Hebrew Conversation and Composition. (2)
 (Numbered 101 prior to 1959-1960.)
 120C-120D. Selected Texts of the Bible. (3-3) Yr.
 130A-130B. Medieval Hebrew Literature. (3-3) Yr.
 140C-140D. Modern Hebrew Poetry and Prose. (3-3) Yr.
 145A-145B. Survey of Hebrew Grammar. (2-2) Yr.
 150A-150B. Survey of Hebrew Literature in English. (3-3) Yr.
 (Numbered 182A-182B prior to 1959-1960.)
 199. Special Studies. (1-6)
- Persian** 101A-101B. Elementary Persian. (3-3) Yr.
 (Numbered 104A-104B prior to 1959-1960.)
 102A-102B. Advanced Persian. (3-3) Yr.
 (Numbered 124A-124B prior to 1959-1960.)
 150A-150B. Survey of Persian Literature in English. (2-2) Yr.
 199. Special Studies in Persian. (1-6)
- Semitics** 101A-101B. Elementary Amharic (Ethiopic). (3-3) Yr.
 102A-102B. Advanced Amharic (Ethiopic). (3-3) Yr.
 130. Biblical Aramaic. (2)
- Turkish** 101A-101B. Elementary Turkish. (3-3) Yr.
 (Numbered 100A-100B prior to 1959-1960.)
 102A-102B. Advanced Turkish. (3-3) Yr.
 (Numbered 190A-190B prior to 1959-1960.)
 110A-110B. Uzbek. (3-3) Yr.
 112A-112B. Old Turkic (Uigur). (3-3) Yr.
 150A-150B. Survey of Turkish Literature in English. (2-2) Yr.
 (Numbered 143A-143B prior to 1959-1960.)

190A-190B. A Survey of the Turkic Languages. (3-3) Yr.

199. Special Studies in Turkish. (1-6)

Political Science 134. International Relations of the Middle East. (3)

151. Governments of the Middle East. (3)

GRADUATE COURSES†

Anthropology and Sociology

Sociology 236. Social Change in the Middle East. (2)

Sociology 237. Social Stratification in the Middle East. (2)

Geography 273. Seminar in Selected Regions (The Middle East). (3)

History 202F. Advanced Historiography. The Near East. (3)

215A-215B. Westernization of the Arabic Speaking World. (2-2) Yr.

268A-268B. Seminar in Near Eastern History. (3-3) Yr.

298. Directed Studies. (1-3)

Near Eastern and African Languages 200. Bibliography and Methods of Near Eastern Languages and Literatures. (2)

African Languages 297. Individual Studies for Graduate Students. (1-6).

299. Research on Thesis or Dissertation. (1-6).

Arabic 230A-230B. Arabic Poetry. (2-2) Yr.

240A-240B. Arab Historians. (3-3) Yr.

297. Individual Studies for Graduate Students. (1-6).

299. Research on Thesis or Dissertation. (1-6).

Hebrew 210A-210B. History of the Hebrew Language. (2-2) Yr.

297. Individual Studies for Graduate Students. (1-6).

299. Research on Thesis or Dissertation. (1-6).

Islamic 299. Research on Thesis and Dissertation. (1-6).

Semitics 201A-201B. Ethiopic. (2-2) Yr.

202A-202B. Readings in Ethiopic literature. (2-2) Yr.

209A-209B. Comparative Ethiopic. (2-2) Yr.

210. Ancient Aramaic. (2)

(Numbered 231 prior to 1961-1962.)

211. Readings in Aramaic Literature. (2)

(Numbered 232 prior to 1961-1962.)

220. Ugaritic. (2)

(Numbered 235 prior to 1961-1962.)

280A-280B. Seminar in Comparative Semitics. (2-2) Yr.

290A-290B. Comparative Morphology of the Semitic Languages. (2-2) Yr.

297. Individual Studies for Graduate Students. (1-6).

299. Research on Thesis and Dissertation. (1-6).

Turkish 210A-210B. Old Ottoman. (2-2) Yr.

297. Individual Studies for Graduate Students. (1-6).

299. Research on Thesis or Dissertation. (1-6).

Political Science 250F. Middle Eastern Studies. (3).

NURSING

(Department Office, 12-139C Medical Center)

Lulu Wolf Hassenplug, R.N., M.P.H., *Dean of the School of Nursing and Professor of Nursing (Chairman of the Department)*.

Harriet M. Coston, R.N., M.A., *Associate Professor of Medical-Surgical Nursing*.

Dorothy E. Johnson, R.N., M.P.H., *Associate Professor of Maternal-Child Health Nursing*.

† For additional courses, see relevant departments.

- Agnes A. O'Leary, R.N., M.P.H., *Associate Professor of Public Health Nursing and Lecturer in Public Health.*
- Mildred A. Dishrow, R.N., M.Litt., *Assistant Professor of Maternity Nursing.*
- Eleanor E. Drummond, R.N., Ed.D., *Assistant Professor of Medical-Surgical Nursing.*
- Laurie M. Gunter, R.N., Ph.D., *Assistant Professor of Nursing.*
- Margaret A. Kaufmann, R.N., Ed.D., *Assistant Professor of Medical-Surgical Nursing.*
- Mary E. Meyers, R.N., M.S., *Assistant Professor of Medical-Surgical Nursing.*
- Miriam Morris, Ph.D., *Assistant Professor of Nursing.*
- Gladys Ancrum, R.N., M.A., *Instructor in Nursing.*
- Rita Braito, R.N., M.S., *Instructor in Medical-Surgical Nursing.*
- Anita B. Chusid, R.N., M.S., *Instructor in Pediatric Nursing.*
- Amelia H. Dowd, R.N., M.A., *Instructor in Public Health Nursing.*
- Patricia A. Hummel, R.N., M.S., *Instructor in Medical-Surgical Nursing.*
- Elizabeth S. Kaufman, R.N., M.S., *Instructor in Psychiatric Nursing.*
- Colette B. Kerlin, R.N., M.S., *Instructor in Maternal-Child Health Nursing.*
- Betty K. Mitsunaga, R.N., M.N., *Instructor in Public Health Nursing.*
- Ruby A. Palmer, R.N., M.A., *Instructor in Psychiatric Nursing.*
- Sharon J. Ringholz, R.N., M.S., *Instructor in Maternal-Child Health Nursing.*
- Jeanne P. Ross, R.N., M.A., *Instructor in Pediatric Nursing.*
- Mary Ann Short, R.N., M.S., *Instructor in Psychiatric Nursing.*
- Mary K. Stanley, R.N., M.S., *Instructor in Public Health Nursing.*
- Mary A. Swartz, R.N., M.S., *Instructor in Medical-Surgical Nursing.*
- Ira D. Trail, R.N., M.A., *Instructor in Psychiatric Nursing.*
- Jean E. Wold, R.N., M.N., *Instructor in Psychiatric Nursing.*
- Kathryn L. Argabrite, R.N., M.S., *Lecturer in School Nursing and Supervisor—Health Education.*
- Clara Arndt, R.N., M.S., *Lecturer in Nursing Service Administration and Assistant Superintendent of Nurses.*
- Virginia M. Brantl, R.N., M.A., M.N., *Lecturer in Medical-Surgical Nursing.*
- Dorothy M. Crowley, R.N., Ph.D., *Lecturer in Medical-Surgical Nursing.*
- Marjorie S. Dunlap, R.N., Ed.D., *Lecturer in Nursing and Associate Research Nurse.*
- Phyllis N. Esslinger, R.N., M.S., *Lecturer in Pediatric Nursing.*
- Charles K. Ferguson, Ed.D., *Lecturer in Nursing.*
- Beatrice R. Hillard, R.N., M.A., *Lecturer in Maternal-Child Health Nursing.*



- S. Stewart West, Ph.D., *Associate Research Sociologist.*
- Genevieve R. Meyer, Ph.D., *Assistant Research Psychologist.*
- Elizabeth J. Cooley, R.N., M.S., *Junior Research Nurse.*
- Barbara J. Hudziak, R.N., M.S., *Junior Research Nurse.*
- Ruth P. Schindler, R.N., M.A., *Junior Research Nurse.*
- Louise B. Thomas, R.N., M.S., *Junior Research Nurse.*
- Carolyn E. Carlson, R.N., M.S., *Career Teacher.*



- F. Doris Bresnahan, R.N., M.A., *Associate Clinical Professor of Nursing Service Administration.*
- Helen M. Wolfe, R.N., M.P.H., *Associate Clinical Professor of Public Health Nursing.*
- Naomi B. Barthrop, R.N., M.N., *Assistant Clinical Professor of Nursing Service Administration.*

- Jamella M. Bell, R.N., M.S., *Assistant Clinical Professor of Nursing Service Administration.*
- Cynthia A. Dauch, R.N., Ed.D., *Assistant Clinical Professor of Public Health Nursing.*
- Irene C. Haarstick, R.N., M.A., *Assistant Clinical Professor of Psychiatric Nursing.*
- Evalyn M. Hamil, R.N., M.N., *Assistant Clinical Professor of Nursing Service Administration.*
- Harriet A. Jackson, R.N., M.S., *Assistant Clinical Professor of Psychiatric Nursing.*
- Olive Whitlock Klump, R.N., B.S., *Assistant Clinical Professor of Public Health Nursing.*
- Julia I. Martin, R.N., M.P.H., *Assistant Clinical Professor of Public Health Nursing.*
- Mary McQuillen, R.N., M.A., *Assistant Clinical Professor of Public Health Nursing.*
- Ruby W. Miller, R.N., M.A., *Assistant Clinical Professor of Psychiatric Nursing.*
- Lucile Perozzi, R.N., M.A., *Assistant Clinical Professor of Public Health Nursing.*
- Geraldine Skinner, R.N., M.S., *Assistant Clinical Professor of Medical-Surgical Nursing.*
- Ruth M. White, R.N., M.S., *Assistant Clinical Professor of Psychiatric Nursing.*
- Barbara J. Williams, R.N., M.S., *Assistant Clinical Professor of Medical-Surgical Nursing.*
- Colleen W. Blair, R.N., B.S., *Clinical Instructor in Medical Nursing.*
- Katherine M. Byran, R.N., B.S., *Clinical Instructor in Public Health Nursing.*
- Elaine M. Gettys, R.N., M.S., *Clinical Instructor in Maternity Nursing.*
- Dorothea Hansen, R.N., B.S., *Clinical Instructor in Public Health Nursing.*
- Eleanor E. Hicks, R.N., B.S., *Clinical Instructor in Psychiatric Nursing.*
- Mary L. Jarvis, R.N., *Clinical Instructor in Public Health Nursing.*
- Edith A. Mars, R.N., B.S., *Clinical Instructor in Psychiatric Nursing.*
- Edith V. Martins, R.N., B.S., *Clinical Instructor in Public Health Nursing.*
- Helen S. Marvel, R.N., *Clinical Instructor in Maternal-Child Health Nursing.*
- Frederica G. Patterson, R.N., B.A., *Clinical Instructor in Medical-Surgical Nursing.*
- Georgia E. Patterson, R.N., A.B., *Clinical Instructor in Nursing.*
- Jerry G. Peers, R.N., B.S., *Clinical Instructor in Surgical Nursing.*
- Virginia L. Poer, R.N., B.S., *Clinical Instructor in Public Health Nursing.*
- Edith Pross, R.N., B.S., *Clinical Instructor in Public Health Nursing.*
- Irene Ross, R.N., B.S., *Clinical Instructor in Public Health Nursing.*
- Theresa G. Ryan, R.N., B.A., *Clinical Instructor in Nursing Service Administration.*
- Helen L. Salmon, R.N., B.S., *Clinical Instructor in Public Health Nursing.*
- Vera L. Thompson, B.N., M.S., *Clinical Instructor in Public Health Nursing.*

The School of Nursing admits students of junior or higher standing and offers curricula leading to the degrees of Bachelor of Science and Master of Science in nursing.

Two curricula are offered for the Bachelor of Science degree:

1. *Basic Program.*

Preparation for the Major.—Completion of 60 units of college work including the courses listed below or transfer credit evaluated as equivalent:

Course	Units
English	6
English 1A, 1B	
Natural Sciences	31
Chemistry 1A, 1B, 8	
Physics 10	
Bacteriology 1	
Psychology 1B	
Zoology 1A, 1B	
Social Sciences	9
Sociology 1	
Anthropology 2	
Psychology 1A	
Electives	
Courses in the Humanities	6
Others from any of the following:	
Foreign Language	
History	
Logic	
Mathematics	
Physical Education	

The Major.—The required upper division nursing courses and elective courses designed to prepare university women for professional nursing responsibilities in the care of the patient and his family.

2. Program for Registered Nurses.

Preparation for the Major.—Completion of the admission requirements.

The Major.—A minimum of 60 units of coordinated upper division courses planned on the basis of professional need.

UPPER DIVISION COURSES FOR BASIC PROGRAM

100. Nursing and Social Change. (3) I. Mrs. Gunter

A study of nursing as it affects and is affected by those factors which influence the health of the individual, the family, and the community, and the provision of nursing service.

105A. Nursing Care of Adults and Children. (6) I.

Miss Dowd, Mrs. Esslinger, Miss Hummel, Miss Ringholz, Mrs. Thomas
Lecture, three hours; laboratory, twelve hours.

Study of those principles which underlie the nurse's role in the promotion and maintenance of health and the prevention of illness. Guided participation in the care of selected patients and families.

105B. Nursing Care of Adults and Children. (9) II.

Miss Dowd, Mrs. Esslinger, Miss Hummel, Miss Ringholz, Mrs. Thomas
Lecture, five hours; laboratory, sixteen hours. Prerequisite: course 105A.

Study of the knowledge and skills utilized in the nursing care of adults and children with emphasis upon nutritional and drug therapies and upon the interrelationships of health practices and family life. Guided participation in nursing care of selected patients in hospital and community settings.

105C. Nursing Care of Adults and Children. (8) I.

Miss Brantl, Miss Hillard, Miss Kaufmann, Miss Ross
Lecture, four hours; laboratory, sixteen hours. Prerequisite: course 105B.

Guided participation in the nursing care of patients with increasingly complex health problems in hospital and community settings.

105D. Nursing Care of Adults and Children. (8) II.

Miss Kaufmann and the Staff

Lecture, four hours; laboratory, sixteen hours. Prerequisite: course 105C. Principles basic to the maintenance and promotion of family and community health and to the care of patients with complicated acute and chronic illnesses. Nursing laboratory in general and psychiatric hospitals, industries, schools, and public health agencies.

195. Fundamental Problems in Administering Nursing Services. (8) I, II.

Miss Coston, Miss Crowley, Miss Johnson

Lectures, four hours; laboratory, sixteen hours. Prerequisite: senior standing.

Analysis and synthesis of systems of administering nursing care programs including evaluation and prediction of success. Participation in administering nursing services.

199. Special Studies in Nursing. (1-3) II.

The Staff

Prerequisite: senior standing and consent of the instructor.

UPPER DIVISION COURSES FOR REGISTERED NURSES

Registered nurses having upper division standing are admitted to all upper division required courses with consent of the instructor or upon completion of prerequisites selected from the areas of physical education, guidance, education, psychology, or sociology, depending upon the goals of the individual student.

106A. Nursing Care of Adults and Children. (8) I, II.

Miss Crowley, Miss Short, and the Staff

Lecture, four hours; laboratory, sixteen hours. Prerequisite: senior standing; Physical Education 145A; Public Health 180 concurrent.

Study of current concepts of nursing care of individuals and families with emphasis on health promotion, disease prevention and remedial and rehabilitative care of patients. Nursing laboratory in psychiatric and public health agencies, school health services, and other community facilities.

106B. Nursing Care of Adults and Children. (8) I, II.

Mrs. Blumberg, Miss Drummond, and the Staff

Lecture, four hours; laboratory, sixteen hours. Prerequisite: senior standing.

Study of current concepts of nursing care with emphasis upon recent advances in the care of acutely and chronically ill adults and children. Nursing laboratory in hospitals and other community health facilities. Individual and group health teaching.

110. Survey of Nursing. (3) II.

Mrs. Gunter

(Former number, 116.)

Critical analysis of studies in nursing and their relationship to the development of the profession.

***122. Survey of Tuberculosis Nursing. (2) II.**

Lecture, one hour; laboratory, four hours.

Survey of recent advances in the prevention, treatment, and control of tuberculosis, and participation in nursing care in the hospital, the home, and public health agencies, including opportunity to assist in the rehabilitation of the tuberculous patient and his family.

* Not to be given, 1961-1962.

144. Community Health Nursing, Including School Nursing. (4) I.

Mrs. Mitsunaga, Mrs. Stanley and the Staff

Lecture, two hours; laboratory, eight hours. For graduate students. Automobile required.

A study of public health nursing, including school nursing; philosophy; functions; responsibilities, current practices, and their relationship to present and future health needs of people. Guided participation in a community health agency and/or school.

165. Fundamentals of Psychiatric Nursing. (4) I. Miss Palmer and the Staff

Lecture, two hours; laboratory, eight hours. For graduate students.

Study of the changing concepts in the care of psychiatric patients, with guided participation in nursing care essential to meet the needs of the mentally ill patient and his family.

199. Special Studies in Nursing. (1-3) I, II.

The Staff

Prerequisite: senior standing and consent of the instructor.

GRADUATE COURSES

205A-205B. Nursing Research and Statistical Data. (2) I, II. Mrs. Morris

Prerequisite: upper division course in statistics.

Exploration and evaluation of studies and research in nursing. Use of the scientific method and the handling of statistical data as an aid in the selection and solution of studies and thesis problems.

225. Human Relations in Administration. (2) I, II.

Mr. Ferguson

A systematic study of the principles of human relations in administration, with emphasis upon their application to the field of nursing.

230. Curriculum Development in Nursing. (2) I, II.

Mrs. M. S. Dunlap

A critical evaluation of present-day nursing curricula, with a consideration of objectives, teaching methods, source materials, community resources, and sequence of instruction. Individual and group studies in University nursing-curriculum building.

236. Current Concepts in Pediatric Nursing. (2) I.

Miss D. Johnson

A critical evaluation of new scientific discoveries in major clinical conditions occurring in childhood and of recent developments in the care and guidance of children from which principles and practices of pediatric nursing may be derived.

237A-237B. Psychiatric Concepts in Nursing and Community Health

Programs. (2-2) Yr.

Miss Cooley, Mrs. Hassenplug

A study of theoretical and practical problems in human behavior which the nurse encounters when meeting mental health needs of individuals and their families.

252A-252B. Seminar in Nursing Service Administration. (2-2) Yr.

Miss Arndt, Miss White, and the Staff

Evaluation of the fundamentals of hospital nursing service administration, including ward administration, personnel management, in-service education programs, nursing functions, team activities, and community relationships. Individual and group study and field work.

253. Seminar in Long-Term Nursing. (2-4) II.

Miss Drummond

Prerequisite: consent of the instructor. Automobile required.

Study of the fundamentals of administration of long-term illness nursing, with emphasis upon program planning, supervision, personnel management, in-service education, and community activities. Individual and group study and field work.

254. Seminar in Nursing School Administration. (2-4) I, II.

Prerequisite: consent of the instructor.

Mrs. Hassenplug

Evaluation of the fundamentals of nursing school administration, including organization, control, personnel, physical and clinical facilities, curriculum, teaching, student selection, and student welfare. Individual and group study and field work.

256A-256B. Seminar in Public Health Nursing. (2-2) Yr. Miss O'Leary

Automobile required.

Evaluation of the fundamentals of public health nursing administration, including agency interrelationships, student welfare, supervisory activities, and program planning in official and nonofficial agencies in urban and rural areas. Individual and group study and field work.

258A-258B. Seminar in Advanced Pediatric Nursing. (2-2) Yr.

Miss D. E. Johnson

Evaluation of the needs of infants and children at different age levels and the various programs designed to meet these needs in urban and rural areas. Individual and group study and field work in child-care programs.

261A-261B. Seminar in Advanced Psychiatric-Mental Health Nursing.

(2-2) Yr.

Miss Palmer and the Staff

Critical analysis of the philosophy, therapeutic principles, skills, and techniques inherent in the professional nursing care of the mentally ill. Guided study and field work.

262A-262B. Seminar in Advanced Maternity Nursing. (2-2) Yr.

Miss Disbrow

Evaluation of present obstetric practices, and analysis of recent advances and changing philosophy in the care of mother and baby; community organization for maternal and child care; individual and group study and field work.

270. Seminar in Advanced Medical-Surgical Nursing. (2-4) I, II.

Miss Coston

Evaluation of the fundamentals of medical-surgical nursing; implications for nursing in recent scientific advances; current trends in rehabilitation. Critical analysis of methods used in patient care and student teaching. Individual and group study and field work.

299. Research on Thesis. (No credit) I, II.

The Staff

401. Guided Supervision in Nursing Services. (5) I, II.

The Staff

Laboratory, thirty hours. Prerequisite: master's degree or the equivalent, or consent of the instructor. May be repeated for credit.

A course in guided supervision in nursing service in hospitals and/or health agencies which places emphasis upon supervisor-nurse-team relationships and the evaluation process. Opportunity is given to apply the theory of supervision and to handle supervisory problems.

NUTRITIONAL SCIENCES

(Department Office, 1209 Home Economics Building)

Gladys A. Emerson, Ph.D., *Professor of Nutrition and Public Health Nutrition.*

Roslyn B. Alfin Slater, Ph.D., *Associate Professor of Nutrition and Public Health Nutrition.*

Edward L. Rada, Ph.D., *Associate Professor of Economics.*

Marian E. Swendseid, Ph.D., *Associate Professor of Nutrition and Physiological Chemistry.*

Edith M. Carlisle, Ph.D., *Lecturer in Nutrition.*

Florence C. McGucken, M.S., *Lecturer in Nutrition.*

Margaret Chang, M.S., *Associate in Nutrition.*

Kay Mercer, B.S., *Associate in Nutrition.*

SCHOOL OF PUBLIC HEALTH

Curriculum requirements for the Bachelor of Science Degree and the Master of Science degree are described in the ANNOUNCEMENT OF THE SCHOOL OF PUBLIC HEALTH and on pages 63-67 of this bulletin.

LOWER DIVISION COURSE

11. **Nutrition and Food.** (3) I, II. Miss Chang
 (Formerly Home Economics 11.)
 Lecture, one hour; laboratory, six hours.
 Nutrition with emphasis on the selection and preparation of foods.

UPPER DIVISION COURSES

100. **Institutional Food Economics.** (2) I. Mrs. McGucken
 (Formerly Home Economics 100.)
 Lecture, one hour; laboratory, three hours.
 Production and distribution methods in food industries; grades and standards; legal control; the cost to consumers in relation to nutritive values.

101. **Food Analysis.** (3) I. Miss Swendseid
 (Formerly Home Economics 101.)
 Lecture, one hour; laboratory, six hours. Prerequisite or concurrent: course 113.
 The application of quantitative methods to the chemical and microbiological assay of foods.

102. **Food Science.** (3) I, II. Miss Chang
 (Formerly Home Economics 102.)
 Lecture, one hour; laboratory, six hours. Prerequisite: course 11, Chemistry 1A-1B.
 The study of chemical, enzymatic and physical principles in food preparation.

111. **Principles of Food and Nutrition.** (2) I, II. Mrs. Carlisle
 (Formerly Home Economics 111.)
 A survey of the principles of nutrition and their application in normal conditions of growth and development. Food habits in relation to nutritive requirements and health. (Not open to students who have had Nutritional Science 11.)

113. **Nutrition.** (3-4) I, II. Miss Swendseid
 (Formerly Home Economics 113.)
 Lecture, three hours; laboratory, three hours. Prerequisites: Chemistry 8, 9, Zoology 1A, 1B.
 The chemistry and biochemistry and carbohydrates, fats, proteins, minerals, and vitamins in relation to human nutrition. Qualitative laboratory studies on the components of food.

- 114. Methods in Metabolism.** (4) II. Mrs. Carlisle
(Formerly Home Economics 114.)
Lecture, two hours; laboratory, six hours. Prerequisite: course 101 or equivalent.
The influence of special diets on various phases of metabolism; methods for determining constituents in blood and urine.
- 115. Nutritional Requirements.** (2) II. Mrs. Emerson
Prerequisite: Consent of instructor.
The experimental basis for the establishment of recommended dietary allowances.
- 116. Therapeutic Dietetics.** (2) I, II. Mrs. Carlisle
(Formerly Home Economics 116.)
Lecture, one hour; laboratory, three hours. Prerequisite: courses 102, 112.
Modification of the normal diet for specific diseases; dietary calculations.
- 117. Evaluation of Nutritional Adequacy and Status.** (2) I. Mrs. Alfin-Slater
(Formerly Home Economics 117.)
Prerequisite: courses 101, 113.
A critical study of the methods used to assess the nutritional adequacy of various foods and the nutritional status of individuals. Criteria for nutritional surveys.
- 121. Quantity Food Study.** (4) I, II. Mrs. McGucken, Miss Mercer
(Formerly Home Economics 121.)
Lecture, two hours; laboratory, six hours. Prerequisite: Nutritional Sciences 102 and Economics 1A-1B.
A study of economic principles and problems involved in the purchase and preparation of foods in quantity.
- 122. Institutional Organization and Management.** (4) I, II. Mrs. McGucken, Miss Mercer
(Formerly Home Economics 122.)
Lecture, two hours; laboratory, six hours.
A study of organization and administration as applied to institutional households such as residence halls, hotels, hospitals, school cafeteria, etc.
- 142. The World's Food.** (4) II. Mr. Rada
Lecture, three hours; laboratory, three hours. Prerequisite: Economics 1A-1B.
The world's food sources; major food groups; human food requirements and consumption; food in developing economies; the international movement of foods; interrelations of food, population, and economic progress.
- 199. Special Studies in Nutritional Science.** (1-3) I, II. The Staff
Prerequisite: senior standing and consent of the instructor.

GRADUATE COURSES

- 251. Seminar in Nutrition.** (2) I. Miss Swendseid
(Formerly Home Economics 251.)
Recent advances in the science of nutrition and in the dietetic treatment of disease.
- 252. Nutritional Diagnosis.** (2) II. Mrs. Emerson, Mrs. Alfin-Slater
(Formerly Home Economics 252.)
Prerequisite: course 113, Chemistry 108A-108B.
Nutrition in the maintenance of health and treatment of disease.
- 253. Bio-Chemistry and Nutrition of Lipids.** (2) I. Mrs. Alfin-Slater
(Formerly Home Economics 253.)
Lecture, TBA; laboratory, TBA. Prerequisite: course 113, Chemistry 108A-108B.

ORIENTAL LANGUAGES

(Department Office, 334 Royce Hall)

Kan Lao, B.A., *Professor of Oriental Languages.*

Richard C. Rudolph, Ph.D., *Professor of Oriental Languages (Chairman of the Department).*

Ensho Ashikaga, M.Litt., Giko, *Associate Professor of Oriental Languages.*

Meiko S. Han, Ph.D., *Acting Assistant Professor of Oriental Languages.*

James T. Araki, Ph.D., *Acting Instructor in Oriental Languages.*

Y. C. Chu, M.A., *Associate in Chinese.*

Letters and Science List.—All undergraduate courses in Oriental languages are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

Preparation for the Major.—Courses 1A-1B, 9A-9B, and 32 or 42. Recommended: Anthropology 1-2.

The Major.—Required: 24 upper division units of Oriental languages, of which 18 units must be in language courses including course 199; Art 111A, 113C, and History 191A-191B. Recommended: Anthropology 110, and Geography 124B. A reading knowledge of French and German should be acquired by those planning to go on to graduate work.

Requirements for Admission to Graduate Courses.—A candidate for admission to graduate courses in Oriental languages must meet, in addition to the general University requirements, the minimum requirements for an undergraduate major in this department. The candidate must pass a reading examination in French or German during the first semester of graduate study.

Requirements for the Master's Degree.—For the general requirements see page 69. The department favors the Comprehensive Examination plan, but under certain conditions the thesis plan may be approved.

LOWER DIVISION COURSES

1A-1B. Elementary Modern Chinese. (4-4) Yr. Mr. Chu

Not open to students with previous training. Five hours a week.

Introduction to the standard or "National Language" (Kuo Yü) of China.

9A-9B. Elementary Modern Japanese. (4-4) Yr. Mr. Ashikaga

Not open to students with previous training. Five hours a week.

13A-13B. Classical Chinese. (2-2) Yr. Mr. Rudolph

Prerequisite: course 1A or consent of the instructor.

Introduction to the development of Chinese writing and the Classical language in which the bulk of Chinese literature is written.

32. History of Japanese Civilization. (2) II. Mr. Araki

A survey of the development of Japanese culture and its relationship to the Asiatic mainland.

42. History of Chinese Civilization. (2) I. Mr. Rudolph

No knowledge of Chinese is required.

A survey of the development of the outstanding aspects of Chinese culture from prehistoric to modern times.

UPPER DIVISION COURSES

101A-101B. Intermediate Chinese. (3-3) Yr. Mr. Chu

A continuation of 1A-1B.

109A-109B. Intermediate Modern Japanese. (3-3) Yr. Mr. Araki

A continuation of 9A-9B.

- 112. Chinese Literature in Translation.** (2) II. Mr. Araki
No knowledge of Chinese is required.
Lectures and collateral reading of representative works—including classics, histories, belles-lettres, and fiction—in English translations.
- 113A-113B. Intermediate Classical Chinese.** (2-2) Yr. Mr. Lao
Further readings in the classics.
- 119A-119B. Advanced Modern Japanese.** (3-3) Yr. Mr. Araki
A continuation of 109A-109B.
- 121A-121B. Advanced Chinese.** (3-3) Yr. Mr. Chu
A continuation of 101A-101B, with practice in newspaper style.
- 129A-129B. Classical Japanese and Kambun.** (2-2) Yr. Mr. Ashikaga
- 132. Japanese Literature in Translation.** (2) I. Mr. Araki
History of Japanese literature from the beginning to modern times, emphasizing Chinese, Buddhist, and Western influences.
- *152A. Chinese Poetry and Fiction.** (3) I. _____
Prerequisite: a reading knowledge of Chinese.
- *152B. Japanese Poetry and Fiction.** (3) II. _____
Prerequisite: a reading knowledge of Japanese.
- 163. Readings in Chinese.** (3) I. Mr. Lao
Prerequisite: course 113A-113B.
Selections from masters in the *Ku wen* style.
- 164A-164B. Tibetan.** (2-2) Yr. Mr. Ashikaga
- 170. Archaeology of China.** (2) II. Mr. Rudolph
No knowledge of Chinese is required.
The important archaeological sites and types of antiquities of ancient China and peripheral regions; the history and development of archaeological work in China.
- *172A-172B. The Influence of Buddhism on Far Eastern Cultures.** (3-3) Yr. _____
The historical development of Buddhism in China and Japan and its influence on the culture, society and institutions of these areas. No language requirement.
- 173. Chinese Historical Texts.** (2) II. Mr. Lao
Prerequisite: course 113A-113B.
- 179A-179B. Readings in Japanese.** (3-3) Yr. Mr. Ashikaga
Prerequisite: course 129B, or consent of the instructor.
- 199. Special Studies in Oriental Languages.** (1-4) I, II. The Staff
Prerequisite: senior standing and consent of the instructor.

GRADUATE COURSES

- 203A-203B. Chinese Philosophical Texts.** (2-2) Yr.
- 213A-213B. Chinese Buddhist Texts.** (3-3) Yr.
- 229A-229B. Japanese Buddhist Texts.** (3-3) Yr.

* Not to be given, 1961-1962.

252A-252B. Seminar in Japanese Literature. (3-3) Yr.

253A-253B. Seminar in Buddhist Studies. (2-2) Yr.

262. Seminar in Sinological Literature. (3) I.

275. Seminar in Chinese Cultural History. (3) II.

295. Bibliography and Methods of Research. (2) I.

PATHOLOGY

(Department Office, 13-267 Medical Center)

Harrison Latta, M.D., *Professor of Pathology.*

Sidney C. Madden, M.D., *Professor of Pathology (Chairman of the Department).*

Frank W. McKee, M.D., *Professor of Pathology (Director, Clinical Laboratories).*

Louis J. Zeldis, M.D., *Professor of Pathology.*

W. Jann Brown, M.D., *Associate Professor of Pathology.*

Baldwin G. Lamson, M.D., *Associate Professor of Pathology.*

Robert S. Stone, M.D., *Associate Professor of Pathology.*

Raymond A. Allen, M.D., *Assistant Professor of Pathology.*

Drake W. Will, M.D., *Assistant Professor of Pathology.*

Roy L. Walford, Jr., M.D., *Assistant Professor of Pathology.*

Robert E. Anderson, M.D., *Instructor in Pathology.*

† Thomas E. Edgington, M.D., *Instructor in Pathology.*

GRADUATE COURSE

Graduate study programs in the department are offered to a limited number of medical students between the second and third or between the third and fourth years. For further information consult the chairman of the department. The following course is open to qualified nonmedical graduate students in so far as facilities permit.

231. Pathological Anatomy and Physiology. (11) I.

The Staff

Prerequisite: graduate student status and completion of a curriculum satisfying basic requirements for the study of human pathology. Candidates should make application to the Department of Pathology office. Limited to twelve students.

Demonstrations, discussions, and individual study of a student loan collection of microscopic slides preparations and of fresh specimens from recent autopsies, supplemented by fixed museum specimens, Kodachrome photomicrographs, and projection of microslides. The course of study includes general pathology and the special pathology of organ systems, emphasizing the correlation of abnormal anatomy with deranged physiology and chemistry. Laboratory exercises illustrative of major phenomena of disease are performed by students under staff supervision. The topic for the term paper should be selected in consultation with the instructor.

PERSIAN

For courses in Persian, see under Department of Near Eastern and African Languages.

† Absent on leave, 1961-1962.

PHARMACOLOGY

(Department Office, 23-267 Medical Center)

Gordon A. Alles, Ph.D., *Professor of Pharmacology in Residence.*

Donald J. Jenden, M.B., B.S., *Professor of Pharmacology.*

Dermot B. Taylor, A.B., M.B., B.Ch., B.A.O., *Professor of Pharmacology (Chairman of the Department).*

Emery M. Gal, Ph.D., *Associate Professor of Pharmacology in Residence.*

Barbara B. Brown, Ph.D., *Associate Clinical Professor of Pharmacology in Residence.*

John A. Bevan, M.D., B.S., M.R.C.S., L.R.C.P., *Assistant Professor of Pharmacology.*

Robert George, Ph.D., *Assistant Professor of Pharmacology in Residence.*

George W. Stevenson, M.D., M.S., *Assistant Professor of Pharmacology.*

Richard C. Ursillo, Ph.D., *Assistant Professor of 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.

Students may from time to time be required to pass such examinations as may be thought advisable by the staff of the department.

Requirements for the Degree of Master of Science

In addition to the general requirements of the Graduate Division as defined on pages 69-71, the student must complete the following:

1. Pharmacology 201. Mammalian Pharmacology and Toxicology.
2. Pharmacology 232. Fundamental Principles of Drug Action.
3. Pharmacology 233. Bioassay Theory.
4. Pharmacology 234. Experiments in Bioassay and Modes of Drug Action.
5. Pharmacology 251A-251B. Seminar.
6. Suitable additional courses in related subjects to make a total of 20 units.
7. A thesis.

The responsibility for completion of all technical requirements for the master's degree rests solely with the candidate. This includes application to the Graduate Division for advancement to candidacy during the first two weeks of the final semester in which the candidate hopes to qualify. The deadline for this application is set each semester by the Graduate Division.

Requirements for the Doctor's Degree

1. *Advancement to Candidacy.* In addition to the general requirements of the Graduate Division as defined on pages 71-74, the student must pass a series of qualifying examinations both written and oral. His guidance committee may also stipulate additional requirements. This committee will be appointed by the chairman of the department.

2. *Departmental Requirements.* The minimum requirements in addition to those for the master's degree in pharmacology and toxicology are:

- (1) Pharmacology 236. Neuropharmacology.

- (2) Reading knowledge of French and German. (See page 72.)
- (3) Two semesters of physical chemistry.
- (4) A course in calculus.
- (5) Such additional subjects as his guidance committee may designate.

The language and course requirements should be satisfied as soon as possible, and students must pass the examinations in foreign languages before applying for the qualifying examination.

The responsibility for completion of all technical requirements for the doctor's degree rests solely with the candidate.

GRADUATE COURSES

201. Mammalian Pharmacology and Toxicology. (8) II.

Mr. Taylor and the Staff

Lectures, demonstrations, laboratories and conferences.

A detailed and comprehensive consideration of the classification, description, modes of action and the pharmacological and toxicological actions of drugs with special reference to the principles governing their use in medicine.

232. Fundamental Principles of Drug Action. (2) I.

Mr. Taylor and the Staff

Advanced lectures on the scientific basis of pharmacological action. Interactions between drugs and cell components. Principles governing absorption, distribution, metabolism and excretion. Diffusion of drugs into and through tissues. Relationships between structure and action in relevant series of drugs.

233. Bioassay Theory. (1) I.

Mr. Dixon and the Staff

Prerequisite: Preventive Medicine 101 (Biostatistics).

The theory and practice of the application of statistical methods to the design of experiments and the analysis of data in pharmacology, toxicology and therapeutics.

234. Experiments in Bioassay and Modes of Drug Action. (1) I.

Mr. Ursillo and the Staff

A detailed laboratory course on the bioassay of pharmacological agents and the experimental techniques involved in the elucidation of their modes of action.

235. Systemic Mammalian Pharmacology and Toxicology. (3) II.

Mr. Taylor and the Staff

A comprehensive lecture course in systemic general mammalian pharmacology including the classification, description and mode of action of pharmacological agents.

236. Neuropharmacology. (1) I, II.

Mr. Taylor and the Staff

Prerequisite: Neuropharmacology.

An advanced course on the actions and mode of action of drugs acting on the nervous system. Interactions between drugs and nervous tissue. The movement of drugs and chemicals through the blood brain barrier and their distribution in the C.S.F. and brain. Problems of central transmission.

251A-251B. Seminar in Pharmacology. (1-1) Yr.

Mr. Taylor and the Staff

290. Research in Pharmacology. (1-6) Yr.

Mr. Taylor and the Staff

PHILOSOPHY

(Department Office, 3303 Humanities Building)

- ¹H. L. A. Hart, M.A. (Oxon.), *Flint Professor of Philosophy*.
 Abraham Kaplan, Ph.D., *Professor of Philosophy*.
 Hans Meyerhoff, Ph.D., *Professor of Philosophy*.
¹Ernest A. Moody, Ph.D., *Professor of Philosophy*.
 Donald A. Piatt, Ph.D., *Professor of Philosophy*.
 J. Wesley Robson, Ph.D., *Professor of Philosophy*.
 Hugh Miller, Ph.D., *Professor of Philosophy, Emeritus*.
 §Rudolf Carnap, Ph.D., *Professor of Philosophy, Emeritus*.
 Donald Kalish, Ph.D., *Associate Professor of Philosophy*.
 Richard Montague, Ph.D., *Associate Professor of Philosophy*.
 Robert M. Yost, Jr., Ph.D., *Associate Professor of Philosophy*.
 Montgomery T. Furth, A.B., *Acting Assistant Professor of Philosophy*.
 Herbert Morris, LL.B., D.Phil., *Assistant Professor Philosophy*.
 Patrick Wilson, Ph.D., *Assistant Professor of Philosophy*.
 Douglas C. Long, M.A., *Acting Instructor in Philosophy*.



John Hospers, Ph.D., *Lecturer in Philosophy*.

Letters and Science List.—All undergraduate courses in this department are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

Preparation for the Major.—Twelve units of lower division courses in philosophy, including courses 20A and 20B. Course 30 or 31 must be taken either as part of the preparation for the major or in the upper division.

The Major.—Twenty-four units in upper division courses, including at least 3 units in each of the following four groups:

Group I. 114, 152, 153, 157A, 157B, 162, 163, 166, 170A, 170B.

‡Group II. 184A, 184B, 185, 186, 187A, 187B, 191.

Group III. 104, 105, 121, 136, 147, 149, 188, 189, 190.

Group IV. 111, 112, 123, 124, 125, 146A, 146B, 175, 180, 181.

Requirements for Admission of Philosophy Majors to Graduate Courses.—Students may be admitted to a graduate course only if they have graduate standing and adequate preparation for this course.

Requirements for the Master's Degree.—For the general requirements, see page 69. In addition, candidates for the master's degree in philosophy must satisfy the following:

1. A reading knowledge of one of the following languages: Greek, Latin, French, or German.

2. At least 20 semester units in courses numbered over 100, 9 or more of which must be in courses numbered over 200.

3. An oral examination designed to test the student's general knowledge of philosophy.

4. A thesis supervised and approved by the department.

Requirements for the Doctor's Degree.—For the general requirements, see

¹ In residence fall semester only, 1961–1962.

§ Recalled to active service.

‡ Students who have taken Philosophy 80 and passed Philosophy 81 with at least a grade B are not required to offer units from Group II in satisfaction of the requirement of 24 upper division units for the major.

page 71. In addition, candidates for the doctor's degree in philosophy must satisfy the following:

1. A reading knowledge of two of the following languages: Greek, Latin, French, or German. On petition to the department, one of these may be replaced by another language especially relevant to the candidate's field of specialization.

2. At least 24 related upper division units approved by the adviser in any one of the following fields: (a) natural sciences and mathematics, (b) social sciences, (c) life sciences, (d) humanities, excluding philosophy.

3. Qualifying examinations for advancement to candidacy consisting of a written examination in each of the following fields: logic, history of philosophy, theory of value, metaphysics, and a field of specialization within philosophy. Ordinarily, preparation for these examinations includes some work in courses numbered over 200. These examinations are normally scheduled for the third week of the fall semester and for the third week of April in the spring semester. In addition, there is an oral qualifying examination in one of the four general philosophical fields and in the related fields represented by the nondepartmental members of the doctoral committee.

4. An oral examination in the field of the student's special interest as represented by his dissertation.

LOWER DIVISION COURSES

All lower division courses are introductory and without prerequisite, except as otherwise stated.

***3. Logic in Practice. (2) I.** Mr. Long
Language and its analysis as an instrument of sound thinking in morals, politics, and everyday life.

***4. Short Introduction to Philosophy. (2) I.** _____
Not open for credit to students who have completed 6A.

***5. Problems of Ethics and Religion. (2) I.** _____
Human conduct, its rules and natural law; the moral basis of institutions; religion and the moral order.

6A-6B. Introduction to Philosophy. (3-3) Yr. Beginning either semester.

Mr. D. Kaplan, Mr. Long, Mr. Morris, Mr. Piatt, Mr. Wilson, Mr. Yost
A philosophical analysis of the basic ideas and methods in political theory, morals, art, science, and religion; and of the interrelations of these fields. An attempt is made to provide the student with a critical technique for developing a well-considered philosophy of his own. Recommended as a course to satisfy requirement (G) (2) in the College of Letters and Science.

Course 6A is a prerequisite to course 6B, and is not open for credit to students who have completed course 4.

20A. History of Greek Philosophy. (3) I, II. Mr. Moody, Mr. Furth
The beginnings of Western science and philosophy; Socrates, Plato, and Aristotle; Greek philosophies in the Roman world and in the Christian era.

20B. History of Modern Philosophy. (3) I, II. Mr. Furth, Mr. Robson
The Renaissance and the rise of modern science; rationalism in Descartes, Spinoza, Leibniz; empiricism in Locke, Berkeley, Hume; Kant and his successors; recent movements.

25. Democratic and Totalitarian Ideologies. (3) II. Mr. A. Kaplan
Not open to freshmen.

Contemporary philosophic conceptions of the relation between the state, society, and culture.

* Not to be given. 1961-1962.

- 30. Introduction to Modern Logic.** (3) I, II. Mr. Kalish
A survey of elementary logic, both inductive and deductive, with applications to ordinary language, the foundations of arithmetic, and science.
- 31. Deductive Logic.** (3) I, II. Mr. Kalish, Mr. D. Kaplan
The elements of symbolic logic; forms of reasoning and structure of language. Recommended for students who plan to pursue more advanced studies in logic.

UPPER DIVISION COURSES

Normally, prerequisite for all upper division courses is upper division standing and such special prerequisites as are mentioned in the course listings. Philosophy majors are recommended to make a selection of upper division courses that is well balanced with respect to the principal fields of philosophy. Many courses in the department of philosophy contain material that is relevant to programs of study in the following areas: fine arts, literary and intellectual history, jurisprudence, social sciences, psychology, natural sciences, and mathematics. The following courses, which require little or no philosophical background, are especially suitable for nonmajors who are interested simply in taking a course in philosophy as an elective: 104, 111, 112, 114, 121, 123, 136, 146A, 146B, 147, and 149.

- 104. Ethics.** (3) I. Mr. Piatt
The fundamental concepts and theories of morals; the history and development of ethical theory.

- 105. Ethics and Society.** (3) II. Mr. Piatt
Prerequisite: course 5, 25, or 104; or upper division standing in psychology or a social science.
A critical application of ethical theory to contemporary social problems and institutions.

- 111. Metaphysics.** (3) II. Mr. Long
Prerequisite: 6 units of philosophy or consent of the instructor.
Metaphysical theories of the universe and man's place in it; types of metaphysical approaches to philosophical problems; relations of metaphysics to science and to other philosophical disciplines.

- 112. Philosophy of Religion.** (3) I. Mr. Wilson
The nature and existence of God; the concept of immortality; religious obligation and the question of free will; the systematic nature of theology and its relation to the philosophical enterprise.

- *114. American Philosophy.** (3) I. Mr. Piatt
Philosophical foundations of American thought. Theories of human nature, political philosophy, and religion, from colonial times to the present.

- 121. Political Philosophy.** (3) II. Mr. Morris
Prerequisite: 6 units of philosophy.
Analysis of fundamental political conceptions: the state, sovereignty, political obligation, natural rights, natural law, and others.

- 123. Existentialist Philosophies.** (3) II. Mr. Meyerhoff
An analysis of existentialist thought in modern philosophy: the nineteenth-century background (Kierkegaard and Nietzsche) and the major varieties of contemporary existentialism, both religious and nonreligious (Heidegger, Sartre, Marcel, and Buber).

- 124. Oriental Philosophy. (3) I.** Mr. A. Kaplan
 Prerequisite: course 20A-20B. Recommended: course 30.
 A survey of the major philosophical systems of China and India: Hindu, Buddhist, Confucian, and Taoist. Attention will be paid to differences and similarities between these and dominant Western conceptions of methodology, ethics, and social philosophy.
- *125. Nineteenth-Century Idealism and Romanticism. (3) I.** Mr. Meyerhoff
 The philosophies of post-Kantian idealism, romanticism and evolution, with special reference to Hegel, Schopenhauer, Nietzsche, and Bergson.
- 136. Philosophy of Art. (3) II.** Mr. A. Kaplan
 The aesthetic experience; form and expression; the functions of art; bases of art criticism.
- 146A. Philosophy in Literature. (3) I.** Mr. Meyerhoff
 A study of philosophical ideas expressed in the literary masterpieces of Plato, Lucretius, Dante, Shakespeare, Goethe, Tolstoy, Lewis Carroll, Thomas Mann, and others.
- 146B. Philosophy in Literature. (3) II.** Mr. Morris
 A study of philosophical ideas expressed in contemporary literary masterpieces.
- *147. Social Philosophy. (3) I.** Mr. Meyerhoff
 Prerequisite: 3 units in group III of the major, or upper division standing in history or a social science.
 Examination of the sociology of knowledge, the objectivity of the social sciences, the meaning of culture, and other problems in social philosophy.
- 149. Philosophy of History. (3) I.** Mr. Meyerhoff
 Prerequisite: 3 units in group III of the major, or upper division standing in history or a social science.
 A survey of philosophical theories of history and an analysis of contemporary problems of historical knowledge.
- 152. Plato. (3) I.** Mr. Meyerhoff
 Prerequisite: course 20A or consent of the instructor.
- 153. Aristotle. (3) II.** Mr. Moody
 Prerequisite: course 20A or consent of the instructor.
- *157. Medieval Thought from Augustine to Aquinas. (3) I.** Mr. Moody
 Prerequisite: course 20A or the equivalent.
 The development of the intellectual tradition of western Christendom from the fourth to the thirteenth century, with special attention to the work of St. Augustine and of St. Thomas Aquinas; Byzantine, Moslem, and Jewish influences on a scholastic philosophy.
- *157B. Medieval and Early Renaissance Thought. (3) II.** Mr. Moody
 Prerequisite: course 20A or the equivalent.
 The origins and development of major currents of early modern thought in philosophy, religion, science, and political theory, from the late thirteenth to the late sixteenth century.
- 158. Philosophy of Nature and Mathematical Physics: 1200 to 1600 A. D. (3) I.** Mr. Moody
 Prerequisite: consent of the instructor.
 A study of the origin and philosophical background of modern classical mechanics.

- 162. Continental Rationalism. (3) II.** Mr. Yost
Prerequisite: course 20B.
The philosophies of Descartes, Spinoza, and Leibniz.
- 163. British Empiricism. (3) II.** Mr. Furth
Prerequisite: course 20B.
The philosophies of Locke, Berkeley, and Hume.
- 166. Kant. (3) I.** Mr. A. Kaplan
Prerequisite: course 162 or 163.
- 170A. Contemporary Philosophy. (3) I.** Mr. Furth
Prerequisite: course 20B. Recommended: course 31.
Analysis of the views of several recent philosophers.
- 170B. Contemporary Philosophy. (3) II.** Mr. Furth
Prerequisite: course 20B. Recommended: course 31.
Analysis of the views of several recent philosophers.
- *175. Pragmatism. (3) I.** Mr. Piatt
Prerequisite: consent of the instructor, based on the student's knowledge of the history of philosophy.
A systemic and critical analysis of American pragmatism, with special reference to James, Dewey, and Mead.
- 180. Philosophy of Mind. (3) I.** Mr. Long
Prerequisite: course 30 or 31, or upper division standing in psychology.
Analysis of psychological concepts.
- 181. Theory of Knowledge. (3) II.** Mr. Long
Prerequisite: course 30 or the equivalent.
Philosophical problems of perception, memory, belief, and knowledge.
- 184A. Intermediate Logic. (3) I, II.** Mr. Kalish, Mr. D. Kaplan
Prerequisite: course 31 or the equivalent.
Symbolic logic: extension of the systematic development of course 31. Set theory; foundations of arithmetic; concept of the infinite.
- 184B. Advanced Logic. (3) II.** Mr. Montague
Prerequisite: course 31, and either course 184A or consent of the instructor.
Methodology of logic and the deductive sciences; consistency and completeness of formal systems; concepts of truth and logical truth.
- 185. Foundations of Probability and Statistics. (3) II.** Mr. Montague
Prerequisite: course 184A or Mathematics 127B or consent of instructor.
Logical and mathematical theories of probability; development of the mathematical calculus of probability in logistic form; outlines of a general mathematical theory of probability and statistics; different interpretations of probability; problem of induction; probability logic.
- 186. Philosophy of Science. (3) I.** Mr. D. Kaplan
(Replaces the former 148.)
Prerequisite: course 184A or Mathematics 127A or Mathematics 127B or consent of the instructor.
A general survey and philosophical analysis of the concepts and laws of modern natural science.
- 187A. Semantics. (3) I.** Mr. Wilson
Prerequisite: course 30 or the equivalent.
General theory of signs; meaning and communication; logic and natural languages.

- 187B. Semantics. (3) II.** Mr. D. Kaplan
 Prerequisite: course 31 or the equivalent.
 Formalized languages; theory of truth; synonymy and analyticity; modal logic.
- 188. Ethical Theory. (3) I.** Mr. Piatt
 Prerequisite: course 104.
 A systematic study of moral philosophy; right and wrong; good and evil; and some leading theories about these topics.
- *189. Aesthetic Theory. (3) I.** Mr. A. Kaplan
 Prerequisite: course 20A-20B, 136.
 A survey of the major philosophies of art from Plato to the present.
- *190. Legal Philosophy. (3) II.** Mr. Morris
 Prerequisite: course 121 or consent of the instructor.
 Analysis of modern legal theories, fundamental legal conceptions, and the foundations of legal institutions.
- 191. Philosophy of Mathematics. (3) I.** Mr. Montague
 Prerequisite: course 184A or Mathematics 127B or consent of the instructor.
 Axiomatic and set-theoretical foundations of systems of numbers: natural numbers, integers, rationals, reals, and complex numbers. Foundational approaches of Russell, Hilbert, and Brouwer.
- 192. Laws and Morals. (3) I.** Mr. Hart
 Prerequisite: 6 units in philosophy or consent of the instructor.
 Morality and law as methods of social control; the identification of morality; the moral criticism of law, justice, and utility; the enforcement of morality by law; responsibility and punishment; the elimination of responsibility.
- 199. Special Studies. (1-5) I, II.** The Staff (Mr. Yost in charge)
 Prerequisite: senior standing and consent of the instructor.

GRADUATE COURSES

Prerequisite for Graduate Courses.—See requirements listed above for admission of philosophy majors to graduate courses; graduate students from other departments may secure admission to graduate courses with the consent of the instructor.

- *211. Philosophical Foundation of Physics. (3) I.** Mr. Carnap
 Prerequisite: course 186 or consent of the instructor.
- 240. Semantics. (3) I, II.** Mr. Kalish, Mr. Montague
 Prerequisite: course 187B.
- 241. Logic. (3) I.** Mr. Montague
 Prerequisite: course 184A or 184B.
- *242. Probability and Induction. (3) II.** Mr. Carnap
 Prerequisite: course 185 or consent of the instructor.
- 251. Seminar: Metaphysics. (3) I, II.** Mr. Yost, Mr. Meyerhoff
 Prerequisite: course 111.
- *252. Seminar: Naturalism. (3) I.** Mr. Piatt
- *253. Seminar: Pragmatism. (3) II.** Mr. A. Kaplan
 Prerequisite: course 175.

- *254. Seminar: **Philosophy of History.** (3) II. Mr. Meyerhoff
Prerequisite: course 149.
- *255. Seminar: **Theory of Knowledge.** (3) II. Mr. Yost
Prerequisite: course 181.
- *257. Seminar: **Plato.** (3) I. Mr. Meyerhoff
Prerequisite: course 152.
256. Seminar: **Hume.** (3) I. Mr. Robson
Prerequisite: course 163.
- *263. Seminar: **History of Formal Logic.** (3) I. Mr. Moody
Prerequisite: consent of instructor.
264. Seminar: **Medieval Philosophy.** (3) I. Mr. Moody
- *265. Seminar: **General Theory of Value.** (3) I. Mr. Robson
266. Seminar: **Ethical Theory.** (3) II. Mr. Piatt
Prerequisite: course 188.
- *267. Seminar: **Legal Philosophy.** (3) II. Mr. Morris
Prerequisite: course 190.
268. **Mind and Deed.** (3) I. Mr. Hart
Prerequisite: consent of the instructor.
269. Seminar: **Philosophy of Art.** (3) II. Mr. Wilson
Prerequisite: course 136.
270. Seminar: **Methodology of the Human Sciences.** (3) II. Mr. A. Kaplan
- *271. Seminar: **Logical Theory.** (3) I, II. Mr. Carnap
Prerequisite: consent of the instructor.
- *272. Seminar: **Semantic Theory.** (3) I. Mr. Carnap
Prerequisite: course 187B.
- *273. Seminar: **Logical Foundations of Mathematics.** (3) II. Mr. Carnap
Prerequisite: course 184A or the equivalent.
- 274A. **Selected Problems in Philosophy.** (3) I. Mr. Carnap
Prerequisite: course 31 or the equivalent or consent of the instructor.
Problems selected from logic, semantics, natural and constructed languages, ontology, modalities, foundations of mathematics.
- 274B. **Selected Problems in Philosophy.** (3) II. Mr. Carnap
Prerequisite: course 31 or the equivalent or the consent of the instructor.
Problems selected from theory of knowledge, mind and body, philosophy of science, probability and induction, the nature of value statements.
297. **Individual Studies for Graduate Students.** (2-4) I, II.
The Staff (Mr. Carnap in charge)
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.
299. **Research on Doctoral Dissertation.** (2-6) I, II.
The Staff (Mr. Carnap in charge)

PHYSICAL EDUCATION

(Department Offices, 206 Men's Gymnasium, 124 Women's Gymnasium)

- Ruth Abernathy, Ph.D., *Professor of Physical Education.*
 Rosalind Cassidy, Ed.D., *Professor of Physical Education and Coordinator of the Women's Staff.*
 Edward B. Johns, Ed.D., *Professor of Physical Education.*
 Ben W. Miller, Ph.D., *Professor of Physical Education.*
 Laurence E. Morehouse, Ph.D., *Professor of Physical Education.*
 Raymond A. Snyder, Ed.D., *Professor of Physical Education.*
 Carl Haven Young, Ed.D., *Professor of Physical Education.*
 John F. Bovard, Ph.D., *Professor of Physical Education, Emeritus.*
 Camille Brown, Ed.D., *Associate Professor of Physical Education.*
 Donald T. Handy, Ed.D., *Associate Professor of Physical Education and Coordinator of the Men's Staff.*
 Alma M. Hawkins, Ed.D., *Associate Professor of Physical Education.*
 Valerie Hunt, Ed.D., *Associate Professor of Physical Education.*
 Marjorie E. Latchaw, Ph.D., *Associate Professor of Physical Education.*
 Wayne W. Massey, Ph.D., *Associate Professor of Physical Education.*
 Norman P. Miller, Ed.D., *Associate Professor of Physical Education.*
 Jeanette B. Saurborn, Ed.D., *Associate Professor of Physical Education.*
 †Wilfred Sutton, Ed.D., *Associate Professor of Physical Education.*
 †Serena Arnold, Ed.D., *Assistant Professor of Physical Education.*
 Joy G. Cauffman, Ph.D., *Assistant Professor of Physical Education.*
 Marguerite Clifton, Ed.D., *Assistant Professor of Physical Education.*
 Jack Keogh, Ed.D., *Assistant Professor of Physical Education.*
 Hope M. Smith, Ph.D., *Assistant Professor of Physical Education.*
 William H. Spaulding, A.B., *Director of Athletics, Emeritus.*
 Norman D. Duncan, M.A., *Supervisor of Physical Education.*
 Cecil B. Hollingsworth, Ed.D., *Supervisor of Physical Education.*
 Edith I. Hyde, M.A., *Supervisor of Physical Education.*
 †Orsie M. Thomson, M.A., *Supervisor of Physical Education.*
 Paul Frampton, M.A., *Supervisor of Physical Education, Emeritus.*
 Ethel T. Bell, Ed.D., *Associate Supervisor of Physical Education.*
 †Pia Gilbert *Associate Supervisor of Physical Education.*
 *M. Briggs Hunt, Ed.D., *Associate Supervisor of Physical Education.*
 William F. Pillich, M.S., *Associate Supervisor of Physical Education.*
 Glen H. Egstrom, M.S., *Assistant Supervisor of Physical Education.*
 Gerald W. Gradner, M.S., *Assistant Supervisor of Physical Education.*
 Janice C. Hanlon, M.S., *Assistant Supervisor of Physical Education.*
 Beverly K. Kozlow, M.S., *Assistant Supervisor of Physical Education.*
 Joan L. Martin, M.S., *Assistant Supervisor of Physical Education.*
 Nanette T. McIntyre, M.S., *Assistant Supervisor of Physical Education.*
 Aubrey A. Robinson, M.S., *Assistant Supervisor of Physical Education.*
 †Carol J. Scothorn, M.A., *Assistant Supervisor of Physical Education.*
 Mary E. Weber, Ed.D., *Assistant Supervisor of Physical Education.*
 Bryant J. Cratty, M.S., *Junior Supervisor of Physical Education.*
 David W. Benson, M.S., *Associate in Physical Education.*
 Stratton F. Caldwell, M.S., *Associate in Physical Education.*
 Leonore L. Emery, M.S., *Associate in Physical Education.*
 Richard K. Means, M.S., *Associate in Physical Education.*

† Absent on leave, 1961-1962.

* Sabbatical leave in residence, fall semester, 1961-1962.

† In residence fall semester only, 1961-1962.

* In residence spring semester only, 1961-1962.

Kenneth M. Moore, M.S., *Associate in Physical Education.*
 Clara L. Allison, M.S., *Associate in Physical Education.*
 Gerald F. Norman, M.S., *Associate in Physical Education.*
 Derek N. Nunney, M.S., *Associate in Physical Education.*
 Kenneth V. Pike, Ed.D., *Associate in Physical Education.*
 Emma V. Spencer, M.S., *Associate in Physical Education.*
 Maryann Waltz, M.S., *Associate in Physical Education.*
 Annmarie Steinbiss, M.S., *Associate in Physical Education.*
 Edward J. Wright, M.S., *Teacher, Child Recreational School.*



Donald S. MacKinnon, M.D., *Director, Student Health Service.*

Physical Education Activities

Course Description.—The following descriptions may be used as a guide in selecting activities (Physical Education 1):

Adapted Sports and Therapeutic Exercise—restricted and special supervised activities for students with "C" medical classification cards.

Apparatus and Tumbling—tumbling, horizontal bar, parallel bars, side horse, long horse, flying rings and trampoline.

Archery—history, terminology, safety rules, tournament procedures, basic fundamentals of good form in target shooting and other forms of archery.

Badminton—knowledges and skills of badminton, fundamental strokes, rules, etiquette, strategy, singles and doubles play.

Body Conditioning—selected activities, such as working with weights, running cross country, handball, and basketball.

Basketball—knowledges and skills of the game.

Body Mechanics—an understanding of individual movement postures, capacities and limitations in activities, and mechanics of efficient movement.

Bowling—fundamentals, scoring procedures, etiquette, and safety precautions. \$13 fee.

Dance: folk—international dances, American square and round dances.

Modern—exploration of basic dance movement and experience in creating dance studies.

Social—basic forms and variations: waltz, fox trot, swing, and Latin-American dances.

Deck Sports—activities that may be used in the home and community, such as: table tennis, paddle tennis, deck tennis, wall handball, aerial darts and shuffleboard.

Fencing—beginning knowledge and skill in foil fencing, historical development, terminology, fundamental skills and bout procedures.

Games—skills and fundamentals of flag football, volleyball, softball and speedball.

Golf—basic patterns of swings, knowledges of choice of clubs, rules, etiquette, scoring and tournaments. Equipment provided by student or rented.

Techniques of Relaxation—restricted to those referred by the Student Health Center.

Self-Defense—basic skills and practice in the techniques of self-defense.

Skiing—ski terminology, fundamental stationary turns, moving turns, etiquette and safety. Equipment provided by student or rented.

Sports Fundamentals—a variety of student-selected activities which best fit needs and interests of the student.

Swimming: Beginning—fundamental principles of movement applied to execution of basic strokes, elementary diving and personal survival skills.

Intermediate—review and individual correction of basic skills and diving.

- Advanced—use of strokes in long distance, speed, and synchronized swimming. Beginning spring board diving.
- Lifesaving and Water Safety—safety knowledges and skills of lifesaving.
- Synchronized—exploration in strokes, stunts and accompaniment. Experiences in creating swimming studies.
- Tennis: Beginning—base knowledges and skills of drives, volley, service, strategy, rules and etiquette.
- Intermediate and Advanced—correction of individual faults and advanced techniques and strategy.
- Track and Field—conditioning and testing in seven track events. Opportunity to participate in a track meet.
- Volleyball—skills, team strategy, tournaments, and game variations.
- Wrestling—basic skills and practice in the techniques of wrestling.

Complete uniform and towel are furnished by the Department of Physical Education, except that gym shoes and swimming caps are provided by the student.

Since the place of the first meeting of many classes is not the same as that listed in the class schedule, students should check bulletin boards in the men's and women's gymnasias.

No refund on the bowling fee will be made after the final date for filing study lists. Bowling shoes will be required, but they can be rented at the bowling alley for ten cents per class meeting.

Students who select a major in the Department of Physical Education must satisfy the general requirements of the College of Letters and Science for the bachelor's degree, *except as noted below*. Students registering according to the following schedule and continuing to the bachelor's degree may obtain the degree by satisfying the requirements of the College of Applied Arts:

New students registering during the academic year, 1961-1962, with 55 or more acceptable units of advanced standing; 1962-1963, 85 or more units.

Reëntering students, formerly in the College of Applied Arts, registering during the academic year, 1961-1962, with 55 or more units; 1962-1963, 85 or more units.

Letters and Science List.—Courses 1, 44, 130, 139, 146, 147, 150A-150B, 151 and 155 are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

The departmental major, leading to the degree of Bachelor of Science in physical education, offers the opportunity for the following specializations:

1. Physical Education.

WOMEN

Preparation for the Major.—Courses 29, 30, 31, 32, 35, 44; Chemistry 2 or Physics 10; Zoology 15, 25.

The Major.—At least 36 units of upper division courses in physical education, including courses 100, 102, 130, 131, 132, 138, 145A-145B, 152, 326A-326B, 327A-327B; and electives chosen from courses 103, 104, 135, 139, 140, 141, 142A, 143, 144, 150A-150B, 151, 153A-153B, 154, 155, 160, 190A-190B-190C, 199.

MEN

Preparation for the Major.—Courses 6, 7, 8, 9, 23, 44; Chemistry 2 or Physics 10; Zoology 15, 25.

The Major.—At least 36 units of upper division courses in physical education chosen from courses 100, 102, 130, 131, 138, 145A-145B, 370, 371A-B-C-D.

2. Dance.

Preparation for the Major.—Physical Education 35, 36A-36B, 36C-36D, 38, 44. Integrated Arts 1A-1B, English 1A, Speech 1, Psychology 1A, 33, Zoology

15, 25, and four units (including at least one course with an asterisk) chosen from Art 10A*, 10B*, 20A*, 30A*, English 31*, Humanities 1A, 1B, Music 30A, 30B, Theater Arts 5A.

The Major.—Physical Education 100, 150A–150B, 151, 152, 153A–153B, 154, 158A–158B, six units chosen from Art 100A–100B, 108, 109, 116B, English 115, 117J, 133, Folklore 101, 105, Music 121A, 136A, 136B, 137, 190H, Philosophy 136, Theater Arts 102, 118A, 119, 140E, 140F, 144, 147, 148A, and electives from Anthropology 102, 124, 125, 127, Sociology 101, 126, Philosophy 146A, 146B, 147, to bring total to 36 units.

3. School Health Education.

Plan I is a curriculum for students interested in health education who have a lower division background in physical education. Plan II is a curriculum for other students interested in health education who have a lower division background in such areas as science, sociology, and psychology.

(a) Plan I. School Health Education.

Preparation for the Major.—Chemistry 2; Bacteriology 1; Zoology 15, 25; Psychology 1A, 1B, or 33; English 1A–1B, or English 1A–Speech 1, or Speech 1–2; Physical Education 44, and 6, 7, 8, 9 (men), or 29, 30, 31, 32 (women).

The Major.—At least 36 units of upper division courses, including Nutritional Sciences 111 or Sociology 142; Sociology 101; Psychology 145A; Education 110A; Public Health 100, 134; Physical Education 100, 102, 132, 145A–145B, 160.

(b) Plan II. School Health Education.

Preparation for the Major.—Chemistry 2; Bacteriology 1; Zoology 15, 25; Psychology 1A, 1B or 33; English 1A–1B, or English 1A–Speech 1, or Speech 1–2; Physical Education 1, 44.

The Major.—At least 36 units of upper division courses, including Education 110A; Nutritional Sciences 111 or Sociology 142; Sociology 101; Psychology 145A–145B; Public Health 100, 110, 134; Physical Education 145A–145B, 160.

4. Physical Therapy.

Affiliation Plan (leading to degree and certificate). This program includes three years of University work (90 units) and a fourteen-month course at the Children's Hospital School of Physical Therapy†, which is affiliated with the University. The hospital work, which is completed in the senior year, is accepted in fulfillment of the residence requirement provided 24 units have been completed in the University of California, Los Angeles, immediately prior to study at the Children's Hospital School of Physical Therapy. Students completing the combined program will receive the degree of Bachelor of Science and the Certificate in Physical Therapy.

Preparation for the Major.—Courses 43, 44; Chemistry 2A; Physics 10; Zoology 15, 25; Psychology 1A, 1B or 33; plus 12 units of social science.

The Major.—Courses 100, 102; and the fourteen-month course at the Children's Hospital School of Physical Therapy. The Hospital program includes courses in anatomy, pathology, psychology, electrotherapy, hydrotherapy, massage, therapeutic exercise, physical therapy (as applied to medicine, neurology, orthopedics, surgery), ethics and administration, electives recommended by the American Medical Association and the American Physical Therapy Association, and clinical practice. A maximum of 30 units will be allowed for completion of the Hospital program.

† Students completing the three-year University program are not assured admission to the Children's Hospital School of Physical Therapy. When the number of qualified applicants exceeds the available facilities, selection of students will be made on the basis of scholarship and personal qualifications, as determined from the transcript of record, examination, and by personal interview.

5. Recreation.

This major is designed to develop professional leaders in recreation with a sound general education, and an insight into the social responsibilities of community agencies.

Preparation for the Major.—Physical Education 1, 7, 23, 27A–27B, 43, 44; Botany 1; English 1A; Music 30A–30B; Psychology 1A, 33; Speech 1; Sociology 1, 12; Life Sciences 1A–1B.

The Major.—At least 36 units of upper division courses, including Physical Education 132, 139, 140, 141, 142A, 143, 144, 155, 190C–190D; and electives selected from Art 330; Business Administration 152; Education 110A; Psychology 145A–145B, 147; Sociology 126, 143; Physical Education 138, 330; Theater Arts 118A.

Teaching Minor in Physical Education

Not less than 20 units of coordinated courses, at least 6 of which are in the upper division. All courses must be approved by an adviser in the Department of Physical Education. For requirements, consult the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES.

The Minor in Recreation

Not less than 20 units of coordinated courses, at least 6 of which are in upper division. All courses must be approved by a recreation education adviser in the Department of Physical Education.

Courses: Physical Education 7, 23, 27A–27B, Sociology 1, Psychology 33, Physical Education 132, 138, 139, 140, 141, 142A, 144, 190C–190D, 199.

Requirements for the General Secondary Credential

Students may complete requirements for the general secondary credential with a major either in physical education or in health education. For the general requirements, consult the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES. For more specific information, consult the Department of Physical Education.

Admission to Graduate Status

Students seeking admission to graduate status for work in the Department of Physical Education will be expected to meet the general requirements for admission to the University and the Graduate Division, as described on page 69. If there are questions as to the adequacy of the student's undergraduate preparation, consultation with the department in person or by mail is advised.

Requirements for the Master's Degree

The degree of Master of Science is awarded with concentrations in health education, physical education, or recreation. For the general requirements, see pages 69–71.

The graduate program emphasizes the declaration of a central problem area and a plan of work and related courses for its investigation rather than the accumulation of units to or beyond the minimum. Study under Plan I or Plan II (see page 70), is available.

The student is expected to have an initial interview with the departmental graduate studies chairman and to consult a departmental graduate adviser at the outset in order to plan his program. Two courses, Physical Education 250 and Physical Education 275, are required of all candidates. In addition, Physical Education 276 is required of all students following Plan I and Physical Education 299 is required of all students following Plan II for the master's degree. The concentrations in health education, physical education, or recreation include other course requirements with which the student will become acquainted in conference with his adviser.

Requirements for the Degree of Doctor of Education

The Department of Physical Education participates with the School of Education in offering a program leading to the degree of Doctor of Education. A student considering this program should communicate with the Dean of the School of Education in this regard. For admission and program requirements, see pages 57 and 74. In addition, consult the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES. Specific information as to the degree should be obtained by correspondence or in conferences, well in advance of beginning course work, with the Dean of the School of Education and the Chairman of the Committee on Graduate Studies, Department of Physical Education.

Thesis Seminar for M.S. Degree, Plan I. (No credit) I, II. Miss Abernathy
Comprehensive Study Group for M.S. Degree, Plan II. (No credit) I, II.

Mr. Massey

LOWER DIVISION COURSES

1. Physical Education Activities (Men and Women). ($\frac{1}{2}$) I, II. The Staff

Classes meet three hours weekly. Section assignments are made by the department. Only 4 units are accepted toward a degree. Students whose physical condition indicates the need of modified activity are assigned to adapted physical education classes. (Special equipment and course fee are required for certain activities. Information regarding these activities may be obtained from the department at the time of registration, or see pages 362-363 of this bulletin.)

†6. Professional Activities (Men). ($1\frac{1}{2}$) I, II. Mr. Egstrom

Designed for the orientation and guidance of major and minor students in physical education. Course must be taken during the first semester of enrollment in the major or minor.

†7. Professional Activities. ($1\frac{1}{2}$) I, II. Mr. Pillich

Only for major and minor students in health, physical, and recreation education. Fundamental knowledge and skills in dance, including rhythm analysis and social-recreation dance.

†8. Professional Activities (Men). ($1\frac{1}{2}$) I, II. Mr. Hunt, Mr. Egstrom

Designed for major and minor students in physical education. Fundamental knowledges in swimming and wrestling.

†9. Professional Activities (Men). ($1\frac{1}{2}$) I. Mr. Hollingworth, Mr. Caldwell

Designed for major and minor students in physical education. Fundamental knowledges and skills in track and field, and tumbling and apparatus.

23. Recreational Activities. (2) I, II. Mr. Pike, ———

An introduction to a variety of social-recreational activities, with opportunity for planning, participation, and leadership in music, dramatics, games and sports, camping, arts and crafts, dance, informal gatherings, and hobbies.

†27A. Elementary School Physical Education Activities. (1) I, II.

Prerequisite: sophomore standing. Mr. Caldwell, ———

Participation in playground activities designed for the elementary school child; emphasis on skills and knowledge leading to proficiency in physical education.

† Open to nonmajor students only by consent of the instructor.

‡ Open only to students who are to be candidates for the elementary school credential and students majoring in recreation. Lower division students may not take these courses concurrently.

‡27B. Elementary School Physical Education Activities. (1) I, II.

Miss Latchaw, Mr. Pillich, Miss Saurborn

Prerequisite: sophomore standing.

Participation in physical education activities in the classroom, gymnasium, and rhythm room which are designed for the elementary school child.

29. Professional Activities (Women). (3) I.

Miss Waltz

Open only to students with a major or minor in physical education.

An introduction to the field of physical education. Sports and dance activity units are approached through a study of competencies, skills, and personal qualities needed for teaching.

30. Professional Activities (Women). (3) II.

Miss Waltz

Open only to students with a major or minor in physical education.

An introduction to the field of physical education. Sports and dance activity units are approached through a study of competencies, skills, and personal qualities needed for teaching.

31. Professional Activities (Women). (3) I.

Miss Smith

Open only to students with a major or minor in physical education.

Sports, games, and dance activities to develop further the competencies needed for teaching. Emphasis upon preparation for and experience in working with youth in a community situation.

32. Professional Activities (Women). (3) II.

Miss Smith

Open only to students with a major or minor in physical education.

Sports, games, and dance activities to develop further the competencies needed for teaching. Emphasis upon preparation for and experience in working with youth in a community situation.

***34. Stage Movement. (2) II.**

Four hours, lecture and laboratory.

Study of the principles of physical timing, rhythm, and control in the acting situation.

35. Music Analysis for Dance Accompaniment. (2) I.

Mrs. Gilbert

Analysis of musical forms and structure in relation to their use in dance forms. A workshop class in study of rhythms, using piano and percussion instruments.

36A-B-C-D. Fundamentals of Creative Dance. (2-2-2-2).

The Staff

Open only to students with major or minor in dance. 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.

38. Dance Notation. (1) II.

Prerequisite: consent of the instructor.

Study of systems of dance notation with experiences in recording and interpreting dance scores.

***43. Recreation for the Exceptional. (2) II.**

Mr. Gardner, Miss Hunt, Miss Weber

Recreational activities as a means of rehabilitation for the exceptional child and adult in community or hospital. Includes group organization, teaching techniques, and modification of activities. Designed for social workers, nurses, therapists, recreation leaders, and teachers.

* Not to be given, 1961-1962.

‡ See double dagger (‡) footnote on page 366.

44. Principles of Healthful Living. (3) I, II.

Mr. Sutton, Mr. Means, Miss Thomson, Mrs. Cauffman, Mrs. Bell
 Fundamentals of healthful living designed to provide scientific health information, and promote desirable attitudes and practices. A prerequisite to Physical Education 330 for all elementary school credential candidates.

UPPER DIVISION COURSES

100. Analysis of Human Movement. (5) I, II.

Miss Hunt, Mr. Gardner, Miss Weber, Mr. Egstrom, Mr. Nunney
 Prerequisite: Zoology 15, 25.
 Analysis of human movement based upon the integration of kinesiology and physiology of activity.

102. Adapted Physical Education. (3) I, II.

Prerequisite: course 100. Miss Hunt, Mr. Gardner, Miss Weber
 Concerned with growth and developmental patterns with implications for special and regular physical education programs. Includes an analysis of postures and divergencies, with procedures for prevention and correction within the public schools.

103. Advanced Adapted Physical Education. (3) I.

Miss Weber

Prerequisite: course 102.
 For students with major interest in Adapted Physical Education. Study of prevalent disabilities and the general organization and supervision of adapted programs. Includes laboratory experiences in the University and community. This course is a prerequisite for student teaching in corrective physical education.

104. Neuromuscular Reeducation. (3) I.

Prerequisite: course 102 or consent of the instructor.
 Appraisal of neuromuscular limitations as a basis for selection of activities for rehabilitation.

130. History and Principles of Physical Education. (2) I, II.

Miss Brown, Miss Clifton, Mr. Keogh
 An historical analysis of the forces and factors affecting programs of physical education. Philosophical bases are developed from which basic principles are evolved to serve as guides in the profession.

131. Administration of Physical Education. (3) I, II.

Mr. Keogh, Miss Smith
 An analysis and study of the underlying philosophy, principles, policies, and procedures of administration as applied to physical education. Legal aspects and the interrelationships with the general school curriculum at the local, state, and national levels are considered.

132. Conduct of the Program of Sports. (2) I, II.

Section 1. Women physical education majors. Miss Hyde
 Section 2. All others. Mr. N. Miller
 Prerequisite: for women physical education majors, courses 130, 326A, and 326B, or consent of the instructor; no prerequisite for recreation majors.

A study of the principles and policies underlying the program of sports in the secondary schools and community centers; class management, organization of clubs, tournaments, care of equipment and facilities, program planning, and sports days. Intramural sports and other laboratory experiences required.

- 135. Evaluation Procedures. (2) I.** Miss Latchaw
Introduction and general acquaintance with basic tools and techniques through the interpretation of tests and measurements, rating scales, observation, and other evaluation procedures in health, physical, and recreation education.
- 138. Recreation and the School. (2) I, II.** Mr. Hollingsworth, Mr. Pike
The role of the school and its staff in the total community recreation program. A study of school and community recreation programs, with emphasis on basic principles, organization, and administration, supplemented with field trips.
- 139. Principles of Recreation. (3) I, II.** Mrs. Arnold, Mr. N. Miller
A consideration of philosophy and foundations of recreation, the environmental factors influencing it, and the basic principles underlying community organization and professional practice in recreation.
- 140. Organization of Community Recreation. (3) II.** Mrs. Arnold
Prerequisite: course 139 or consent of the instructor.
A study of the organization of recreation in the community, with implications for the administration of public and voluntary agency programs.
- 141. Club Activities. (2) I.** Mr. N. Miller
An analysis of the activities of clubs of various types, with emphasis upon leadership requirements and program planning to meet needs and interests of groups.
- 142A. Outdoor Education. (2) II.** Mr. N. Miller, Mr. Pike
A study of the principles and practices of camping and outdoor education for the concepts underlying the use of land and water resources for recreation.
- 142B. Outdoor Education Leadership. (2) I.** Mr. Pike
Prerequisite: course 142A or consent of the instructor.
A study of the camping and outdoor education program of public and private agencies and the role of the counselor as a leader and teacher. Field trips required.
- 143. Problems in Group Work. (2) II.** Mr. N. Miller
Principles and procedures of group work in recreation, with emphasis on group structure, community relations, and program planning.
- 144. Recreation Survey. (2) I.** Mrs. Arnold
An examination of the fields and methods of recreation research, with special emphasis on the design and administration of the community recreation survey.
- 145A. School Health Education. (3) I, II.** Mr. Sutton, Miss Abernathy, Mr. Johns, Mr. Snyder
Prerequisite: course 44 or consent of the instructor.
Organization and administration of the school health program; underlying principles, including legal aspects; administrative divisions of health instruction, health services, and healthful school living; and interrelationships with community health agencies. Emphasis on coordinated functions of the school health team—administrator, teacher, school physician, nurse, and other personnel.
- 145B. School Health Education. (3) II.** Mr. Sutton, Mrs. Cauffman
Prerequisite: courses 44, 145A, or consent of the instructor.
Organization of content, methods, and materials for health teaching in schools and colleges, and plans for in-service education; health instruction as an integral part of the total school program, including safety education.

- 146. Social Aspects of Health.** (2) I, II. Mrs. Bell, Mr. Means
Prerequisite: course 44 or consent of the instructor.

A study of the basic health factors underlying democratic society, with special emphasis on health as a social problem.

- 147. Development of Modern Health Problems.** (3) I, II. Mrs. Bell, Mrs. Cauffman, Mr. Means
Prerequisite: course 44 or consent of the instructor. Open to elementary school credential candidates.

A study of the history and development of modern health problems, with special emphasis on interpretation of their effect on individuals and community life.

- 150A-150B. Advanced Dance.** (3-3) Yr. _____
Prerequisite: course 36A-B-C-D.

A continuing study of dance with emphasis on integration and synthesis of previous dance experience and the creative use of movement in composition.

- 151. History of Dance.** (3) I. _____
Prerequisite: Integrated Arts 1A-1B; or consent of the instructor.

Study of the functions and form of dance in society. Consideration of various cultures—primitive through the present day with emphasis on dance as an art in Western civilization.

- 152. Organization of Public Performances.** (2) I, II. Miss Brown, Miss Hyde
Consideration of purpose, sources of materials, production procedure for folk festivals, dance recitals, and other special events.

- 153A-153B. Dance Composition Workshop.** (2-2) Yr. _____
Prerequisite: consent of the instructor.

Analysis of the elements and process of dance composition, and practice in individual and group composition and evaluation.

- 154. Advanced Music Analysis for Dance.** (2) II. Mrs. Gilbert
Prerequisite: course 35 or consent of instructor.

Piano and percussion improvisation; analysis of music for the dance; the historical development of musical forms used in dance; building an accompanist's repertoire.

- 155. Folk Festivals.** (2) II. _____
Prerequisite: one semester of folk dance or consent of the instructor.

Study of folklore in relation to festivals and pageants. The preparation of an original festival.

- 158A-158B. Philosophical Bases and Trends in Dance.** (2-2) Yr. Miss Hawkins
Prerequisite: course 150A-150B, 151.

Critical analysis of dance as a creative experience and the role of professional and educational dance in our society. Study of selected points of view and the relationship of various creative approaches to current developments in dance.

- *160. Counseling in the Health, Physical, and Recreation Education Program.** (2) II. _____

A study of the counseling responsibilities and procedures of teachers and leaders in all three professional areas.

- 171. Conditioning of Athletes and Care of Injuries.** (2) I, II. _____
Lecture, one hour; laboratory, two hours.

Prerequisite: course 102 or consent of the instructor.

Anatomical and physiological approach to conditioning as it relates to

athletic teams. Prevention, examination, and care of athletic injuries, methods of taping, bandaging, and therapeutic exercises applied to athletic injuries; diets; training room equipment, protective devices, and supplies.

190A-B-C-D-E-F. Field Work in Profession. I, II.

Observation and practical experience in public, private, and/or voluntary agency programs.

190A-190B. Rehabilitation. (3 units each) Mr. Young, ———
Prerequisite: course 102 or consent of the instructor.

190C-190D. Recreation. (3 units each) Mr. N. Miller, Mr. Pike, Mrs. Arnold
Prerequisite: course 140 or consent of the instructor.

190E-190F. Health Education. (2-4 units each. Maximum of 6 units only allowed.) Mr. Johns, Mr. Sutton
Prerequisite: Public Health 134 or consent of the instructor.

199. Special Studies. (1-4) I, II. Mr. Massey and the Staff
Prerequisite: senior standing and consent of the instructor.

GRADUATE COURSES

201. Secondary School Curriculum in Physical Education. (2) I, II.
Seminar in laboratory assignments. Miss Brown, Mr. Handy
A study of physical education programs based on the needs of boys and girls in American secondary schools. (Required of fifth-year students preparing for the general secondary credential.)

227. Comparative Study of Materials and Methods in Dance. (2) II. Miss Hawkins
A study of educational ideas and practices as they relate to the various forms of dance.

230. The Elementary School Program in Health, Physical, and Recreation Education. (2) I. Miss Saurborn
Prerequisite: consent of the instructor.

The study of administrative, supervisory, instructional, and curricular problems and practices in elementary school programs of health, physical, and recreation education.

235. Advanced Evaluation Procedures. (2) II. Mr. Massey, Miss Latchaw
Prerequisite: course 135 or consent of the instructor.
Study and application of advanced evaluation procedures and scientific instruments in the solution of professional problems and projects.

245. Curriculum Development in Health Education. (2) II. Mr. Johns, Mr. Sutton
Prerequisite: course 145A-145B or consent of the instructor.

The development of the health instruction program based on the health needs of school-age children. The formulation of objectives, scope and sequence of instruction, the examination of teaching methods, source materials, community resources, and evaluation procedures.

250. Changing Perspectives in the Profession. Seminar. (2) I, II.
Seminar and group conferences. Mr. Snyder, Miss Cassidy, Mr. Massey
Prerequisite: consent of the instructor.

A student-staff examination of changing perspectives in the field, directed toward the formulation of a working professional philosophy in the fields of health education, physical education, and recreation, including a historical development.

254. Current Problems in Health Education. (2) I. Mr. Johns

A critical analysis of new findings in the basic health education areas (nutrition, mental health, family health, consumer health, safety, communicable and chronic diseases) contributing to healthful living in the family, school, and community.

255. Administrative Interrelationships in Health Education. Seminar. (2) II. Miss Abernathy, Mr. Johns

Prerequisite: consent of the instructor.

A consideration of the principles, policies, and practices involved in the interrelationships of the school curriculum, the public and private health agencies in the community.

256. Administrative Problems in Physical Education. Seminar. (2) I. Miss Abernathy, Mr. B. Miller, Mr. Snyder

Prerequisite: consent of the instructor.

A consideration of policies, problems, and practices in school and college physical education administration; interrelationships with the general curriculum, and among the local, state, and federal levels.

257. Administrative Problems in Recreation. Seminar. (2) II. Mr. N. P. Miller

Prerequisite: consent of the instructor.

A consideration of policies, problems, and current administrative practices and interrelationships in public and private recreation agencies at the local, state, and national levels.

258. Problems in Adapted Physical Education. (2) II. Miss Hunt

Identification and solution of problems in the administration, supervision, instruction, curriculum, research, evaluation, and personnel services in adapted physical education at the local, state, and national levels.

259. Intertherapy Education. Seminar. (2) I. Mr. Young

Prerequisite: consent of the instructor.

The scope, functions, and interrelationships of physical therapy, occupational therapy, recreational therapy, and adapted physical education pertaining to programs of prevention, treatment, and adjustment in the schools and community.

265. Foundations of the Curriculum. Seminar. (2) I. Miss Brown, Miss Cassidy

Prerequisite: consent of the instructor.

A study of the process of present-day curriculum-making in physical education based on a critical analysis of the areas of individual and group needs in contemporary society. Students may center their individual studies at elementary, secondary, or college level.

266. Social Bases of the Profession. Seminar. (2) II. Miss Abernathy

Prerequisite: consent of the instructor.

Analysis of the social forces and relationships bearing on the fields of health education, physical education, and recreation, and the significant role of the professional person in these areas.

267. Physiological Bases of the Profession. Seminar. (2) I. Miss Hunt, Mr. Morehouse

Prerequisite: consent of the instructor.

Critical analysis of the physiological bases of health education, physical education, and recreation, with special attention to concepts from which principles and criteria of the profession are derived.

275. Seminar in Health, Physical, and Recreation Education. (2) I, II. Mr. Handy, Miss Latchaw, Mr. Massey, Mr. Young

An exploration of research in the profession and a critical evaluation of needed studies through survey of literature and other sources leading to the identification and analysis of individual research problems.

276. Methods of Research in Health, Physical, and Recreation Education.
(2) I, II. Mr. Massey

Prerequisite: course 275 or consent of the instructor.

The scientific methods and techniques of research in the organization, solution, and writing of theses, dissertations, and other research studies and projects.

280. Research in Health, Physical, and Recreation Education. Seminar.
(2) I, II. Mr. Massey

Prerequisite: consent of the instructor.

Individual and group analysis of student research problems in progress through discussion, interpretation, and critical evaluation of research methods and resources.

299. Independent Study. (2-4) I, II. Mr. Massey and the Staff

Prerequisite: course 275 or the equivalent and consent of the instructor.

Individual investigation of a special professional problem based on the research needs and interests of the student, and developed and written according to acceptable research standards.

PROFESSIONAL COURSES IN METHOD

326A-326B. Principles of Teaching Sports (Women). (2-2) Yr. Miss Clifton
Must be taken concurrently with course 327A-327B.

Analysis of problems in teaching sports, including safety techniques and game forms, with special reference to their use in planning teaching units and lesson plans. Advanced practice is provided in team activities, with emphasis on the interpretation of rules and the technique of officiating.

327A-327B. Principles of Teaching Dance (Women). (2-2) Yr. _____

Prerequisite or concurrent: course 35 or 154. Must be taken concurrently with course 326A-326B.

A study of methods, curricular materials, and evaluation procedures as related to the teaching of dance in the secondary schools.

330. Health, Physical, and Recreation Education in the Elementary School.
(3) I, II. Mrs. Bell, Miss Latchaw, Miss Sauborn

Prerequisite: upper division standing, courses 27A-27B, and 44, or the equivalent, Education 110B, and/or consent of the instructor.

A course to prepare the student to guide elementary school-age children through a well-balanced program in health, physical, and recreation education. Study of aims and objectives, procedures, methods, evaluation and program planning. Prerequisite to all supervised teaching for the kindergarten-primary or general elementary credentials.

370. The Teaching of Physical Education (Men). (3) I, II. Mr. Handy

Lecture, two hours; laboratory, three hours. (Laboratory assignments to be made by instructor.)

Prerequisite: senior standing.

A study of methods, curricular materials, and evaluation procedures in elementary and secondary schools, including directed observation, field experience, class organization, and management of games and relays.

371A-B-C-D. Technique of Teaching Activities (Men). (3-3-3-3)

Lecture, two hours; laboratory, four hours.

Prerequisite: senior standing and consent of instructor.

371A. Basketball and Speedball. I, II. Mr. Norman**371B. Baseball and Volleyball. I, II.** Mr. Keogh

371C. Football. I.

Mr. Duncan

371D. Track and Field, Tumbling, Apparatus. II. Mr. Hollingsworth

A critical analysis of the methods and problems in teaching and coaching. Application is made to the secondary-school teaching situation, with emphasis on lesson planning, development of teaching units, organization for class activity, and administration of the program. Advanced practice is provided in the activities, with emphasis on strategy, selection of players, officiating, interpretation of rules, scoring, scouting, systems of team play, and administration of inter-school meets.

RELATED COURSE IN ANOTHER DEPARTMENT

Integrated Arts 1A-1B. Man's Creative Experience in the Arts. (3-3) Yr.

Mr. Davidson

PHYSICS

(Department Office, 115 Physics Building)

†Alfredo Baños, Jr., Dr.Eng., Ph.D., *Professor of Physics.*Hans E. Bömmel, Ph.D., *Professor of Physics.*Leo P. Delsasso, Ph.D., *Professor of Physics (Chairman of the Department).*Joseph W. Ellis, Ph.D., *Professor of Physics.*Robert J. Finkelstein, Ph.D., *Professor of Physics.*Joseph Kaplan, Ph.D., Sc.D., L.H.D., *Professor of Physics.*E. Lee Kinsey, Ph.D., *Professor of Physics.*Robert W. Leonard, Ph.D., *Professor of Physics.*Kenneth R. MacKenzie, Ph.D., *Professor of Physics.*J. Reginald Richardson, Ph.D., *Professor of Physics.*Isadore Rudnick, Ph.D., *Professor of Physics.*†David S. Saxon, Ph.D., *Professor of Physics.*Harold K. Ticho, Ph.D., *Professor of Physics.*Norman A. Watson, Ph.D., *Professor of Physics.*Byron T. Wright, Ph.D., *Professor of Physics.*Laurence E. Dodd, Ph.D., *Professor of Physics, Emeritus.*Vern O. Knudsen, Ph.D., LL.D., *Professor of Physics, Emeritus.*———, *Associate Professor of Physics.*†Steven A. Moszkowski, Ph.D., *Associate Professor of Physics.*Derek J. A. Prowse, Ph.D., *Associate Professor of Physics.*†Robert A. Satten, Ph.D., *Associate Professor of Physics.*Donald H. Stork, Ph.D., *Associate Professor of Physics.*Carl M. York, Ph.D., *Associate Professor of Physics.*Christian Fronsdal, Ph.D., *Assistant Professor of Physics.*Roy P. Haddock, Ph.D., *Assistant Professor of Physics.*David I. Paul, Ph.D., *Assistant Professor of Physics.*Clifford K. Jones, Ph.D., *Lecturer in Physics.*R. E. Norton, Ph.D., *Lecturer in Physics.*

Edward Teller, Ph.D., Sc.D., *Professor of Physics at Large.*

David T. Griggs, *Professor of Geophysics.*Robert E. Holzer, Ph.D., *Professor of Geophysics.*Leon Knopoff, Ph.D., *Professor of Geophysics.*

† Absent on leave, 1961-1962.

Gordon J. F. MacDonald, Ph.D., *Professor of Geophysics.*

Clarence E. Palmer, M.S., *Professor of Geophysics.*

Louis B. Slichter, Ph.D., *Professor of Geophysics.*

George W. Wetherill, Ph.D., *Associate Professor of Geophysics and Geology.*

Norman Ness, Ph.D., *Assistant Professor of Geophysics.*

Letters and Science List.—All undergraduate courses in physics except 370 are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

Preparation for the Major in Physics.—Required: Physics 1A, 1B, 1C, 1D (to be taken in the order listed), or, with the consent of a departmental adviser, Physics 2A, 1C, 1D or Physics 2A, 2B; Chemistry 1A, 1B; Mathematics 5A, 5B, 6A, 6B; or Mathematics 1 (or the equivalent special examination—see prerequisites for Mathematics 3A on page 292), 3A (taken concurrently with Mathematics 1 or after passing of the special mathematics examination—see prerequisites for Mathematics 3A on page 292), 3B, 4A, 4B; or their equivalents.

The Major in Physics.—The following upper division courses in physics, representing at least one course in each of the main subjects in physics, are required: 105, 107, 107C, 108B, 108C, 110, 112, 114A, 121, 113 or 124A, 113C or 114C or 124C. An average grade of C or higher must be maintained in the above courses. Required: Mathematics 110AB or 110C or 119A. Strongly recommended: Mathematics 122A–122B. Recommended: a reading knowledge of German and French. This major leads to the degree of Bachelor of Arts in the College of Letters and Science.‡

Preparation for the Major in Applied Physics.—Required: Physics 1A, 1B, 1C, 1D (to be taken in the order listed), or, with the consent of a departmental adviser, Physics 2A, 1C, 1D, or Physics 2A, 2B; Chemistry 1A, 1B; Mathematics 5A, 5B, 6A, 6B, or Mathematics 1 (or the equivalent special examination—see prerequisites for Mathematics 3A on page 292), 3A (taken concurrently with Mathematics 1 or after passing of the special mathematics examination—see prerequisites for Mathematics 3A on page 292), 3B, 4A, 4B, or their equivalents; recommended: mechanical drawing. The last-named course may be taken in high school, University Extension, or elsewhere.

The Major in Applied Physics.—One of the following groups of courses prescribed to give a specialization in some particular field of physics is required.

(a) *Specialization in electronics:* Physics 105, 107, 107C, 108B, 108C, 110, 112, 114A, 116A, 116B, 116C, 116D, 121, 124A.

(b) *Specialization in spectroscopy:* Physics 105, 107, 107C, 108B, 108C, 110, 112, 113, 113C, 114A, 115, 116A, 116C, 121.

(c) *Specialization in acoustics and electronics:* Physics 105, 107, 107C, 108B, 108C, 112, 114A, 114B, 114C, 116A, 116B, 116C, 116D, 121.

(d) *Specialization in chemical physics:* Physics 105, 107, 107C, 108B, 108C, 112, 113, 113C or 124C, 116A, 121, 124A, Chemistry 8, 110A, 110B, 111.

(e) *Specialization in nuclear physics:* Physics 105, 107, 107C, 108B, 108C, 112, 113, 113C, 114A, 116A, 116C, 121, 124A, 124B, 124C.

(f) *Specialization in atmospheric physics:* Physics 105, 107, 107C, 108B, 108C, 110, 112, 113, 114A, 116A, 116C, 121, 124A; Meteorology 104. Meteorology 131A is recommended as an elective.

An average grade of C or higher must be maintained in the above courses. Also required: Mathematics 110AB, 110C, or 119A. Recommended: a reading knowledge of German and French. This major leads to a degree of Bachelor of Science in the College of Letters and Science. The College of Letters and Science requires for the Bachelor of Science degree in applied physics 6, not 12, upper division units outside of physics.

‡ A mimeographed brochure, giving more detailed information than is contained in this bulletin, is obtainable from the office of the Department of Physics.

Requirements for the General Secondary Credential

For the requirements, consult the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES; the credential is offered with the field major of physical sciences.

Requirements for the Degree of Master of Arts

For the general requirements, see pages 69-71. Course 220A and one course from each of the following two groups: (a) 210A, 212, 215, or 231; (b) 208, 213, 214, 221A, or 224A, are required of all candidates. In addition, an over-all B average is required for all physics courses taken after the student has been admitted to graduate status. Students are urged to complete the foreign language reading requirement during the first semester of graduate work. Acceptable languages are French, German, and Russian. For more detailed information, see Department of Physics brochure.†

Requirements for the Degree of Doctor of Philosophy

For the general requirements, see pages 71-74. Candidates should complete the foreign language reading requirements during the first year of graduate work. Acceptable languages are French, German, and Russian. The qualifying examinations for candidates for the Ph.D. degree in physics include (1) a written comprehensive examination; (2) final written examinations in each of the four courses 220A, 221A, 210A, and 212; (3) a preliminary departmental oral examination; and (4) a special examination in the student's chosen field conducted by a committee appointed by the Graduate Council, upon nomination by the departmental chairman, to examine the student and guide him in his thesis project. For more detailed information, see Department of Physics brochure.†

Requirements for the Degree of Master of Science in Applied Physics

The following classes of students may study toward the degree of Master of Science in applied physics: students who have received or have met the requirements for the degree of Bachelor of Science in applied physics or engineering at this or some other university; graduates of the United States Military Academy or the United States Naval Academy. See page 375 for the requirements for the degree of Bachelor of Science in applied physics.

For the general requirements for the master's degree, see pages 69-71.

Required courses: Physics 220A, and 9 additional units of graduate courses in physics, not more than 6 of these 9 units to be in Physics 290 or the seminar courses, Physics 260-270. In addition, an over-all B average is required for all physics courses taken after the student has been admitted to graduate status.

No foreign language is required for the degree of Master of Science in applied physics. For more detailed information, see Department of Physics brochure.†

LOWER DIVISION COURSES

Physics 1A, 1B, 1C, and 1D form a sequence of courses in general physics for major students in physics and applied physics. All, or part, of the sequence is also required or recommended as first choice for major students in: astronomy, chemistry, engineering, meteorology, and certain interdepartmental fields of concentration. Students in departments other than those listed and with correct prerequisites may elect course 1A and any other courses in the sequence. (Course 1A is prerequisite to any of the other courses in the sequence.)

Physics 2A and 2B form a one-year sequence of courses in general physics which is required of students specializing in the following fields: agriculture,

† A mimeographed brochure, giving more detailed information than is contained in this bulletin about the examinations required of candidates for all degrees in physics and other information of interest to graduate students in physics, is obtainable from the office of the Department of Physics.

bacteriology, geology, medical technology, pre dentistry, pre medicine, pre optometry, pre public health, and zoology. It is an alternate sequence (but only on approval of the appropriate departmental adviser) for major students in physics, applied physics, astronomy, chemistry, and meteorology. Students in other departments and with correct prerequisites may elect 2A or 2A and 2B. (Course 2A, or 1A, is always prerequisite to course 2B.)

Physics 10 is a one-semester, nonlaboratory course which surveys the whole field of general elementary physics. It is designed primarily for the liberal arts student.

In general, not more than 15 units of credit will be given for any amount of lower division work. Credit in excess of 15 units will be given only in exceptional cases, when approved by the department.

1A. General Physics: Mechanics of Solids. (3) I, II. Mr. Jones, Mr. Ellis

Lecture and demonstration, three hours; laboratory, two hours. Prerequisite: section 1: high school physics or chemistry; Mathematics 3A or 5A taken concurrently with Physics 1A. Section 2: high school physics or chemistry; Mathematics 5A. Students who have credit for Physics 2A will be limited to one unit of credit for Physics 1A.

1B. General Physics: Mechanics of Fluids, Heat, and Sound. (3) I, II.

Mr. Paul

Lecture and demonstration, three hours; laboratory, two hours. Prerequisite: course 1A (or 2A on approval of an adviser); Mathematics 3A or 5A completed; Mathematics 3B or 5B taken concurrently with Physics 1B. Students who have credit for Physics 2A will be limited to one unit of credit for Physics 1B.

1C. General Physics: Electricity and Magnetism. (3) I, II. Mr. MacKenzie

Lecture and demonstration, three hours; laboratory, two hours. Prerequisite: course 1A (or 2A on approval of an adviser); Mathematics 3B or 5B completed; Mathematics 4A or 6A taken concurrently with Physics 1C.

Upper division credit will be allowed to students who are not majors in physics, who take the course while in the upper division, and who do not have upper division credit for Physics 1D or are not taking Physics 1D for upper division credit. Students who have credit for Physics 2B will be limited to 2 units of credit for Physics 1C.

1D. General Physics: Light and Modern Physics. (3) I, II.

Mr. Ellis, Mr. Prowse

Lecture and demonstration, three hours; laboratory, two hours. Prerequisite: Physics 1A and 1C (or 2A-2B on approval of an adviser); Mathematics 4A or 6A completed; Mathematics 4B or 6B taken concurrently with Physics 1D.

Upper division credit will be allowed to students who are not majors in physics, who take the course while in the upper division, and who do not have upper division credit for Physics 1C or are not taking Physics 1C for upper division credit. Students who have credit for Physics 2B will be limited to 2 units of credit for Physics 1D.

2A. General Physics: Mechanics, Heat, and Sound. (4) I, II. Mr. Watson

Lecture and demonstrations, four hours; laboratory, two hours. Prerequisite: three years of high school mathematics, or two years of high school mathematics and one 2- or 3-unit college course in algebra or trigonometry. Students who have credit for Physics 1A or 1B will be limited to 2 units of credit for Physics 2A. Physics 2A is not open for credit to students who have credit for Physics 1A and 1B.

2B. General Physics: Electricity, Magnetism, and Light. (4) I, II.

Mr. Haddock, Mr. Prowse

Lecture and demonstrations, four hours; laboratory, two hours. Prerequisite: course 2A or 1A. Students who have credit for Physics 1C or 1D will be limited to 2 units of credit for Physics 2B. Physics 2B is not open for credit to students who have credit for Physics 1C and 1D.

10. General Physics. (3) I, II.

Mr. Kaplan

Prerequisite: high school algebra and plane geometry.

An introductory survey course in classical and modern physics designed primarily for liberal arts students.

Students enrolled in this course who desire laboratory work in lower division physics are referred to course 21 (10).

21. Supplementary Laboratory Courses in General Physics. (1)

Lower Division Staff (Mr. Watson in charge)

These courses, except 21 (10), are intended for students entering the University with partial credit in general physics and are part of the regular work of courses 1A, 1B, 1C, 1D, 2A, and 2B. Course 21 (10) is intended for students who wish a laboratory supplement to physics 10. Students should enroll under the appropriate one of the following numbers:

21 (1A). Mechanics of Solids. I, II.

21 (1B). Mechanics of Fluids and Sound. I, II.

21 (1C). Electricity and Magnetism. I, II.

21 (1D). Light and Modern Physics. I, II.

21 (2A). Mechanics, Heat, and Sound. I, II.

21 (2B). Electricity, Magnetism, and Light. I, II.

21 (10). General Physics. I, II.

41B. General Physics: Heat. (1) I, II.

Mr. Paul

Prerequisite: Physics 4A (Berkeley) or equivalent; Mathematics 3A or 5A or equivalent; Mathematics 3B or 5B taken concurrently with Physics 41B.

Equivalent to a part of 1B. Students enrolled under 41B will attend lectures and laboratories of 1B which deal with heat, and will take examinations only on those portions of the course.

UPPER DIVISION COURSES

Prerequisite for all upper division courses: Physics 1A, 1B, 1C, 1D, or 2A, 1C, 1D, or 2A-2B; Mathematics 5A, 5B, 6A, 6B; or 3A, 3B, 4A, 4B; or the equivalents.

105. Analytical Mechanics. (3) I, II.

———, Mr. Delsasso

The kinematics and dynamics (statics and kinetics) of particles, systems of particles, and rigid bodies.

107. Electrical Theory and Measurements. (2) I, II.

Mr. Stork

Lectures on direct and alternating current theory and measurements, and on introductory electronics.

107C. Electrical Measurements Laboratory. (2) I, II. Mr. Stork, ——

Lecture-discussion and laboratory to accompany course 107.

108B. Physical Optics. (3) I.

Mr. Ellis

Prerequisite: at least one semester of upper division study.

Wave motion. Interference, diffraction, absorption, scattering and polarization of light. Crystal optics. Relativity effects in optics.

108C. Physical Optics Laboratory. (1) I.

Mr. Satten

Laboratory to accompany 108B.

- 110. Electricity and Magnetism. (3) II.** Mr. Ticho
Prerequisite: courses 105 and 107, or consent of the instructor.
A survey of field theory, to include systems of charge conductors and of linear circuits, simple dielectric and magnetic media, and the formulation of Maxwell's equations.
- 112. Thermodynamics and Introduction to Kinetic Theory. (3) I, II.** Mr. York, ———
Prerequisite: course 105.
- 113. Atomic Spectroscopy. (3) II.** Mr. Ellis
Prerequisite: senior standing or consent of the instructor.
Black body radiation and the origin of the quantum theory. Atomic spectra and quantum theoretical interpretations. Effects of electron and nuclear spins. X-ray spectra. Zeeman and Stark effects.
- 113C. Spectroscopy Laboratory. (1) II.** Mr. Satten
Prerequisite or concurrent: course 113.
- 114A. Mechanics of Wave Motion and Sound. (3) I, II.** Mr. Rudnick, Mr. Paul
Prerequisite: course 105.
Vibration of particles and elastic bodies; mechanical sound sources; propagation in elastic media.
- 114B. Mechanics of Wave Motion and Sound. (3) II.** Mr. Leonard
Prerequisite: course 114A or the equivalent.
Propagation of sound in gases; reflection, refraction, interference, and diffraction of sound; acoustic impedance; applications.
- 114C. Mechanics of Wave Motion and Sound Laboratory. (2) II.** Mr. Leonard
Prerequisite: courses 107 and 107C completed, and 114B completed or taken concurrently, or consent of the instructor.
- 115. Elementary Quantum Mechanics. (3) I.** Mr. Norton
Prerequisite: courses 105, 114A, 121; Mathematics 110A or 110C or 119A.
The classical background, basic ideas and methods of quantum mechanics.
- 116A. Electronics. (3) II.** Mr. Jones
Prerequisite: course 107 or the equivalent.
Thermionic and photoelectric emission. Physics and characteristics of electronic devices, including vacuum tubes, gas tubes, and semiconductors; and associated circuits.
- 116B. Electronics. (3) I.** Mr. Leonard
Prerequisite: course 116A or the equivalent.
Wave filters, lines, and wave guides; ultra high frequency generators and measuring equipment.
- 116C. Electronics Laboratory. (2) II.** Mr. MacKenzie
Laboratory to accompany 116A.
- 116D. Electronics Laboratory. (2) I.** Mr. Leonard
Laboratory to accompany 116B.
- *117. Hydrodynamics. (3) I.** ———
- 119. Kinetic Theory and Solid State. (3) II.** Mr. Richardson
Prerequisite: course 112 or the equivalent.
An introduction to the elementary classical and quantum mechanical theories of statistical mechanics. Emphasis is placed on the application to various fields in modern physics such as fluctuation phenomena, low temperature physics, and the theory of metals.

121. Atomic Physics. (3) I, II.

Mr. Prowse

The atomic nature of matter and atomic composition. The propagation of electromagnetic waves and their interaction with matter. Special relativity. Atomic spectra and electron distribution. Basic concepts of wave mechanics.

124A. Nuclear Physics. (3) I.

Mr. Wright

Prerequisite: course 121 or consent of the instructor.

Basic nuclear concepts. The origin and interaction with matter of alpha, beta, and gamma rays. Nuclear forces. Neutrons. Nuclear disintegration. Detection equipment. Particle accelerators. Fission.

124B. Nuclear Physics. (3) II.

Mr. Wright

Prerequisite: course 124A or consent of the instructor.

Elements of wave mechanics, two nucleon systems, theory of alpha decay, nuclear forces, nuclear spin and magnetism, nuclear models, cosmic rays and subnuclear particles.

124C. Atomic and Nuclear Physics Laboratory. (1) I.

Mr. Wright

Prerequisite: course 121. Laboratory to accompany course 124A.

Electron diffraction. X-ray diffraction. Beta-ray spectroscopy. Neutron absorption. Artificial radioactivity. Rutherford scattering of alpha-particles and other experiments.

198. Special Courses in Physics. (1-6) I, II.

The Staff (Mr. Delsasso in charge)

199. Special Studies in Physics. (1-5) I, II.

The Staff (Mr. Wright in charge)

Prerequisite: senior standing and consent of the instructor.

GRADUATE COURSES

***208. Advanced Classical Optics. (3) I.**

Mr. Satten

Recommended: course 210A or its equivalent.

Propagation of light waves in isotropic and anisotropic media on the basis of electromagnetic theory. Macroscopic and microscopic crystal and molecular optics.

210A. Electromagnetic Theory. (3) II.

Mr. MacKenzie

An advanced course on electromagnetic theory based on the vector treatment of Maxwell's equations. The vector and scalar potentials, the Hertz polarization potentials, energy considerations, the electrostatic and magneto-static fields, and a general discussion of plane homogenous waves in unbounded, isotropic media. Boundary value problems.

***210B. Electromagnetic Theory. (3) I.**

Mr. Bafios

Theory of wave propagation in cylindrical structures, with particular applications to wave guides and coaxial lines. The general theory of electromagnetic cavity resonators from the point of view of the Lagrangian formulation. Spherical waves and applications to the general problem of radiation. Introduction to relativistic electrodynamics.

212. Thermodynamics. (3) I.

Mr. Finkelstein

***213. Molecular Spectroscopy. (3) I.**

Mr. Satten

Prerequisite: a course in quantum mechanics.

The theory of molecular structure and spectra. Applications to optical, infrared, Raman, and microwave spectroscopy.

* Not to be given, 1961-1962.

214. **Advanced Acoustics.** (3) I. Mr. Delsasso
215. **Statistical Mechanics.** (3) II. Mr. Finkelstein
- *217. **Hydrodynamics.** (3) II. Mr. Baños
Not open for credit to students who have credit for Meteorology 217.
218. **Magnetohydrodynamics.** (3) II. Mr. Baños
An advanced course in hydromagnetics and plasma dynamics, starting, respectively, from conservation laws and from the Boltzmann equation. Stability considerations, force-free configurations, plasma oscillations, magneto-hydrodynamic waves, hydromagnetic shock, and hydromagnetic turbulence.
- 220A. **Theoretical Mechanics.** (3) I. Mr. Kinsey
- *220B. **Theoretical Mechanics.** (3) II. Mr. Kinsey
- 221A. **Quantum Mechanics.** (3) II. _____
(Numbered 220C prior to 1960-1961.)
- 221B. **Quantum Mechanics.** (3) I. Mr. Ticho
(Numbered 220D prior to 1960-1961.)
- 224A. **Nuclear Physics.** (3) I. Mr. Richardson
An introduction to our present knowledge of the nucleus with particular emphasis on a critical evaluation of the evidence on the two-nucleon interaction. The properties of pi mesons are discussed and correlated with possible theories of nuclear forces.
- 224B. **Nuclear Physics.** (3) II. Mr. Moszkowski
An advanced course in the structure of complex nuclei and nuclear radiation.
- *230. **Relativistic Quantum Mechanics.** (3) II. Mr. Moszkowski
An advanced course in the application of quantum mechanics to relativistic particles. A detailed discussion is given of the quantum theory of radiation, the Dirac equation, the interaction between charged particles and photons, scattering of charged particles, Feynman diagrams and renormalization problems.
231. **Methods of Theoretical Physics.** (3) I. _____
An advanced course in which the general mathematical methods employed in the solution of boundary value problems arising in all chapters of theoretical physics are systematically developed and coordinated. A detailed discussion is given of the use of Green's functions, characteristic functions, variational methods, conformal mapping, and of integral equations the solution of which is based on the theory of the Fourier and Laplace transforms.
232. **Relativity.** (3) II. Mr. Finkelstein
The special and general theories of relativity with application to elemental particle physics and cosmology.
260. **Seminar: Problems in Elementary Particle Physics and Field Theory.** _____
(1-3) I, II.
261. **Seminar in Special Problems in Theoretical Physics.** (1-3) I, II. _____
Mr. Moszkowski, _____
262. **Seminar in Physics of the Solid State.** (1-3) I. Mr. Paul
264. **Seminar in Advanced Acoustics.** (1-3) II. Mr. Delsasso

266. **Seminar in Propagation of Waves in Fluids.** (1-3) II. Mr. Rudnick

*268. **Seminar in Atomic Physics.** (1-3) II. Mr. Satten

269. **Seminar in Nuclear Physics.** (1-3) I, II. _____

281. **Experimental Techniques in Modern Physics.** (3) II. Mr. Richardson

Essentially a laboratory course with some lectures on the theory of the techniques used. An effort is made to develop a critical research attitude on the part of the student and considerable freedom is allowed in the choice of problems to be attacked. High-vacuum technique, atomic magnetic resonance, magnetic spectrograph, electron diffraction, cloud chamber, electrical counting of particles, conduction of electricity through gases, etc.

284. **Experimental Techniques in Acoustics.** (2) II. Mr. Rudnick

A laboratory course in experimental acoustics designed to train the student in the techniques and instrumentation used in modern acoustic research.

290A-290B. **Research.** (1-6; 1-6) Yr. The Staff (Mr. Delsasso in charge)

RELATED COURSES AND CURRICULUM

GEOPHYSICS

See page 9 for an interdepartmental curriculum in geophysics involving physics and geology.

GRADUATE COURSES

240. **Theoretical Seismology.** (3) I. Mr. Knopoff

An advanced course treating problems of transient wave motions in elastic solids. The mathematical analysis of wave propagation, boundary value problems, interaction of compression and shear waves, surface waves, plane boundaries, elastic and imperfectly elastic materials.

250. **Seminar in Geophysics.** (3) I, II. Mr. Slichter

Seismology, geophysical prospecting, electromagnetic prospecting. Selected topics in earth physics. The content will vary from year to year.

255. **Seminar in Atmospheric Physics.** (3) I. Mr. Holzer

Selected problems in physics of the high atmosphere, electromagnetic waves in ionized media; magnetic noise; atmospheric electrical currents. The content will vary from year to year.

290. **Research in Geophysics.** (1-6) I, II. The Staff

This course will include studies relative to exploration geophysics and experimental work in the electromagnetic model laboratory; research relative to gravity-surveying, and to gravity earthtides (Mr. Slichter); theoretical and experimental studies relative to seismology and geophysics (Mr. Knopoff); tectonophysics and properties of matter at high pressure (Mr. Griggs); atmospheric electrical phenomena (Mr. Holzer); meteorological problems (Mr. Palmer); physics of the earth's interior (Mr. MacDonald).

PHYSICAL SCIENCES

PROFESSIONAL COURSE IN METHODS

370. **Methods and Materials for Teaching Physical Sciences.** (3) II.

Prerequisite: graduate or senior standing. Mr. Toon, Mr. Watson

Methods and materials for teaching physical sciences in secondary schools. Solution of special problems which arise in secondary school physical science courses.

* Not to be given, 1961-1962.

PHYSIOLOGICAL CHEMISTRY

(Department Office, 33-257 Medical Center)

Wendell H. Griffith, Ph.D., *Professor of Physiological Chemistry (Chairman of the Department)*.

Ralph W. McKee, Ph.D., *Professor of Physiological Chemistry*.

James F. Mead, Ph.D., *Professor of Physiological Chemistry in Residence*.

Sidney Roberts, Ph.D., *Professor of Physiological Chemistry*.

Robert M. Fink, Ph.D., *Associate Professor of Physiological Chemistry*.

David R. Howton, Ph.D., *Associate Professor of Physiological Chemistry in Residence*.

Joseph F. Nyc, Ph.D., *Associate Professor of Physiological Chemistry*.

John G. Pierce, Ph.D., *Associate Professor of Physiological Chemistry*.

John E. Snoke, Ph.D., *Associate Professor of Physiological Chemistry*.

Irving Zabin, Ph.D., *Associate Professor of Physiological Chemistry*.

Isaac Harary, Ph.D., *Assistant Professor of Physiological Chemistry in Residence*.

Requirements for Admission to Graduate Status

1. For general requirements, see pages 17-20 of the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION.
2. Minimum departmental requirements:
 - A. Bachelor's degree in agriculture, biochemistry, botany, chemistry, microbiology, physical-biological science, or zoology.
 - B. Courses, or their equivalent, as follows: General Chemistry (Chemistry 1A-1B); Quantitative Analysis (Chemistry 5A); Physical Chemistry (Chemistry 109 or 110A-110B), with at least 2 additional units of laboratory; Organic Chemistry (Chemistry 112A-112B); Analytical Geometry and Calculus (at least equivalent to Mathematics 37); General Physics (Physics 2A-2B); General Biology (Zoology 1A-1B, or Bacteriology 1 and Botany 1).
 - C. In the admission of students, preference will be given those whose curricula include the following courses, or their equivalent: Advanced Quantitative Analysis (Chemistry 5B); Qualitative Organic Analysis (Chemistry 103); General Biochemistry (Chemistry 108A-108B); Physical Chemistry (Chemistry 110A-110B, Chemistry 111); Analytical Geometry and Calculus (Mathematics 3A-3B, Mathematics 4A); Statistics (Statistics 1); General Zoology (Zoology 1A-1B).

Requirements for the Master of Science Degree

1. For general requirements, see pages 69-71 of this bulletin.
2. Departmental requirements:
 - A. A reading knowledge of German is required. *The requirement must be satisfied during the first semester of graduate registration.*
 - B. *Thesis Plan I* must be completed. Under this plan 20 units are required in upper division and graduate courses, including 6 to 10 units of Physiological Chemistry 290 (research) and a minimum of 6 units in graduate courses other than Physiological Chemistry 290. Physiological Chemistry 101A-B-C, or the equivalent, may not be counted as part of the required 20 units.
 - C. Candidates for the master's degree may be required to pass written and oral examinations.

Requirements for the Doctor of Philosophy Degree

1. For general requirements, see pages 71-74 of this bulletin.

2. Departmental requirements:

- A. A reading knowledge of French and German is required. *The requirement must be satisfied before the end of the third semester in residence.*
- B. Course of study: The course of study for an advanced degree will be arranged according to the needs of the individual student. Normally, all candidates will be expected to register for departmental courses 220, 242, 251, and 290. Additional courses in the major and other fields will be taken in accordance with the recommendations of the guidance committee.

UPPER DIVISION COURSES

- 101A. **Physiological Chemistry.** (4) I. The Staff
Required in the medical curriculum; consent of the instructor is required for nonmedical students.
- 101B. **Physiological Chemistry.** (3) II. The Staff
Required in the medical curriculum; consent of the instructor is required for nonmedical students.
- 101C. **Physiological Chemistry Laboratory.** (3) II. The Staff
Required in the medical curriculum; consent of the instructor is required for nonmedical students.

GRADUATE COURSES

210. **Hormones and Metabolism.** (3) I. Mr. Roberts
Lecture, three hours. Prerequisite: course 101A-101B-101C, or Chemistry 108A-108B, or equivalent. Zoology 118A-118B-118C recommended. Normally offered only in alternate years.
Chemical nature, biogenesis and metabolic fate of hormones in the vertebrates; significance of metabolic end products; mechanism of action; influence on the metabolism of the major foodstuffs, including salt and water; relation to growth.
212. **Protein Structure.** (2) I. Mr. Pierce
Lecture, two hours. Prerequisite: course 101A-101B-101C, or Chemistry 108A-108B, or equivalent. Normally offered only in alternate years.
Chemical and genetic bases of the primary, secondary and tertiary structure of proteins with emphasis on protein and biological activity.
- 220A-220B. **Biochemical Preparations and Techniques.** (3-3) I, II. Mr. Nye and the Staff
Lecture or conference, one hour; laboratory, six hours. Prerequisite: consent of instructor.
Laboratory techniques important in biochemical research; isolation, identification and determination of biologically active compounds. Either or both semesters may be taken.
- *221. **Neurobiochemistry.** (3) II. Mr. Roberts and the Staff
Lecture or conference, three hours. Prerequisite: course 101A-101B-101C, or Chemistry 108A-108B, or equivalent. Normally offered only in alternate years.
Chemistry and metabolism of the nervous system with particular emphasis on development, differentiation and function.

* Not to be given, 1961-1962.

230. Cytochemistry. (4) I.

Mr. McKee

Lecture, two hours; laboratory, six hours. Prerequisite: course 101A-101B-101C or Chemistry 108A-108B, or equivalent. Normally offered only in alternate years.

Chemical composition of the animal cell with special reference to identification and significance of sites of chemical activity.

232. Biochemistry of Nutrition. (2) I.

Mr. Griffith

Lecture, two hours. Prerequisite: course 101A-101B-101C, or Chemistry 108A-108B, or equivalent.

Nutritional aspects of metabolism of vitamins and minerals; biochemical recognition of dietary deficiencies.

234. Problems in Human Nutrition. (2) II.

Mr. Griffith

Lecture, two hours. Prerequisite: consent of instructor.

Qualitative and quantitative requirements of nutrients during growth and aging; minimal and optimal diets; relation of the food supply, of food habits and of environmental factors to nutritional health.

***235. Physical Biochemistry. (3) II.**

Mr. Snoko

Lecture, three hours. Prerequisite: course 101A-101B-101C, or Chemistry 108A-108B or equivalent; Chemistry 110A-110B and 111; consent of instructor.

Physico-chemical principles in biochemical systems including the physical properties of macromolecules and thermodynamic and kinetic characteristics of metabolic reactions.

242. Advanced Metabolism. (3) I.

Mr. Zabin in charge, Mr. Snoko, Mr. Harary

Lecture, three hours. Prerequisite: course 101A-101B-101C, or Chemistry 108A-108B, or equivalent.

An advanced treatment of methods for the study of the biogenesis and degradation of carbon compounds *in vivo* and *in vitro*; kinetics and energetics of metabolic systems in animals.

***245. Biochemistry of Lipides. (2) II.**

Mr. Mead, Mr. Howton

Lecture and conference, two hours. Prerequisites: course 101A-101B-101C, or Chemistry 108A-108B, or equivalent.

Biochemistry of lipides including methods of isolation, characterization and determination; role of lipides in animal metabolism.

248. Biochemistry of Nucleoproteins. (2) II.

Mr. Fink

Lecture and conference, two hours. Prerequisites: course 101A-101B-101C, or Chemistry 108A-108B, or equivalent.

Biogenesis, function and catabolism of nucleotides and nucleoproteins and their structure, self-reproducibility and mutagenesis.

251A-251B. Seminar in Physiological Chemistry. (1-1) I, II.

Mr. Snoko

Oral reports by graduate students on topics selected from current biochemical literature.

290A-290B. Research in Physiological Chemistry. (2-6; 2-6) I, II. The Staff

* Not to be given, 1961-1962.

PHYSIOLOGY

(Department Office, 23-250 Medical Center)

- W. Ross Adey, M.D., *Professor of Physiology and Anatomy.*
 John Field, Ph.D., *Professor of Physiology (Chairman of the Department),
 Lecturer in Medical History, and Associate Dean of the School of Medicine.*
 Morton I. Grossman, M.D., Ph.D., *Clinical Professor of Physiology and Medi-
 cine.*
 Victor E. Hall, M.D., *Professor of Physiology (Vice-Chairman of the Depart-
 ment).*
 Allan Hemingway, Ph.D., *Professor of Physiology.*
 Donald B. Lindsley, Ph.D., *Professor of Physiology and Psychology.*
 Wilfried F. H. M. Mommaerts, Ph.D., *Professor of Physiology and Medicine,
 and Director of the Los Angeles County Heart Association Cardiovascular
 Research Laboratory.*
 Robert D. Tschirgi, M.D., Ph.D., *Professor of Physiology and Anatomy.*
 Daniel H. Simmons, M.D., Ph.D., *Associate Professor in Residence of Physi-
 ology and Medicine.*
 Robert E. Smith, Ph.D., *Associate Professor of Physiology.*
 Ralph R. Sonnenschein, M.D., Ph.D., *Associate Professor of Physiology.*
 Allan J. Brady, Ph.D., *Assistant Professor in Residence of Physiology and
 Medicine.*
 Aaron A. Cohen, M.D., *Assistant Professor in Residence of Physiology and
 Assistant Clinical Professor of Medicine.*
 Bennett J. Cohen, D.V.M., Ph.D., *Assistant Professor of Physiology.*
 Leonard M. Linde, M.D., *Assistant Professor of Physiology and Pediatrics.*
 John F. Murray, M.D., *Assistant Professor of Physiology and Medicine.*
 Bernice M. Wenzel, Ph.D., *Assistant Professor of Physiology.*
 George Moore, Ph.D., *Assistant in Physiology.*

Admission to Graduate Status

Candidates for admission to graduate status in the Department of Physiology must conform to the general requirements set by the Graduate Division for admission to such status. In addition to meeting the requirements of the Graduate Division, the students must have received the bachelor's degree in a biological or physical science or in the premedical curriculum, provided that 6 semester units of college mathematics, 8 units of physics, 16 units of chemistry (including quantitative analysis and organic chemistry), and 12 units of zoology (including comparative vertebrate anatomy) have been completed. Students will be expected to have completed courses in mathematics through calculus and in physical chemistry, or must take these in their first year of graduate work. It is expected that candidates for an advanced degree in the department usually will have taken during their undergraduate years a substantial number of the courses listed below as required for an advanced degree. In certain cases, at the discretion of the department, students with less than the above requirements may be admitted to graduate status, provided that all deficiencies are removed by satisfactory completion of the appropriate courses within a specified time after admission.

All students admitted to graduate status in the Department of Physiology are required, during their first year of residence, to take such preliminary examinations as the department staff may deem advisable. Satisfactory performance in these examinations is prerequisite to continuation of graduate standing in the department. These examinations are designed to evaluate the scientific competence of the student and to facilitate the work of the staff in recommending a study program which will most effectively aid his development.

*Requirements for the Master of Science Degree***1. General University Requirements.**

Candidates for the Master of Science degree in physiology must conform to the general requirements set by the Graduate Division for this degree (pages 69-71). The candidate may elect either Plan I or Plan II as set forth in the general section on "Requirements for the Master's Degree." Plan I will normally be followed by students preparing for advanced work in physiology, while Plan II is recommended for those working toward less specialized objectives.

2. Departmental Requirements.

Satisfactory completion of the following courses is required for the M.S. degree in physiology.

(a) Physiology 101. (Mammalian Physiology)

(b) Physiology 103. (Basic Neurology)

(c) At least two of the following courses:

(1) Physiology 201. (Physiological Methods)

(2) Physiology 203. (Cellular Physiology)

(3) Physiology 204. (Cardiovascular Physiology)

(4) Physiology 205. (Physiology of Respiration)

(5) Physiology 206. (Gastrointestinal Physiology)

(6) Physiology 207. (Neurophysiology)

(7) Zoology 118B. (Advanced Endocrinology)

Or other such courses approved by the department.

(d) Physiology 251A-251B. (Seminar)

(e) Sufficient additional courses in physiology and related subjects to make a total of 20 units (Plan I) or 24 units (Plan II), including not less than 8 units (Plan I) or 12 units (Plan II) of graduate courses in physiology.

(f) Mathematics to and including analytical geometry.

(g) A thesis (Plan I) or a comprehensive final examination (Plan II).

Courses substantially similar in subject matter and scope may be substituted for the specific courses listed above at the discretion of the department.

Prospective candidates for the M.S. degree are responsible for completion of all technical requirements for this degree. They must not depend upon any staff member or upon the departmental secretary to remind them of these responsibilities, which include:

(a) Application to the Graduate Division for advancement to candidacy during the first two weeks of the final semester in which the candidate hopes to qualify. The deadline date for this application is set each semester by the Graduate Division.

(b) Under Plan II the candidate must request the department committee in charge of examinations to prepare the appropriate examinations. The student is required to take these examinations on the date specified by the department.

*Requirements for the Doctor's Degree***1. General University Requirements.**

Candidates for the doctorate in physiology must conform to the general requirements set by the Graduate Division for this degree (pages 71-74). It should be noted that the student must pass a series of written and oral examinations before admission to candidacy. The qualifying oral examination is conducted by a doctoral committee appointed by the Graduate Council (see page 73).

2. Departmental Requirements.

(a) Admission to Candidacy.

The student must first pass the written and oral examinations of the department, after which he is eligible to take the qualifying oral examination for admission to candidacy. These examinations may not be taken more than twice. The student must also conform to any requirements set by the department staff and by his guidance committee. This committee will be appointed by the chairman of the department upon admission to the doctoral program of the department.

It should be noted that the doctorate in physiology is not granted merely upon completion of routine requirements as to examinations, courses, and dissertation: fulfillment of such requirements is a prerequisite. The doctor's degree will be granted only to students who have clearly demonstrated both an adequate grasp of a broad field of knowledge and their ability to contribute to that field of knowledge by original and independent research.

(b) Course Requirements.

(1) Physiology 101. (Mammalian Physiology)

(2) Physiology 103. (Basic Neurology)

(3) Physiology 201. (Physiological Methods)

(4) At least four of the following courses:

(1) Physiology 203. (Cellular Physiology)

(2) Physiology 204. (Cardiovascular Physiology)

(3) Physiology 205. (Physiology of Respiration)

(4) Physiology 206. (Gastrointestinal Physiology)

(5) Physiology 207. (Neurophysiology)

(6) Zoology 118B. (Advanced Endocrinology)

Or other such courses approved by the department.

(5) Physiology 251A-251B. (Seminar) during all semesters of residence

(6) Biophysics 101. (Elements of Medical Biophysics)

(7) Physiological Chemistry 101A, 101B and 101C or Chemistry 108A, 108B and 136 (Biochemistry)

(8) Anatomy 101. (Microscopic Anatomy)

(9) Chemistry 109. (Physical Chemistry)

(10) Courses in differential and integral calculus

(11) A course in statistical methods

(12) Such courses as the guidance committee may recommend as appropriate for the development of the student.

Courses substantially similar in subject matter and scope may be substituted for the specific courses listed above at the discretion of the department.

(c) Foreign Languages.

A reading knowledge of German and one other language of scientific importance is normally required.

Prospective candidates for the doctor's degree are responsible for completion of all technical requirements for this degree. Careful study of the requirements set by the Graduate Division (see pages 71-74 of this bulletin) will be necessary to accomplish this. Students must not depend upon any staff member or upon the departmental secretary to remind them of these responsibilities.

UPPER DIVISION COURSES

101. Mammalian Physiology. (8) II.

Mr. Field and the Staff

Lecture, three hours; laboratory and conference, nine hours; correlation clinic, one hour. Prerequisite: Chemistry 1A, 1B and 8; Physics 2A and 2B; Zoology 1A and 1B; a course in microscopic anatomy; a course in gross anatomy, human or comparative; and consent of the instructor.

Lectures, laboratory exercises, demonstrations, and conferences on the functional activities of the body as a whole and of lower levels of organization such as organ systems, organs, tissues, cells and subcellular structures, with emphasis on man. Topics include the circulation, blood, general and cellular metabolism, muscle function, respiration, digestion, kidney function, water and electrolyte balance, endocrine function, temperature regulation and an analysis of the physiological consequences of stress.

103. Basic Neurology. (3) II. Mr. Tschirgi and the Staff

Lectures, two hours; laboratory and conference, six hours. Prerequisite: Chemistry 1A, 1B and 8; Physics 2A and 2B; Zoology 1A and 1B; a course in microscopic anatomy; a course in gross anatomy, human or comparative; and consent of the instructor.

Lectures, laboratory exercises, demonstrations and conferences dealing with the structure and function of the receptors, peripheral and central nervous system. Given jointly with the Department of Anatomy. Concomitant registration in Anatomy 103 required.

199. Special Studies. (1 to 6) I, II. Mr. Field and the Staff

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.

GRADUATE COURSES

201. Physiological Methods. (2) I. Mr. Hemingway

Lecture, one hour; laboratory, two hours. Prerequisite: Chemistry 1A, 1B and 5A.

Training in the special procedures used in physiological research.

203. Cellular Physiology. (2) I. Mr. Smith

Prerequisite: consent of the instructor.

Relationship of metabolism and function in mammalian cells and consideration of factors regulating cell metabolism.

204. Cardiovascular Physiology. (2) I. Mr. Hall

Prerequisite: Physiology 101 and consent of the instructor.

Advanced consideration of special topics in the physiology of the circulatory system.

205. Physiology of Respiration. (2) I. Mr. Hemingway

Prerequisite: Physiology 101 and consent of the instructor.

Analysis of physiological mechanisms involved in respiration and its control in normal and stress situations.

206. Gastrointestinal Physiology. (2) I. Mr. Sonnenschein

Prerequisite: Physiology 101; and either Physiological Chemistry 101A, 101B and 101C or Chemistry 108A and 108B; and consent of the instructor.

Selected topics in normal and abnormal function of the gastrointestinal tract including mechanisms of motility, secretion, absorption and activities of the liver.

207. Neurophysiology. (2) I. Miss Wenzel

Prerequisite: consent of the instructor.

Seminar 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.

- 208. Theoretical Physiology.** (2) I. Mr. Tschirgi
Prerequisite: consent of the instructor.
A series of seminar-discussions concerning the homeostatic relationships between the organism and its environment.
- 210. Selected Topics in the History of Physiology.** (1) I. Mr. Field
Lectures dealing with the historical development of scientific method and of scientific ideas in physiology.
- 211. Orientation in Biomedical Research.** (1) I. Mr. Hall
Prerequisite: consent of the instructor.
A course for graduate and postdoctoral students in biomedical sciences. Lectures deal with method and logic of science, scientific writing, use of library facilities, professional career planning, public relations and the like.
- 251A-251B. Seminar in Physiology.** (1-1) I, II. Mr. Field and the Staff
Prerequisite: consent of the instructor.
Review and discussion of current physiological literature, research in progress and special topics.
- 299A-299B. Research in Physiology.** (1-6) I, II. Mr. Field and the Staff
Prerequisite: consent of the instructor.
Research in mammalian and general physiology.

PROFESSIONAL COURSE

- 301. Methods and Techniques in the Use of Laboratory Animals.** (1) I. Mr. Cohen
One hour per week of lecture, demonstration or laboratory. Prerequisite: consent of the instructor.
An introductory course for graduate students in the medical and biological sciences, covering principles and practical problems in the handling and use of common laboratory animal species.

PLANT PATHOLOGY

(Department Office, 288 Physics Building)

John G. Bald, Ph.D., *Professor of Plant Pathology.*
John T. Middleton, Ph.D., *Professor of Plant Pathology (Chairman of the Department), Riverside.*

The Major.—The major is offered on the Berkeley and Davis campuses. See the BULLETIN OF THE COLLEGE OF AGRICULTURE and consult the appropriate adviser for students in agriculture.

UPPER DIVISION COURSES

- 120. Plant Diseases.** (4) I. Mr. Bald
Lecture, two hours; laboratory, six hours.
Prerequisite: Botany 1 or the equivalent. Recommended: Bacteriology 1.
A general course treating on the nature, cause, and control of plant diseases. Insofar as practicable the illustrative materials will be drawn from subtropical fruit plants and ornamental plants.

- *140. Diseases of Floricultural Plants.** (3) II. Mr. Bald
Laboratory, lecture, and discussion, nine hours. Several field trips.
Prerequisite: Plant Pathology 120 or the equivalent.
The pathology of floricultural plants in relation to cultural practices. Recognition, environmental relations, etiology, and control of important types of diseases.
- *199. Special Studies.** (2-4) I, II. The Staff
Prerequisite: senior standing and consent of the instructor.

GRADUATE COURSES

- *201. Seminar in Plant Pathology.** (1) I, II. The Staff
- 299. Research in Plant Pathology.** (2-6) I, II. The Staff

PLANT SCIENCE**Botanical Science**

Graduate programs leading to the M.A. or Ph.D. degrees are offered with opportunities for specialization in: anatomy, ecology, evolution, genetics, morphology, mycology, physiology, systematics, and virology.

Admission to Graduate Status

Admission to the graduate program requires an undergraduate major in botany, biology, or plant science. Students with good academic records in other majors will also be considered for admission.

Requirements for the Master's Degree

The general requirements are given on pages 69-71. Students may follow Plan I or Plan II. Those following Plan II must pass a comprehensive written examination which may be taken toward the end of any semester. There is no foreign language requirement.

Requirements for the Doctor's Degree

The general requirements are given on pages 71-74. Advancement to candidacy for the Ph.D. in botanical science involves demonstration of proficiency in the fields of morphology, taxonomy, anatomy, physiology and genetics. This requirement may be met by suitable work in Botany 2, 3, 6, 107, and 140 or their equivalent or by written examinations. A reading knowledge of German and one other foreign language approved by the student's guidance committee is required. Course work in botany and related subjects may be required by the guidance committee depending on the student's interest and preparation. Qualifying examinations consist of two parts, a written exercise administered by the department committee on graduate study, and an oral examination conducted by the doctoral committee. Together, the two parts of the qualifying examination test the student's comprehension of the subject matter of botany and related fields and insure the student's ability to express his thoughts orally and in writing. After admission to candidacy the student must submit a dissertation and pass a final oral examination.

Horticultural Science

For graduate program in horticultural science, see page 466.

* Not to be given, 1961-1962.

POLITICAL SCIENCE

(Department Office, 160 Haines Hall)

- John C. Bollens, Ph.D., *Professor of Political Science.*
 James S. Coleman, Ph.D., *Professor of Political Science.*
 Winston W. Crouch, Ph.D., *Professor of Political Science.*
 Russell H. Fitzgibbon, Ph.D., LL.D., *Professor of Political Science.*
 Malbone W. Graham, Ph.D., *Professor of Political Science.*
 J. A. C. Grant, Ph.D., *Professor of Political Science.*
 Ivan H. Hinderaker, Ph.D., *Professor of Political Science (Chairman of the Department).*
 Thomas P. Jenkin, Ph.D., *Professor of Political Science.*
 Dean E. McHenry, Ph.D., *Professor of Political Science.*
 Robert G. Neumann, Ph.D., *Professor of Political Science.*
 Foster H. Sherwood, Ph.D., *Professor of Political Science.*
 H. Arthur Steiner, Ph.D., *Professor of Political Science.*
 *Charles H. Titus, Ph.D., LL.D., *Professor of Political Science.*
 Frank M. Stewart, Ph.D., *Professor of Political Science, Emeritus.*
 David T. Cattell, Ph.D., *Associate Professor of Political Science.*
 †Ernest A. Engelbert, Ph.D., *Associate Professor of Political Science.*
 David G. Farrelly, Ph.D., *Associate Professor of Political Science.*
 Dwaine Marvick, Ph.D., *Associate Professor of Political Science.*
 Charles R. Nixon, Ph.D., *Associate Professor of Political Science.*
 Vincent Ostrom, Ph.D., *Associate Professor of Political Science.*
 *Douglas H. Mendel, Jr., Ph.D., *Assistant Professor of Political Science.*
 Richard N. Rosecrance, Ph.D., *Assistant Professor of Political Science.*
 Howard E. Swearer, Ph.D., *Assistant Professor of Political Science.*
 David A. Wilson, Ph.D., *Assistant Professor of Political Science.*
 Peter Woll, Ph.D., *Assistant Professor of Political Science.*
 Charles E. Young, Ph.D., *Assistant Professor of Political Science.*
 L. F. E. Goldie, L.L.M., *Lecturer in Political Science.*

Letters and Science List.—All undergraduate courses in political science, except 104, are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

Preparation for the Major.—Political Science 1 and 2. Course 103 may be substituted for course 2 for students entering with upper division standing.

The Major.—Twenty-four units in upper division political science courses numbered from 110 to 199. Courses 101, 102, 103, and 104 may not be applied to the major. The 24 units of permissible upper division course work must be so distributed that at least three courses are taken in *one* of the groups into which the upper division courses of the department are organized, and at least *one* course is taken in three of the remaining five groups. The group organization of courses is as follows:

- Group I (Political Theory), courses 110–118;
- Group II (International Law and Relations), courses 125–138;
- Group III (Politics), courses 141–148;
- Group IV (Comparative Government), courses 150–160B;
- Group V (Public Law), courses 161–168;
- Group VI (Public Administration and Local Government), courses 171–187.

Courses 117, 133A–133B, and 187 may be counted in Group V; course 166 may be counted in Group VI. Ungrouped courses 198 and 199 apply to the

* In residence spring semester only, 1961–1962.

† Absent on leave, 1961–1962.

major but are not counted in meeting the minimal requirements for the distribution of course work among four principal groups.

The student must maintain an average grade of C or higher in all upper division courses in political science. For other details, the student should consult a departmental adviser.

Related Curricula.—For the curricula in international relations and public service, see pages 12 and 16 of this bulletin.

Admission to Graduate Status

Applicants who have completed the undergraduate major in political science, or its equivalent, with a minimum grade-point average of 2.75, will ordinarily be recommended for admission to the graduate programs in political science. They must meet the general University requirements noted in the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION. Students transferring from other institutions without the equivalent of the undergraduate major in political science at UCLA will be required to make up such deficiencies or satisfy such conditions as may be indicated by the department before entering upon programs leading to graduate degrees. The Graduate Student Adviser of the department is to be consulted prior to the initial enrollment in courses, and is available for detailed interpretations of the regulations.

Somewhat different admission requirements apply to the master's degree program in international relations (page 396) and to the Master of Public Administration degree (page 397). These interdepartmental programs are administered by the department, but are not considered as programs in political science.

Graduate Fields of Study

The six fields offered to graduate students correspond generally to the groups of courses defined for undergraduate majors. Course 203, Scope and Methods, which is required of all graduate students, is ungrouped. Graduate courses and seminars corresponding to the undergraduate courses in their respective fields are as follows: Group I (Political Theory), course 211, seminar 257; Group II (International Law and Relations), course 212, seminar 253; Group III (Politics), course 214, seminar 259; Group IV (Comparative Government), course 215, seminar 256; Group V (Public Law), course 216, seminar 252; Group VI (Public Administration and Local Government), courses 218 and 228, seminars 262, 263. The seminars in regional and area political studies, 250A-250J, inclusive, may apply to Groups II or IV, as recommended by the guidance committees appointed for doctoral candidates. Graduate programs also include undergraduate courses numbered from 110 through 187 (but do not include courses 101, 102, 103, 104, 198 or 199). Required distributions of undergraduate courses and of graduate courses and seminars in the different degree programs of the department are shown in connection with each program. Detailed information will be supplied by the Graduate Student Adviser.

Disqualification from Graduate Status

Every student admitted to graduate status under the condition of meeting subject or other deficiencies is subject to immediate disqualification from graduate status if he fails to meet the stipulated condition. A student is subject to dismissal if his grade-point average in political science courses falls below 3.0, or if his grade-point average in political science courses falls below 3.0 in two successive semesters even though this over-all average remains above that level. Students subject to dismissal may, at the discretion of the department, be continued in graduate status for an additional semester during which their grade-point deficiency is to be made up.

Requirements for the Master's Degree in Political Science

The department normally operates under Plan II (comprehensive examination), but Plan I (thesis) may be followed in individual cases with the approval of the department. See pages 69-71 of this bulletin for the basic requirements under either plan.

Language Requirements.—Candidates for the M.A. degree in political science are required to pass a reading examination in one modern foreign language, as administered by the Graduate Council.

Advancement to Candidacy.—Following successful completion of course 203, which is required of all candidates for the master's degree, the student should formally apply for advancement to candidacy on forms provided by the Graduate Division before the date announced in the graduate calendar. Students proceeding under Plan II must also indicate at this time their two intended fields of comprehensive examination. Students proceeding under Plan I, whose thesis work will be supervised by a committee appointed by the Graduate Council on recommendation of the department, must give notice at this time of the single field, additional to the thesis field, in which they will take a comprehensive examination.

Course Requirements.—While satisfying the basic requirements, candidates under Plan II (24 units) must complete (a) course 203 (ordinarily during their first semester in graduate status), and (b) a graduate course (numbered 211 through 218) in each of three major fields of work in the department, after having satisfied their respective prerequisites. Students who meet the requirements for admission into political science seminars may include such seminars in their M.A. programs, without modifying the 12-unit graduate course requirement.

When Plan I is authorized, not less than 12 of the 20 units must be taken in political science courses numbered 200 to 263, including (a) course 203 (normally taken during the first semester), and (b) courses in at least two major fields within the department.

A 3.0 grade-point average must be maintained in all 200-series courses in Political Science under either plan. Course 298 may not apply to the 12-unit requirement of graduate courses or seminars. The residual unit requirements must be taken in other courses in political science, although with prior approval of the department, 3 units may be met by graduate courses or seminars, or by undergraduate courses, in another department.

Comprehensive Examination.—Comprehensive examinations in each of the six major fields of work within the department are conducted in sequence toward the end of each regular semester, normally in January and May. They are not offered during summer session. A student is permitted to take the examination sequence during the semester following the completion of all course requirements, even though not enrolled in course work, provided he meets other eligibility requirements set by the Graduate Council. At regular intervals the department issues information statements covering the scope of the respective comprehensive examinations, including subjects to be included and recommended reading.

Candidates for the degree under Plan II must pass examinations in two selected fields during the same examination sequence. To be eligible for the examinations, the applicant must have been advanced to candidacy and must have completed or be in the process of completing, graduate courses in three fields within the department (in addition to course 203) with the requisite 3.0 grade-point average. The three graduate courses must include graduate courses in the two proposed examination fields, as follows: Political Theory (course 211), International Law and Relations (course 212), Politics (course 214), Comparative Government (course 215), Public Law (course 216), and Public Administration and Local Government (course 218). At the discretion

of the department, or its several examining committees, supplementary oral examinations may be conducted in appropriate cases.

Each candidate under Plan I must pass a written comprehensive examination in one major field other than in which his thesis work falls, to be selected from the fields in which he has completed a graduate course in the 211-218 series. The department also reserves the right to conduct other examinations as it may deem appropriate to certifying the candidate for the award of the degree.

Requirements for the Doctor's Degree in Political Science

General requirements for the doctor's degree are given on pages 71-74 of this bulletin.

Departmental Requirements for Eligibility.—Admission into the Ph.D. program in political science requires the Master of Arts degree, or a comparable degree, as a precondition; but, alternatively, this condition may be satisfied by successful completion of the comprehensive examinations given to M.A. candidates under Plan II. The prospective doctoral candidate must demonstrate a strong record of academic performance in his M.A. program, substantially higher than that required to satisfy the minimum grade-point average for graduate status. He is deemed to have provisional status in the doctoral program until such time as a guidance committee, which is appointed by the department after the student files his *Notice of Intention*, has reviewed his record. At its discretion, the guidance committee may give the student informal oral or written examinations to determine the nature and adequacy of his preparation, including his general reading.

Notice of Intention.—Formal notice of intention to proceed to candidacy for the doctor's degree (Form 1) must be filed with the chairman of the department by the prospective candidate. Normally, this will be done immediately after completion of the requirements for the master's degree, or during the first semester in graduate residence following the award of the master's degree.

Guidance Committee.—See pages 73 of this bulletin.

Foreign Language Requirement.—Before he may take the written qualifying examinations, the prospective doctoral candidate must pass reading examinations in two modern foreign languages, as recommended or approved by his guidance committee.

Written Departmental Qualifying Examinations.—When the guidance committee is satisfied with the adequacy of the student's preparation, and after the student has passed the foreign language examinations, it will administer the written qualifying examinations on behalf of the department. To qualify for candidacy, the student must demonstrate by written examinations his competence in four major fields, three of which must be within the departmental offering. The fourth examination field may be based on a special program of work in another department (or departments), subject to preliminary approval by the guidance committee and the department in individual cases. The sequence of four written qualifying examinations must be completed within a 2-week period, in accordance with a schedule approved by the guidance committee. Each of the written examinations must be passed before the student is eligible to proceed to the oral qualifying examination. Failure on any one examination is deemed to be failure on the entire sequence; but the examining committee, at its discretion, may authorize re-examination in the sequence following an appropriate interval.

Oral Qualifying Examination.—In this examination, conducted by the doctoral committee of the Graduate Council, the student is expected to demonstrate his conversancy with the entire subject of political science, including departmental fields in which no written examinations were taken. It is a responsibility of the guidance committee to recommend to the student a pro-

gram of course work or reading designed to assist him in meeting this requirement.

Dissertation and Final Examination.—See page 73 of this bulletin.

Other Graduate Programs Administrated by the Department

The department also administers two interdepartmental master's degree programs which are closely related to the principal emphases of the department's academic program but have a quasi-professional character. These master's degree programs, separately described below, are terminal degrees in the sense that they do not lead to doctor's degree programs in their respective subjects.

Master of Arts in International Relations

The program for the degree of Master of Arts in international relations provides specialized training for those who intend to enter public or private service at levels where special proficiency in this field is required. Subject to the limits indicated below, a special course of study is formulated for each candidate according to his experience and requirements. The degree generally will not be taken by prospective candidates for the doctor's degree.

1. *General Requirements.*—See pages 69-71 of this bulletin.

2. *Admission to the Program.*—The degree of Bachelor of Arts in international relations or its equivalent is required. Applicants for admission are expected to satisfy the department that (a) the quality of their academic work or other experience and (b) the individual objectives they have in mind are adequate to justify admission to candidacy; consequently admission of students will be conditional on the results of personal interview with the faculty supervisor of the program.

3. *Plan.*—The program is offered only under Plan I. Candidates are required to complete a satisfactory thesis on a subject agreed upon by the candidate and his adviser and approved by the advisory committee.

4. *Language Requirement.*—Candidates for the degree of Master of Arts in international relations should have special linguistic qualifications. The student will be required to pass reading examinations in two modern foreign languages acceptable to the advisory committee and demonstrate a speaking and writing proficiency in one of them.

5. *Course Requirements.*—The degree of Master of Arts in international relations will require completion of a course program of not less than 36 units, which may be increased to a maximum of 40 units in the case of individual candidates by decision of the advisory committee, including not less than 18 units of work in the 200 series.

6. *Residence Requirement.*—The curriculum is based on a requirement of four semesters of residence.

7. *Program.*—The graduate and undergraduate course program of each candidate will be especially prescribed by department and the advisory committee. This program should, wherever possible, be established before the candidate enters his first semester of work. The program will be planned to provide specialized mastery of one of the following major fields: (a) Western Europe, (b) Eastern Europe, (c) Far East, (d) Latin America, (e) British commonwealth, and (f) International Law and Organization. Up to 6 units of credit may be approved, in the discretion of the committee, for practical field experience. The program of each candidate will include, among the 18 required units of work in graduate courses or seminars, the following: Political Science 212, 253, and 6 units chosen from Political Science 215, 256; History 256A-256B, 257A-257B, 259A-259B; Economics 263, 266. The remaining 6 units of graduate work will be prescribed according to the candidate's major field. The program should include work in at least three academic departments.

8. *Final Oral Examination.*—In his final semester of work, and after he has

submitted in final form an acceptable thesis, the candidate will be given a final oral examination covering (a) the general scope of international relations and (b) the thesis.

Master of Public Administration

The program leading to the degree of Master of Public Administration is organized both for those who have earned a bachelor's degree and wish to prepare for a career in governmental administration, and for more advanced public servants who wish to supplement knowledge already obtained and increase their level of competence in theoretical and practical aspects of public administration. The program is administered by the Department of Political Science but offers an opportunity for the student to do work in departmental and non-departmental fields related to public administration.

1. *General Requirements.*—See pages 69–71 of this bulletin.

2. *Admission to the Program.*—(a) The student shall have received the degree of Bachelor of Arts with a major in public service or political science or a combination of undergraduate work and experience which the Master of Public Administration degree committee evaluates as satisfactory preparation.

(b) Applicants must file a special application with the secretary of the M.P.A. committee in the Department of Political Science, in addition to the application for admission to graduate status to be filed with the Graduate Division.

3. *Plan.*—Plan II will be followed. Programs for each candidate will be prepared in consultation with an advisory committee, and in accordance with program criteria defined below.

4. *Course Requirements.*—The candidate must complete an approved program of at least 36 units of upper division and graduate courses, consisting of not less than 12 units of graduate courses in the 200 series, distributed among the three fields of the program. In addition to these requirements, candidates must complete an approved internship in accordance with Section 8, below.

5. *Residence Requirement.*—The candidate must complete at least two semesters of graduate residence at the University of California.

6. *Program.*—Candidates must demonstrate competence in three fields; (1) administrative theory and methodology; (2) governmental institutions and management practices; and (3) public law and policy. General and specialized levels of competence in each of the three fields is expected of each student who becomes a candidate for the M.P.A. degree. Levels of competence for each field and relevant courses are indicated as follows:

A. Administrative Theory and Methodology.

(1) Level of competence.

(a) General background in administrative theory and the general methodological significance of research and analytical tools for controlling and organizing evidence for research and decision-making purposes.

(b) Specialized competence in a particular tool or skill relevant to research or administrative analysis, for example, statistics, accounting, data processing, operations research and systems analysis, foreign languages.

(2) Relevant courses. Political Science 181, 203, 218, 263. Other courses in Business Administration, Economics, Sociology, Psychology, and other related fields.

B. Governmental Institutions and Management Practices.

(1) Level of competence.

(a) General understanding of political institutions of the national, state and local governments as providing the context for the conduct of governmental and administrative activities.

(b) Specialized knowledge of the function of planning, organization and management, fiscal, personnel and other controls that are utilized in the management of American government.

- (2) Relevant courses: Political Science 143, 145, 146, 171, 172, 181, 184, 185, 186, 214, 228, 254, 262, and 263.

C. Public Law and Policy.

- (1) Level of competence.

(a) A general level of understanding of the nature of a legal system, American public law and the role of administration in a rule of law.

(b) A specialized knowledge of one particular field or problems of administration (for example, welfare, economic development, personnel, law enforcement, labor, land use, water resources) with an understanding of the special nature of the problems of administration and control in that field, how the basic legal ideas were developed and the significance of these ideas in current administrative practices and problems of public policy.

- (2) Relevant courses: Political Science 117, 143, 161, 166, 167A-B, 168, 183, 187, 216, 252. Miscellaneous offerings in other departments may also be relevant depending upon the special area of interest.

The M.P.A. committee will designate an advisory committee for each candidate upon nominations from its secretary to meet with the candidate as early in the academic year as possible to consider plans for his program of study. Each candidate will be expected to prepare a formal statement of his study program, subject to the advisory committee's approval, indicating specialized areas of study. Membership in the advisory committees will be designated to indicate representation of each of the three fields. Each student will be encouraged to meet informally or through a special readings or research arrangement (Political Science 298) with members of his advisory committee. These tutorial arrangements should serve to complement normal course and seminar instruction.

This reorganization of the Master of Public Administration degree program will become effective for students entering during the fall of 1959. Students who have completed work in residence toward the M.P.A. degree prior to September, 1959, will be permitted to continue under the arrangements of the previous program until September, 1961.

7. Comprehensive Examination.—The advisory committee is responsible for the administration of written examinations of approximately two hours' duration in each of the three fields of study. An oral examination will be administered by the M.P.A. committee as a whole following successful completion of the written examinations.

8. Internship.—Each candidate is required to complete an internship by working in a public agency, office, or council, prior to receiving the degree. The length and content of the internship must be in accordance with approved standards. In some instances experience prior to entrance into the program may be used to fulfill this requirement.

LOWER DIVISION COURSES

1. Introduction to Government. (3) I, II.

Mr. Farrelly, Mr. Hinderaker, Mr. Marvick, Mr. McHenry,
Mr. Rosecrance, Mr. Woll, Mr. Young

An introduction to the principles and problems of government with particular emphasis on national government in the United States. This course fulfills in part the requirement of American History and Institutions. Students who have credit for American Institutions 101 will receive only one unit of credit for Political Science 1.

2. Introduction to Government. (3) I, II.

Mr. Binder, Mr. Mendel, Mr. McHenry, Mr. Rosecrance

A comparative study of constitutional principles, governmental institutions, and political problems of selected governments abroad.

UPPER DIVISION COURSES

Prerequisite for all upper division courses: upper division standing, except as indicated below.

Courses 101, 102, 103, 104 may not be counted toward upper division requirements for the major.

101. American Institutions. (2) I, II.

The Staff

This course counts toward satisfaction of the "Requirement of American History and Institutions." (See page 24C of this bulletin.) It may not be applied toward the political science major, and is not open to students who have credit for Political Science 1 or Political Science 3A.

The fundamental nature of the American constitutional system and of the ideals upon which it is based.

102. Contemporary World Politics. (3) I, II.

Mr. Graham, Mr. Mendel, Mr. Rosecrance

Current problems and issues in the foreign policies of the world powers since World War II, with particular attention to diplomatic, political, and security affairs. Open without prerequisite to both lower and upper division students, but not applicable to the requirements of the major in political science or international relations.

103. Principles of Political Science. (2) I, II.

The Staff

Prerequisite: course 1 or 2, or the equivalent.

Principles of political organization; the major institutions and practices of government, such as political parties, legislatures, constitutions, etc., or the functions they perform.

104. Parliamentary Organization and Procedure. (1) I.

Prerequisite: upper division standing.

Mr. Marvick, Mr. Woll

Theory and practice of the parliamentary law and procedure of public and private bodies, with particular emphasis on its application to organized groups.



Majors in political science must distribute their upper division work so that they have at least three courses in one of the following groups, and at least one course in each of three other groups.

Group I.—Political Theory**110. History of Political Ideas. (3) I, II.**

Mr. Jenkin, Mr. Nixon

An exposition and critical analysis of the ideas of the major political philosophers and schools from Plato to the seventeenth century.

112. Modern Political Theory. (3) I, II. Mr. Jenkin, Mr. Nixon, Mr. Swearer

An exposition and critical analysis of the ideas of the major political philosophers from the seventeenth century to the present.

113. American Political Thought. (3) I, II.

Mr. Jenkin, Mr. Nixon

A survey of the development of American ideas concerning political authority from Cotton and Williams to the present.

117. Jurisprudence. (3) I.

Mr. Goldie, Mr. Sherwood

Development of law and legal systems; comparison of methods and procedure in making and enforcing law in Roman and common law 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 *Group I* or *Group V*.

118. Nature of the State. (3) II.

Mr. Jenkin

Prerequisite: course 110, 112, or 113.

A systematic analysis of modern concepts and problems of political association.

Group II.—International Law and Relations

125. Foreign Relations of the United States. (3) I, II.

Mr. Coleman, Mr. Graham, Mr. Neumann, Mr. Steiner

A survey of the factors and forces entering into the formation and carrying out of American foreign policy, with special emphasis on contemporary problems.

126. Latin-American International Relations. (3) I.

Mr. Fitzgibbon

The major problems of Latin-American international relations and organization in recent decades.

127. International Relations. (3) I, II.

Mr. Coleman, Mr. Graham, Mr. Neumann, Mr. Steiner, Mr. Cattell

A general survey of the institutions and agencies of international government, including the United Nations, with major stress on outstanding issues in contemporary diplomacy.

130. World Politics and National Policies: Atlantic Area. (3) I, II.

Mr. Mendel, Mr. Rosecrance

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.

131. World Politics and National Policies: Soviet Sphere. (3) I. Mr. Cattell

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. Replaces Political Science 130B.

132. New States in World Politics. (2) I, II.

Mr. Coleman, Mr. Wilson

An analysis of the foreign policies and the role in world politics of new states.

133A-133B. International Law. (3-3) Yr.

Mr. Neumann, Mr. Sherwood

A critical analysis of the general principles of the law of nations as demonstrated in the decisions of international and municipal tribunals and in the practices of nations. This course may be counted in either *Group II* or *Group V*.

134. International Relations of the Middle East. (3) II.

A study of the relations among the countries of the Middle East with special reference to the policies of the Great Powers.

136. International Relations of the Western Pacific Area. (3) I. Mr. Mendel

The foreign policies of Japan, and the interests and policies of other countries, particularly the United States, in the Western Pacific Area.

138. International Relations of East Asia. (3) II. Mr. Steiner, Mr. Wilson

The relations of the countries of the East Asian seaboard, especially China, with their neighbors and the other powers, with emphasis on contemporary interests and policies of the United States vis-a-vis China.

Group III.—Politics

141. **Politics.** (3) I, II. Mr. Titus
Prerequisite: consent of the instructor.
An analysis of political activities, with emphasis on methods of operating, capturing, and creating organizations.
142. **Elections.** (2) II. Mr. Titus, Mr. Marvick
An analysis of the history, rules, procedures, techniques, and politics of the American system of elections.
143. **Legislatures and Legislation.** (3) II.
Mr. Farrelly, Mr. Hinderaker, Mr. Marvick, Mr. Young
The functions of legislatures, the organization and procedure of typical legislative bodies, and the problems and principles of law making.
145. **Political Parties.** (2) I, II.
Mr. Farrelly, Mr. Hinderaker, Mr. McHenry, Mr. Marvick
Organization, functions, and practices of political parties primarily in the United States.
146. **Public Opinion and Propaganda.** (2) I, II.
Mr. Hinderaker, Mr. Marvick, Mr. Nixon
Prerequisite: upper division standing only.
A study of the nature and the means of formation of public opinion. Public opinion as a factor in popular government and as a control device in the modern state, with special reference to current conditions in American democracy.
147. **Political Behavior Analysis.** (3) I. Mr. Marvick
An introduction to quantitative methods in the study of political behavior, especially in relation to voting patterns, political participation, and techniques of political action.
148. **Public Relations.** (2) I, II. Mr. Hinderaker, Mr. Marvick, Mr. Titus
An analysis of principles, activities, problems, and distinctive types of organizations in the field of public relations.

Group IV.—Comparative Government

- 150A. **The Governments of Latin America.** (3) I. Mr. Fitzgibbon
A comparative study of governmental and political development, organization and practices in the states of Middle America.
- 150B. **The Governments of Latin America.** (3) II. Mr. Fitzgibbon
A comparative study of governmental and political development, organization and practices in the states of South America.
151. **The Governments of the Middle East.** (3) I. _____
A comparative study of government in the Arab States, Turkey and Iran.
152. **British Government.** (3) I. Mr. McHenry
The government and politics of the United Kingdom; the British constitution, parliament, parties and elections, foreign policies, administrative problems, and local governments.
153. **The British Commonwealth of Nations.** (2) II.
Mr. McHenry, Mr. Rosecrance
The constitutional and political relations of the United Kingdom and dominion governments; the governments of Canada, Australia, New Zealand, and the Union of South Africa.

154. The Governments of Central Europe. (3) II. Mr. Neumann

An intensive study of the political and constitutional organization of Germany and Danubian Europe, with special attention to contemporary political issues, parties, elections, and foreign relations.

155A. The Government of the Soviet Union. (3) I. Mr. Cattell, Mr. Swearer

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.

155B. Governments of Eastern Europe. (3) II. Mr. Cattell, Mr. Swearer

Prerequisite: course 155A, or the equivalent.

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 inter-regional relations.

156. The Governments of Tropical Africa. (3) I. Mr. Coleman

The governments of the independent states and dependent territories of Africa south of the Sahara and north of the Union of South Africa, with special reference to comparative colonial policies, nationalism, and the problems of nation building.

157. The Governments of Western Europe. (3) I. Mr. Neumann

The constitutional and political structure and development of the countries of western continental Europe, with special attention to contemporary problems.

158. Japanese Government and Politics. (3) II. Mr. Mendel

The structure and operation of the contemporary Japanese political system, with special attention to domestic political forces and problems.

159. Chinese Government and Politics. (3) II. Mr. Steiner

Organization and structure of Chinese government, with particular attention to the policies, doctrines, and institutions of Chinese communism; political problems of contemporary China.

160A. Government and Politics in South Asia. (3) II. Mr. Steiner

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.

160B. Government and Politics in Southeast Asia. (3) I. Mr. Wilson

The institutional structures and political processes of states in Southeast Asia (Burma, Thailand, Malaya, Laos, Cambodia, Vietnam, Indonesia, The Philippines) attending principally to problems of institutional transformations and political stabilization.

*Group V.—Public Law***161. The Anglo-American Legal System. (3) I, II.** Mr. Grant

Evolution of the English common law courts and their legal system, with special emphasis on the contributions made by canon law, the law merchant and equity; the theory of *stare decisis* as illustrated by the evolution of modern rules of negligence.

166. Administrative Law. (3) II. Mr. Sherwood

The rights, duties, and liabilities of public officers; relief against administrative action; extraordinary legal remedies; jurisdiction, conclusiveness, and judicial control; legal principles and tendencies in the development of public administration. This course may be counted in either *Group V* or *Group VI*.

167A. Constitutional Law. (3) I, II. Mr. Farrelly, Mr. Grant, Mr. Sherwood
General principles of constitutional law, federal and state; relations and powers of the federal government and the states.

167B. Constitutional Law. (3) I, II. Mr. Farrelly, Mr. Grant, Mr. Sherwood
Limitations on the federal government and the protection accorded to individual rights under the American constitutional system.

168. Government and Business. (3) II. Mr. Farrelly, Mr. Woll
Government activities in the preservation and regulation of competition, with special emphasis upon problems of administration and intergovernmental cooperation; regulation of trades and professions.

Group VI.—Public Administration and Local Government

171. State and Local Government. (3) I, II. Mr. Bollens, Mr. Crouch, Mr. McHenry
Development of state constitutions; the political, administrative, and judicial systems of state and county government; and relations between the state and local government, with special reference to California.

172. Municipal Government. (3) I, II. Mr. Bollens, Mr. Crouch
A study of the modern municipality in the United States; legal aspects of city government; local election problems; types of municipal government; problems of metropolitan areas; relationship of the cities to other units; problems bearing on city government today.

181. Principles of Public Administration. (3) I, II. Mr. Bollens, Mr. Ostrom
An introduction to modern theories of public administration; the relation of administration to the political process; and an analysis of special problems of public administration involving the regulation and control of resources, personnel, finance, organization, and public policy.

183. Problems in Public Administration. (3) I. Mr. Bollens, Mr. Ostrom
Problems of policy, organization and procedure in selected fields of public administration, with emphasis on administrative functions. It is anticipated that during 1961-1962, Semester I will be devoted to national administrative problems, and Semester II to planning.

184. Metropolitan Area Government. (3) II. Mr. Bollens
An analysis of the problems, politics, organization, and functions of government in metropolitan areas.

185. Public Personnel Administration. (3) I. Mr. Crouch
Evolution of public employment policies; a study of the principles and practices of public service personnel, including recruitment, promotion, morale and discipline, retirement, classification, compensation, unions of employees, organization of the personnel agency, and training for public employment.

186. National Policy and Administration. (3) I, II. Mr. Marvick, Mr. Woll
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.

187. The Administrative Process. (3) I. Mr. Sherwood, Mr. Woll
An analysis of (1) judicial control of the way in which administrative agencies operate, and (2) within these limits, the most effective procedures as demonstrated by experience. This course may be counted in either *Group V* or *Group VI*.

*Ungrouped***198. Special Courses. (1-3) I, II.**

Prerequisite: credit for 6 units of upper division courses in political science, and the special requirements necessary for the field selected for special study. Permission to register for this course is required of the instructor. These sections will be offered only to the extent justified by student demand. Each of them may take up in any given semester one or more special problems appropriate to the field.

Section 1. Techniques of Legal Research.

Mr. Farrelly, Mr. Sherwood, Mr. Grant

Section 2. Problems in International Relations.

Mr. Coleman, Mr. Graham, Mr. Steiner

Section 3. Readings in Political Theory.

Mr. Jenkin, Mr. Nixon

Section 4. Methods of Administrative Management.

Mr. Bollens, Mr. Ostrom

Section 5. Problems in Comparative Government.

Mr. Graham, Mr. Neumann

Section 6. Problems in Politics and Legislation.

Mr. Hinderaker, Mr. Marvick, Mr. Titus

Section 7. Problems in Latin-American Political Institutions.

Mr. Fitzgibbon

Section 8. Problems of the Pacific Area.

Mr. Steiner, Mr. Mendel

Section 9. Problems in Public Administration.

Mr. Crouch, Mr. Bollens

199. Special Studies. (1-5) I, II.

The Staff

Prerequisite: senior standing and consent of the instructor.

GRADUATE COURSES

Prerequisite for graduate courses 211 through 228: satisfactory completion of at least two upper division courses in the field, or the equivalent.

203. Scope and Methods. (3) I, II. Mr. Farrelly, Mr. Marvick, Mr. Ostrom

The scope, methods, techniques, interrelationships, and literature of political science as a whole. The course includes an examination of the historical development of political science, of its relation to other social sciences, of methods of dealing with problems of political science, and of techniques of research. Required of all candidates for a graduate degree.

211. Political Theory. (3) I, II.

Mr. Jenkin, Mr. Nixon

An analysis of the central problems of political theory and their relation to allied disciplines.

212. International Relations. (3) I, II.

Mr. Steiner, Mr. Coleman

An intensive analysis of the principles and practices of international organization, chiefly as illustrated in the operation of the United Nations and its specialized agencies.

214. Politics. (3) I, II.

Mr. Hinderaker, Mr. Marvick, Mr. Titus

An analysis of political leaderships, with emphasis on the American presidency and its relation to various aspects of American politics, including Congress, political parties, elections, and public opinion.

215. Comparative Government. (3) I, II.

Mr. McHenry, Mr. Neumann

An intensive and systematic analysis, employing the comparative approach, of the basic principles and problems of government of the major states and areas.

216. Public Law. (3) I. Mr. Sherwood, Mr. Grant
 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.

218. Public Administration and Local Government. (3) I. Mr. Bollens, Mr. Crouch
 The nature and scope of public administration and its role in a democratic society; basic problems in the execution of public policies on all levels of government, such as organization, personnel, finance, internal management, administrative powers and responsibilities, intergovernment relationships, and the impact of public opinion, pressure groups, and political parties on administration.

223. Administrative Management. (3) II. Mr. Crouch
 An intensive study of the role of the modern budget process and of the personnel program in government administration. This course is required for candidates for the M.P.A. degree; it may be elected by other qualified graduate students.

GRADUATE SEMINARS

Prerequisite for all graduate seminars: advance consent of instructors.

250. Seminars in Regional and Area Political Studies.

- 250A. Latin-American Studies. (3) Mr. Fitzgibbon
- 250B. Russian and Slavic Studies. (3) Mr. Cattell, Mr. Swearer
- 250C. Chinese and East Asian Studies. (3) Mr. Steiner
- 250D. Japanese and Western Pacific Studies. (3) Mr. Mendel
- 250E. African Studies. (3) Mr. Coleman
- 250F. Middle Eastern Studies. (3) _____
- 250G. Commonwealth Studies. (3) Mr. McHenry
- 250H. Western European Studies. (3) Mr. Neumann
- 250J. Southeast Asian Studies. (3) Mr. Wilson

252. Seminar in Public Law. (3) Mr. Farrelly, Mr. Grant, Mr. Sherwood

253. Seminar in International Relations. (3)
 Mr. Graham, Mr. Neumann, Mr. Steiner, Mr. Coleman

254. Seminar in Public Administration. (3) Mr. Crouch

256. Seminar in Comparative Government. (3)
 Mr. Graham, Mr. McHenry, Mr. Neumann, Mr. Steiner

257. Seminar in Political Theory. (3) Mr. Jenkin, Mr. Nixon

259. Seminar in Political and Electoral Problems. (3)
 Mr. Hinderaker, Mr. Marvick, Mr. Titus

262. Seminar in Municipal Government. (3) Mr. Bollens, Mr. Crouch

263. Seminar in Political and Administrative Aspects of Planning. (3)
 Mr. Bollens, Mr. Ostrom

298. Special Study and Research for M.A. Degree Candidates. (1-3) I, II.
 The Staff

299. Special Study and Research for Ph.D. Degree Candidates. (2-6) I, II.
 The Staff

401A-401B. Internship in Public Service. (1-3) I, II.

Mr. Woll

Directed work in applying the techniques of public administration during a period of service in a governmental agency. A required course for students enrolled in the Master of Public Administration program. Open to other properly qualified graduate students upon application.

BUREAU OF GOVERNMENTAL RESEARCH

The Bureau of Governmental Research conducts several programs of organized research and service. Included within it is a Program of Urban Studies, a Program of Public Policy Studies, and a large collection of documents, pamphlets, and periodicals relating to governmental administration and selected fields of public affairs. It administers the John Randolph Haynes and Dora Haynes Collection relating to California government and politics. It provides facilities for upper division and graduate students to pursue study and research in several fields relating to public administration, central and local governments, politics and elections, and public policy formulation. The work of the Bureau is conducted under a Director in consultation with a Faculty Advisory Committee appointed by the Chancellor.

The Bureau's central offices and document collection are located at Room 46, University Library.

PORTUGUESE

For courses in Portuguese, see under Department of Spanish and Portuguese.

PREVENTIVE MEDICINE

(Department Office, A3-115C Medical Center)

The Department of Preventive Medicine, in conjunction with the Department of Public Health, School of Public Health, offers a graduate program for certain qualified students. For information concerning courses and advanced degrees available, see the ANNOUNCEMENT OF THE SCHOOL OF PUBLIC HEALTH, the ANNOUNCEMENT OF THE SCHOOL OF MEDICINE and pages 65-67 and 420-428 of this bulletin.

PSYCHIATRY

A Department of the School of Medicine

(Department Office, B8-262 Medical Center)

Norman Q. Brill, M.D., *Professor of Psychiatry (Chairman of the Department)*.

Ivan N. Mensh, Ph.D., *Professor of Medical Psychology (Head, Division of Medical Psychology)*.

Frank F. Tallman, M.D., *Professor of Psychiatry (Head, Division of Preventive and Community Psychiatry)*.

Charles W. Tidd, M.D., *Professor of Psychiatry (Head, Division of Adult Psychiatry)*.

Eugene Pumpian-Mindlin, M.D., *Associate Professor of Psychiatry in Residence*.

Arnold B. Scheibel, M.D., *Associate Professor of Psychiatry and Anatomy*.

Frederic G. Worden, M.D., *Associate Professor of Psychiatry*.

Robert Thompson, Ph.D., *Associate Professor of Medical Psychology in Residence*.

Henry H. Work, M.D., *Associate Professor of Psychiatry (Head, Division of Child Psychiatry)*.

Justin D. Call, M.D., *Assistant Professor of Psychiatry.*

Pietro Castelnuovo-Tedesco, M.D., *Assistant Professor of Psychiatry in Residence.*

Keith S. Ditman, M.D., *Assistant Professor of Psychiatry in Residence.*

Joaquin M. Fuster, M.D., *Assistant Professor of Psychiatry in Residence.*

Harold Garfinkel, Ph.D., *Assistant Professor of Sociology in Residence.*

Robert H. Geertsma, Ph.D., *Assistant Professor of Medical Psychology in Residence.*

Wayne E. Jacobson, M.D., *Assistant Professor of Psychiatry in Residence.*

Ronald B. Koegler, M.D., *Assistant Professor of Psychiatry in Residence.*

Edward J. Kollar, M.D., *Assistant Professor of Psychiatry.*

Henry Lesse, M.D., *Assistant Professor of Psychiatry in Residence.*

James T. Marsh, Ph.D., *Assistant Professor of Medical Psychology.*

James O. Palmer, Ph.D., *Assistant Professor of Medical Psychology in Residence.*

Alexander C. Rosen, Ph.D., *Assistant Professor of Medical Psychology in Residence.*

Donald A. Schwartz, M.D., *Assistant Professor of Psychiatry in Residence.*

Robert J. Stoller, M.D., *Assistant Professor of Psychiatry.*

Lowell H. Storms, Ph.D., *Assistant Professor of Medical Psychology in Residence.*

Charles W. Wahl, M.D., *Assistant Professor of Psychiatry (Head, Division of Psychosomatic Medicine).*

David Abrahams, M.D., *Instructor in Psychiatry in Residence.*

Carol H. Broen, Ph.D., *Instructor in Medical Psychology in Residence.*

Alexander B. Caldwell, Jr., Ph.D., *Instructor in Medical Psychology in Residence.*

Herbert H. Eveloff, M.D., *Instructor in Psychiatry in Residence.*

William Flynn, M.D., *Instructor in Psychiatry in Residence.*

Joshua S. Golden, M.D., *Instructor in Psychiatry in Residence.*

Kenneth B. Holden, Ph.D., *Instructor in Medical Psychology in Residence.*

Thomas V. Hoyer, M.D., *Instructor in Psychiatry in Residence.*

Ronald S. Mintz, M.D., *Instructor in Psychiatry in Residence.*

Morris J. Paulson, Ph.D., *Instructor in Medical Psychology in Residence.*

Paul F. Slawson, M.D., *Instructor in Psychiatry in Residence.*

Marvin Spanner, Ph.D., *Instructor in Medical Psychology in Residence.*

Norris H. Weinberg, Ph.D., *Instructor in Medical Psychology in Residence.*

Admission to Graduate Status

1. General requirements of the Graduate Division.
2. Evidence of motivation, aptitude, and integrity.
3. Preliminary evaluation examinations.
4. The baccalaureate and the medical degrees.
5. A reading knowledge of one foreign language pertinent to the field of study.

Requirements for the degree of Master of Science in Psychiatry

General requirements of the Graduate Division (see pages 69-71). The candidate will ordinarily be required to follow Plan I as set forth in the general section on "Requirements for Master's Degree." However, in exceptional cases the candidate may, with the permission of the chairman of the department, be allowed to follow Plan II.

GRADUATE COURSES

252. Seminar in Medical Psychology. (2) I.

Mr. Mensh

Presentation of the history and foundation of psychological methods and techniques; basic concepts in psychology and their application to psychiatry.

257A-257B. Psychiatric Seminar. (2-2) Yr. Mr. Tidd

A presentation of the causes, nature and symptoms of mental and emotional disorders and the principles of their treatment.

262A-262B. Research Seminar. (1-1) Yr. Mr. Brill

This conference will include additional instruction and discussion on scientific methodology and experimental design and statistics. There will be reports by members of the staff and invited guests from other departments on research work in progress and discussions of work in prospect.

264A-264B. Seminar in Child Psychiatry. (1-1) Yr. Mr. Work

A study of the basic personality elements together with special problems encountered in work with children and the techniques of treatment.

273A-273B. Advanced Psychiatric Seminar. (2-2) Yr. The Staff

A study of the basic contributions in the field of mental illness, including the historical background and relation to allied fields.

275A-275B. Research in Psychiatry. (6-6) Yr. The Staff

Research in the field of psychiatry or allied fields under the supervision of the staff.

A group of elective courses are offered from which the candidate may choose, depending on the direction of his research interest, after consultation with the chairman.

RELATED COURSES IN OTHER DEPARTMENTS

Anatomy 255. Seminar in Endocrinology. (2) II.

Mr. Sawyer and Mr. Barraclough

Pharmacology 232. Fundamental Principles of Drug Action. (2) I.

Mr. Taylor

Pharmacology 251A-251B. Seminar in Pharmacology. (1-1) I, II. The Staff

Physiological Chemistry 234. Problems in Human Nutrition. (2) II.

Mr. Griffith

Physiology 204. Cardiovascular Physiology. (2) I.

Mr. Hall

Physiology 205. Physiology of Respiration. (2) I.

Mr. Hemingway

Physiology 206. Gastrointestinal Physiology. (2) I.

Mr. Sonnenschein

Physiology 207. Neurophysiology. (2) I.

Mr. Tschirgi



Special arrangements may be made for other elective courses.

PSYCHOLOGY

(Department Office, 3283 Franz Hall I)

Harry W. Case, Ph.D., *Professor of Engineering and Professor of Psychology.*

Roy M. Dorcus, Ph.D., *Professor of Psychology and Professor of Psychology in the School of Medicine.*

Joseph A. Gengerelli, Ph.D., *Professor of Psychology.*

Howard C. Gilhousen, Ph.D., *Professor of Psychology.*

Milton E. Hahn, Ph.D., *Professor of Psychology.*

F. Nowell Jones, Ph.D., *Professor of Psychology.*

Harold H. Kelley, Ph.D., *Professor of Psychology.*

¹Bruno Klopfer, Ph.D., *Clinical Professor of Psychology.*

George F. J. Lehner, Ph.D., *Professor of Psychology.*

¹ In residence fall semester only. 1961-1962.

Donald B. Lindsley, Ph.D., *Professor of Psychology (Chairman of the Department) and Professor of Psychology in the School of Medicine (Physiology.)*

Eliot H. Rodnick, Ph.D., *Professor of Psychology.*

John P. Seward, Ph.D., *Professor of Psychology.*

Marion A. Wenger, Ph.D., *Professor of Psychology.*

Franklin Fearing, Ph.D., *Professor of Psychology, Emeritus.*

Kate Gordon Moore, Ph.D., *Professor of Psychology, Emeritus.*

Richard P. Barthol, Ph.D., *Associate Professor of Psychology.*

†Richard Centers, Ph.D., *Associate Professor of Psychology.*

James C. Coleman, Ph.D., *Associate Professor of Psychology.*

†Andrew L. Comrey, Ph.D., *Associate Professor of Psychology.*

Wendell E. Jeffrey, Ph.D., *Associate Professor of Psychology.*

John H. Lyman, Ph.D., *Associate Professor of Engineering and Associate Professor of Psychology.*

Irving Maltzman, Ph.D., *Associate Professor of Psychology.*

George E. Mount, Ph.D., *Associate Professor of Psychology and Associate Professor of Engineering.*

Jessie L. Ruhlman, Ed.D., *Associate Professor of Psychology.*

*Joseph G. Sheehan, Ph.D., *Associate Professor of Psychology.*

S. Carolyn Fisher, Ph.D., *Associate Professor of Psychology, Emeritus.*

Norman H. Anderson, *Assistant Professor of Psychology.*

William E. Broen, Ph.D., *Assistant Professor of Psychology.*

Edward C. Carterette, Ph.D., *Assistant Professor of Psychology.*

Morton P. Friedman, M.A., *Acting Assistant Professor of Psychology.*

Michael J. Goldstein, Ph.D., *Assistant Professor of Psychology.*

Jaques W. Kaswan, Ph.D., *Assistant Professor of Psychology.*

Charles Y. Nakamura, Ph.D., *Assistant Professor of Psychology.*

Allen Parducci, Ph.D., *Assistant Professor of Psychology.*

Bertram H. Raven, Ph.D., *Assistant Professor of Psychology.*

Suresh Srivastva, Ph.D., *Lecturer in Psychology.*



Harry M. Grayson, Ph.D., *Clinical Professor of Psychology.*

Frank J. Kirkner, Ph.D., *Clinical Professor of Psychology.*

Myron Feld, M.D., *Associate Clinical Professor of Psychology.*

Charlyne T. Herbert, Ph.D., *Associate Clinical Professor of Psychology.*

Harrington V. Ingham, M.D., *Associate Clinical Professor of Psychology and Neuropsychiatrist, Student Health Service.*

Barbara M. Stewart, Ph.D., *Associate Clinical Professor of Psychology.*

Leonard V. Wendlund, Ph.D., *Associate Clinical Professor of Psychology.*

Dorothy V. Anderson, Ph.D., *Assistant Clinical Professor of Psychology.*

George W. Hohmann, Ph.D., *Assistant Clinical Professor of Psychology.*

George F. Seacat, Ph.D., *Assistant Clinical Professor of Psychology.*

Laurence A. Petran, Ph.D., F.A.G.O., *Professor of Music and University Organist.*

Gladys M. Jewett, Ph.D., *Lecturer in Psychology and Manager, Student Counseling Center.*

Edward Levonian, Ph.D., *Lecturer in Psychology.*

Lenore Rice Love, Ph.D., *Lecturer in Psychology, Psychology Out-Patient Clinic.*

Phillip Oderberg, Ph.D., *Lecturer in Psychology, Psychology Out-Patient Clinic.*

Frances B. Berres, M.A., *Supervisor in the Clinic School.*

Elise S. Hahn, Ph.D., *Associate Professor of Speech and Associate in the Psychological Clinic.*

† Absent on leave, 1961-1962.

* In residence spring semester only, 1961-1962

Benson H. Marsten, Ph.D., *Supervisor in the Clinic School.*

Chester Jensen, M.A., *Teaching Supervisor in the Clinic School.*

David Pablo Boder, Ph.D., *Research Associate in Psychology.*

Evelyn Gentry Hooker, Ph.D., *Research Associate in Psychology.*

Margaret Hubbard Jones, Ph.D., *Research Associate in Psychology.*

Letters and Science List.—All undergraduate courses in psychology are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

Preparation for the Major.—Required of all majors: Psychology 1A-1B. Upper division students changing to psychology should consult an adviser regarding lower division requirements. For nonmajors, course 101 will be acceptable as prerequisite for certain upper division courses as specified on page 411.

Recommended: courses from the following areas according to the student's interests. (a) natural science such as physics, chemistry, zoology, physiology; (b) social science such as anthropology, sociology, economics, political science, history; (c) mathematics, statistics; (d) humanities such as philosophy, languages, literature, art, music, drama.

Recommended for students who expect to do graduate study in psychology, at least 18 units, distributed among the following: (a) 6 units of cultural or social anthropology and/or sociology; (b) not less than 3 units of college chemistry; (c) one year of college physics, including laboratory; (d) college algebra and analytic geometry or mathematics for the social and life sciences; (e) not less than one year of work chosen from the following: general zoology, elementary physiology, elementary zoology and physiology, applied human physiology, general physiological biology, endocrinology, genetics. These students should also plan to take such courses as will give them the reading knowledge of two foreign languages required for the Ph.D. degree.

The Major.—Courses 105A, 106A, 126, 137, and 145A or 147, plus other upper division courses in psychology, to total not less than 24 upper division units. Upper division courses in other departments may not be substituted for this requirement.

General.—Undergraduates, preparing for graduate work, should include among their courses the following: statistics, experimental psychology, social psychology, learning theory, and contemporary history of psychology. Students are rarely accepted whose upper division work falls below a B average (3.0).

Graduate Requirements

All students should obtain from the departmental office a statement of the graduate requirements in psychology.

The department offers the M.A. and Ph.D. degrees in psychology. For the Ph.D., degree all students are required to obtain thorough grounding in research methodology and psychological theory. Specialized training is available in such areas of psychology as clinical, comparative, counseling, developmental, engineering, experimental, industrial, mathematical, measurement, physiological, and social.

Admission Requirements.—In addition to meeting the general graduate requirements listed on pages 69-74 of this bulletin, 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. Applicants should write to the Dean of the Graduate Division for an application form, and should, in addition, write to the Department of Psychology for other information and the necessary departmental forms. The completed departmental forms and transcripts must be received prior to February 15 for con-

sideration for the following fall semester. Normally, all applicants will have had an undergraduate major in psychology; however, outstanding students who have majored in other areas will be considered. *The closing date of February 15 should be carefully noted.*

Requirements for the M.A. and Ph.D. Degrees

All entering graduate students must take certain core courses in the department during their first year in residence. Performance in these courses will determine (a) whether qualified to continue toward the Ph.D., degree, or (b) whether qualified for completion of the M.A. degree. Required core courses for persons entering with an M.A. degree will be determined by a reviewing committee and/or examination.

M.A. Degree.—The M.A. degree is not required of candidates for the Ph.D. degree; however a student may qualify and apply for the M.A. degree after satisfactory completion of certain departmental core courses, comprehensive examinations, and the passing of a reading comprehension examination in one approved foreign language. The department follows Plan II. See page 71. A thesis is not required for the M.A. degree.

Ph.D. Degree.—Eligibility for an oral qualifying examination and admission to candidacy requires prior qualification in departmental core courses, qualification in comprehensive examinations in areas of specialization within the department, and the passing of reading comprehension examinations in two approved foreign languages. 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 his adviser and other members of the doctoral committee, after which he must pass a final oral examination on the dissertation and its implications.

Fellowships, Scholarships, Assistantships, and Stipends

At the present time almost all graduate students obtain work in the profession as assistants or trainees, or receive one of the many fellowships available within and without the University. Graduate students may also receive some financial assistance by serving as course readers. Applications for work or assistantships are sent to the department with the departmental application form; fellowship and scholarship forms may be obtained from and should be mailed to the Dean of the Graduate Division.

LOWER DIVISION COURSES

1A. Introductory Psychology. (3) I, II. Mr. Parducci and Staff

Consideration of facts and principles pertaining to the topics of perception, imagination, thought, feeling, and emotion, leading to the problems of experimental psychology, and the topics of intelligence and personality.

1B. Elementary Physiological Psychology. (3) I, II.

Prerequisite: course 1A. Mr. Carterette, Mr. Gengerelli, and Staff
Study of the integrative relations of psychological processes to nervous, muscular, and glandular features of the response mechanism, including the structure and functions of the sense organs.

33. Personal and Social Adjustment. (3) I, II. Mr. Lehner, Miss Rhulman

Prerequisite: course 1A.
The principles of mental hygiene. Orientation in the practical use of psychological principles in problems and circumstances encountered in college and later life.

UPPER DIVISION COURSES

Except as otherwise indicated, courses 1A and 1B are normally prerequisite to all upper division courses. For students not majoring in psychology, 1A, or

101, or the equivalent will meet the prerequisite for the following courses: 110, 112, 145A-B, 147, 167A-B, 180, 181, 185, 186, 187.

101. Principles of Psychology. (3) I, II. Mr. Levonian
Open to upper division students who do not have credit for courses 1A and 1B.

A critical discussion of the basic topics in psychology. Elementary details, including essential information concerning nervous, muscular, and glandular mechanisms will be covered by examinations based on readings.

105A. Mental Measurements. (3) I, II. Mr. Friedman
Students who have credit for any other course in statistics will receive only 1 unit of credit for this course.

A study of the construction, techniques of application, and interpretation of tests and scales. Practice in statistical procedures applicable to data derived from tests.

105B. Mental Measurements. (2) I, II. Mr. Broen
Prerequisite: course 105A.

Further study of the principles of measurement, stressing basic concepts. Application to problems of test construction, administration, and interpretation.

106A. Experimental Psychology. (3) I, II. Mr. Mount
Lectures and demonstrations, two hours; laboratory, two hours; assigned readings. Prerequisite or concurrent: course 105A.

Methods, techniques, and typical results in experimental research in psychology.

106B. Experimental Psychology. (3) II. Mr. Jones, ———
Lectures, two hours; laboratory, two hours; assigned readings and reports. Prerequisite: course 106A.

Continuation of the study of methods, techniques, and typical results in experimental research. Emphasis is placed on the conditions and requirements of representative laboratory experiments and evaluation of associated experimental literature.

107. Advanced Psychometric Methods. (3) I, II. Mr. Gengerelli
Recommended: course 105B; Mathematics 3B or 37. The application of higher statistical methods to psychological data.

108. Physiological Psychology. (3) I. Mr. Wenger
Integrative activities, consciousness, intelligent behavior, receptor and effector processes in relation to neuromuscular structure and function. Facts, problems, and methods.

109. Research Methods in Human Dynamics. (3) I. ———
Lecture, two hours; laboratory, two hours.

Application of experimental techniques to problems in human adjustment. Group and individual projects will give experience in planning research, treating and interpreting data, and describing experiments.

110. Educational Psychology. (3) I, II. Miss Rhulman
A general survey of the basic principles of psychology that are pertinent to education. Includes a study of growth and development, abilities, intelligence, social and emotional factors, and principles of learning.

112. Child Psychology. (3) I, II. Mr. Jeffrey
An elaboration of the developmental aspects of physical, mental, social, and emotional growth from birth to adolescence.

- 113. Psychology of Adolescence.** (2) II. Miss Rhulman
Prerequisite: course 112.
The physical, psychological, and social development of the adolescent. Essentially a continuation of child psychology, but with relatively greater emphasis on personality formation and problems of social adjustment.
- 120. History of Psychology.** (3) II. Mr. Maltzman
The development of psychological theories and research to the end of the nineteenth century.
- 126. Contemporary Psychology.** (2) I, II. Mr. Carterotte, ———
Recommended: course 120.
The variant tendencies in current psychology, including a critical examination of the more important so-called "schools" of psychology.
- 131. Sensation and Perception.** (2) I. Mr. Jones
Intensive study of sense perception, with reference to the structure and functions of sense mechanisms, and experimental findings.
- 134. Motivation.** (2) II. Mr. Gilhousen
Theories and experimentally determined facts concerning drives, needs, preferences, and desires.
- 135. Imagination and Thought.** (2) I. Mr. Maltzman
An analysis of experimental studies of problem solving, reasoning, insight, concept formation, and related topics.
- 137. Learning: Simple Processes.** (2) I, II. Mr. Seward, ———
Prerequisite: course 105A; recommended, course 126.
An experimental approach to the primary problems of how learning is related to what an individual perceives, wants, and does. Basic facts of conditioning and other elementary forms of learning provide an introduction to the major contemporary theories.
- 138. Feeling and Emotion.** (2) II. Mr. Wenger
The nature and basis of the affective factor in life, with particular emphasis on the critical evaluation of affective theory. This is not a course in personality and emotional adjustment.
- 139. Learning: Complex Processes.** (3) II. Mr. Seward
Prerequisite: course 137.
Integration of verbal and motor skills; conditions of remembering, forgetting, and transfer of training. Emphasis is on the theoretical significance of experimental findings. Students may conduct their own experiments.
- 142. Human Communication.** (2) I. ———
Prerequisite: courses 145A-145B or 147, or consent of the instructor.
Role of communication in human social organization; psychological factors involved in the creation and manipulation of symbols; art, drama, and science as forms of communication. Particular attention will be given to the social and psychological aspects of the mass media of communication, radio, and motion pictures.
- 143. Propaganda and Public Opinion.** (2) II. ———
Prerequisite: course 145A-145B or 147, or consent of the instructor.
Propaganda as a form of communication. The detection, analysis, and effects of propaganda. The creation, manipulation, and measurement of public opinion; the relation between public opinion and propaganda; the relation between the mass media of communication and public opinion and propaganda.

144. Psychological Interviewing and Case History Methods. (3) II.

Mr. Goldstein

Lectures, two hours; laboratory, two hours. Prerequisite: senior or graduate standing and permission of the instructor.

Procedures, methods, and problems in the collection of personal data in the interview situation.

145A-145B. Social Psychology, General Course. (2-2) Yr.

Course 145A is prerequisite to course 145B.

_____, Mr. Kelley

Interaction between the individual and the group; the individual in the group. Critical analysis of concepts of group mind, imitation and suggestion; rational and irrational motives in group living. Social motivation, attitudes, values, opinions, and beliefs, in relation to group personality structure. Adjustments and maladjustments as conditioned by cultural and subcultural group pressures.

146. Attitude and Opinion Measurement. (3) I.

Mr. Centers

Prerequisite: two semesters of social psychology or consent of the instructor.

The nature of attitudes and opinions, and their measurement by means of various types of attitude scales and public opinion surveys. Study design, formulation of questionnaires and interview schedules, sampling methods, techniques of interviewing, analysis of results, and applications to various psychological problems. Class projects and field work.

147. The Psychological Method in the Social Sciences. (3) II.

Mr. Raven

Psychological factors in major social problems, including social control, propaganda, group conflict, cultural determination, etc.

148. Personality Structure and Development. (3) I.

Mr. Kaswan

The psychological, behavioral, and cultural role of perception, learning, and motivation in personality. These topics will be discussed in the context of current research and major theories, such as those of Freud, Fromm, Horney, Sullivan, Miller and Dollard, Lewin, and others.

149. Group Dynamics. (3) I.

Mr. Raven

Prerequisite: course 145A or 147.

The theory and phenomena of group behavior; effects of group membership on the individual; relations between groups; methods of group observation; role of groups in society.

150A. Animal Psychology. (3) I.

Mr. Gilhausen

General survey of the behavior of the higher forms of animal life.

150B. Animal Psychology. (3) II.

Mr. Gilhausen

Prerequisite: course 150A or consent of the instructor.

A more intensive study of facts and theories concerning motivation, learning, and problem solving. Lectures and laboratory demonstration.

***160. Mental Deficiency. (2) I.**

Lectures, readings, discussions, demonstrations. Prerequisite: course 112 or the equivalent.

A study of mental retardation and related abnormalities in children and adults, including a consideration of causes, classifications, special traits, and educational, vocational, and social problems and needs.

161. The Psychology of Exceptional Children. (3) II.

Prerequisite: course 112 or the equivalent.

A study of the nature, diagnosis, and treatment of exceptional disabilities and problem behavior in individual children or special groups.

* Not to be given, 1961-1962.

- 162. Speech Pathology.** (2) II. Mr. Sheehan
Recommended: courses 108, 168.

A clinical approach to speech problems with emphasis on stuttering and neurological disorders and their treatment.

- 167A. Remedial Techniques in Basic School Subjects.** (2) I, II. Mr. Coleman

The diagnosis and treatment of reading, spelling, and other school disabilities in children and adults. Clinical demonstration, testing, and training of typical cases.

- 167B. Laboratory in Remedial Techniques.** (2-4) I, II. Mr. Coleman

Lecture, one hour; laboratory, five hours. Laboratory course for course 167A.

- 168. Abnormal Psychology.** (3) I, II. Mr. Goldstein

Study of the dynamics and prevention of abnormal behavior, including neuroses, psychoses, character disorders, psychosomatic reactions and other abnormal personality patterns.

- *169. Psychology of the Physically Handicapped.** (2) II. _____

A study of the basic facts, principles, and methods of understanding the personality and behavior of individuals who possess physical handicaps, with particular reference to methods of reeducation and adjustment. Psychological disabilities resulting from sensory and motor disorders, illness and disease, and injury will be discussed.

- 172A-172B. Psychology of Music.** (3-3) Yr. Mr. Petran

A study of the psychological factors and problems in music from the points of view of the listener, performer, and composer.

- 180. Psychology of Advertising and Selling.** (2) I. _____

The relative strength of the desires in buying; attention value of form, size, color, and typographical layout and methods of measuring the effectiveness of advertisements; characteristics of salesman.

- 181. Problems in Human Relations.** (3) I, II. Mr. Barthol, Mr. Srivastva

Understanding human relations, problems and developing skills in inter-personal relations. Topics include the effective use of human resources; group management and leadership skills; interviewing, counseling, and conference techniques. Does not carry credit toward major in psychology.

- 185. Personnel Psychology.** (2) I. Mr. Case

The methods of selection, classification, and training of employees.

- 186. Occupational Counseling and Job Classification.** (2) I. Mr. Case

Prerequisite: courses 105A, 185.

Principles of occupational counseling; nature and sources of occupational information; methods of job analysis and creation of job families.

- 187. Industrial Psychology.** (2) II. Mr. Barthol

The psychological aspects of work methods, conditions of work, training, employee motivation, and morale.

- 188A-188B. Psychological Bases of Counseling.** (2-2) Yr. Mr. Hahn

Prerequisite: open to senior and graduate students who have preparation in educational psychology, statistics, tests and measurements, mental hygiene, or abnormal psychology. Permission of the instructor.

* Not to be given, 1961-1962.

The logical and experimental approaches to human aptitudes, abilities, and interests as used in counseling. Mental organization, physiological and psychological traits, individual and group educational-vocational-personality characteristics, derivation of interest and ability pattern, pattern analysis and its counseling applications.

- 199. Special Studies in Psychology.** (1-3) I, II. The Staff
Prerequisite: senior standing and consent of the instructor.

GRADUATE COURSES

- 200. Learning.** (3) I. Mr. Seward
An intensive study of experimentation on the fundamental processes: reinforcement, extinction, generalization, and discrimination.

- 201. Perception.** (3) I. Mr. Parducci
Basic experiments and theories of perception and judgment, with applications to learning, motivation, and personality. Laboratory demonstrations and individual experiments.

- 202. Personality.** (3) I. Mr. Rodnick
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.

- 203A. Advanced Psychological Statistics, I.** (3) I. Mr. Friedman
Prerequisites: 107A and Mathematics 37 or the equivalent.
Review of fundamental concepts. Basic statistical techniques as applied to the design and interpretation of experimental and observational research.

- 203B. Advanced Psychological Statistics, II.** (3) II. Mr. Anderson
Prerequisite: 203A.
Advanced experimental design and planning of investigations.

- 204. Physiological Correlates of Behavior.** (3) II. Mr. Lindsley
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.

- 205. Social Psychology.** (3) II. Mr. Kelley
An intensive consideration of the concepts, theories, and major problems in social psychology, and the principal methods of research centering around them.

- 206. Experimental Laboratory.** (3) II. Mr. Kaswan, Mr. Maltzman, Mr. Parducci, Mr. Raven
Students will design and conduct original research projects under the supervision of the instructor in charge.

- 207. Quantitative and Laboratory Methods in Psychology.** (3) II. Mr. Mount
Fundamentals of measurement, laboratory techniques and instruments, sources and types of error, treatment and presentation of data, problems in the design and interpretation of experiments in representative areas of laboratory investigation.

- 208. Mathematical Psychology.** (3) II. Mr. Anderson
Prerequisite: Mathematics 37 or equivalent. Desirable: probability theory.
Construction and analysis of mathematical models of behavior. Emphasis on applications to research in learning, perception, social, and other areas.

- 209. Factor Analysis. (3) I.** Mr. Comrey
Theory and practice of factor analysis in psychological research. Methods of factor extraction and rotation. Applications of computers to computations in factor analysis.
- 210. Multivariate Analysis in Psychological Research. (3) II.** Mr. Comrey
The use of multivariate techniques as they relate to the problems of personality profiles and psychological classification. Multiple discriminant functions, generalized distance functions, and multidimensional scaling.
- 211. Theory of Mental Tests. (3) II.** Mr. Broen
Prerequisite: Psychology 107, 203A-203B.
Fundamental assumptions and equations of test theory. Methods of estimating the variables involved.
- *212. Advanced Perception. (3) I.** Mr. Carterette
Prerequisite: Psychology 201.
Advanced study of topics in perception with emphasis on theories of perception.
- 213. Psychology of Vision. (3) II.** Mr. Mount
Prerequisite: Psychology 201.
An advanced treatment of psychophysiology and psychophysics of vision with special attention to modern theories.
- 214. Psychology of Audition. (3) I.** Mr. Carterette
Prerequisite: Psychology 201.
An advanced treatment of the psychophysiology and psychophysics of audition with special attention to modern theories.
- 215. Psychophysics. (3) II.** Mr. Jones
Prerequisite: Psychology 201.
Intensive study of the psychophysical methods with laboratory applications.
- 216. Advanced Learning. (3) I.** Mr. Anderson
Prerequisite: Psychology 200.
A discussion of experimental research and theoretical analyses of selected topics such as frustration, curiosity, effects of early experience, schedules of reinforcement, and verbal learning.
- 217A-217B. Clinical Psychology. (2-2) Yr.** Mr. Nakamura, Mr. Bodnick
Prerequisite: course 161 or 168, or the equivalent.
- 218. Verbal Behavior and Thinking. (3) I.** Mr. Maltzman
Prerequisite: Psychology 200, recommended 135.
Experimental research and theories dealing with such topics as meaning, verbal conditioning, problem solving, originality, and normal and schizophrenic thinking.
- 219. Theories of Behavior. (3) II.** Mr. Seward
Prerequisite: Psychology 200.
A critical analysis of the major premises influencing current research: Hull, Guthrie, Tolman, Skinner, Spence, Estes, and others.
- 222. Personality Dynamics. (2) II.** Mr. Lehner
A survey of the theoretical views of Freud, Jung, Adler, Rank, and various modern writers, including Allport, Lewin, Murray and Murphy
- 223. Hypnosis and Its Therapeutic Applications. (2) II.** Mr. Dorcus
Prerequisite: course 257A, or the equivalent.
This course will acquaint the student with theories, techniques of induction, and its applications in therapy.

†224A-224B. **Theory and Practice in Projective Methods.** (2-2) Yr.

Mr. Klopfer, Mr. Spiegelman

Prerequisite: courses 217A, and 217B or 230A or 252A; consent of the instructor. Recommended: courses 144, 230B.

Survey of theories and fields of application of projective methods, and supervised practice in techniques.

225. **Rationale and Methods of Research in Projective Techniques.** (3) I.

Prerequisite: course 224A-224B. Recommended: course 203B. Mr. Klopfer
Advanced Rorschach interpretation.

*226. **Experimental Approaches to Clinical Psychology.** (2) I. Mr. Lindsley

A survey of techniques and procedures employed in experimental and physiological psychology as they relate to problems in clinical psychology. Emphasis will be placed upon research in, and the development of, new psychodiagnostic measures, using the classical experimental literature on perception, attention, emotion, action, etc., as a guide.

227A-227B. **Tools and Techniques of Diagnosis in Psychological Counseling.** (3-3) Yr.

Mr. Hahn

Prerequisite: courses 105A-105B, 148, or the equivalents, recommendation of adviser, and consent of the instructor.

Study of the theoretical and practical problems arising from the use of psychological methods and instruments on case work material.

228. **Psychophysiology of Brain Function.** (2) I.

Mr. Lindsley

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.

230A-230B. **Clinical Measurement Techniques.** (3-3) I, II.

(Former number, 219A-219B.)

Mr. Broen, Mr. Sheehan

Advanced study of tests in clinical diagnostic study, including individual and group tests of intelligence, structured personality tests, and projective techniques. Emphasis will be placed on application in the clinical situation. Lecture and laboratory.

231. **Advanced Developmental Psychology.** (3) II.

Mr. Jeffrey

Prerequisite: Psychology 112 or equivalent.

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 preparing students for clinical and research work with children.

235A-235B. **Advanced Industrial Psychology.** (2-2) I, II.

Mr. Barthol

(Former number, 215A-215B.)

Selection and training of employees; factors influencing efficiency or work.

*252A-252B. **Seminar in Mental Measurements.** (3-3) Yr.

Mr. Comrey

253A-253B. **Seminar in Physiological Psychology.** (3-3) Yr.

Mr. Wenger

Prerequisite: course 108 or the equivalent.

254. **Seminar in Experimental Child Psychology.** (3) I.

Mr. Jeffrey

255. **Seminar in Clinical Child Psychology.** (3) II.

Mr. Nakamura

256. **Seminar in the Psychological Aspects of Aging.** (3) I.

Mr. Goldstein

* Not to be given, 1961-1962.

† Both 224A and 224B to be given fall semester only.

- 257A. Introduction to Psychotherapy.** (3) I. Mr. Dorcus
Open to students enrolled in Psychology 279A-279B or 401A-401B, or upon consent of the instructor.
- 257B. Individual Psychotherapy.** (3) II. Mr. Ingham
Open to students enrolled in Psychology 279A-279B or 401A-401B, or upon consent of the instructor.
- 257C. Group Psychotherapy.** (3) I. Mr. Lehner
- *258A-258B. Seminar in Abnormal Psychology.** (3-3) Yr. Mr. Dorcus
- 259. Seminar in Learning Disorders.** (3) II. Mr. Coleman
An intensive review and intergration of experimental findings relating to the role of neurophysiological, psychological, and sociological factors in learning difficulties. Diagnostic and treatment implications will be explored.
- 262. Seminar in Clinical Psychology and Speech Pathology.** (3) I. Mr. Sheehan
- 263A-263B. Seminar in Social Psychology.** (3-3) I, II. Mr. Kelley
(Former number, 255A-255B.)
- 264A-264B. Seminar in Group Behavior.** (3-3) I, II. ———, Mr. Raven
(Former number, 256A-256B.)
- *266. Seminar in Opinion and Attitude Research.** (3) I. Mr. Centers
- 267. Critical Problems in Social Psychology.** (3) I. Mr. Centers
- *268. Individual Dynamics and Their Social and Cultural Determinants.**
(3) II. Mr. Centers
Consideration of the facts, problems and theories concerning the interdependence between motivation systems, value patterns, attitudes, beliefs, and other personality characteristics of the individual and the cultural and social environment.
- 277A-277B. Field Work in Personnel Psychology.** (3-6; 3-6) Yr. Mrs. Jewett and the Counseling Staff
Prerequisite: regular graduate standing and upper division or graduate work in tests and measurements, statistics, mental hygiene or abnormal psychology, and counseling methods; recommendation of the adviser and consent of the instructor.
Internship in the Student Counseling Center, which includes psychometrics, observation of counseling, preparation of case materials for counselors, record keeping, tests scoring, case discussions, and participation in other service activities. Minimum of ten hours per week, including one to two hours of staff meetings and conferences.
- 278A-278B. Research in Psychology.** (1-6; 1-6) Yr. The Staff
Required each semester of all graduate students, beginning with the first semester of the second year (except for terminal M.A. candidates).
- 279A-279B. Field Work in Clinical Psychology.** (3-6; 3-6) Yr.
Prerequisite: consent of the adviser.
Students in the Veterans Administration Clinical Training Program are required to register for this course each semester.
Section 1. General Clinical Psychology. The Clinical Staff
Practical work in hospitals and clinics in clinical diagnostic testing and psychotherapy.

- Section 2. Speech Pathology. Mr. Sheehan
Practical work in hospitals and clinics in diagnostic testing and psychotherapy with speech disorders.
- Section 3. Counseling Psychology. The Counseling Staff
280. Seminar in Advanced Mathematical Psychology. (3) I. _____
Prerequisite: Psychology 208 and permission of instructor.
281. Seminar in Critical Problems in Research Methods. (3) I. Mr. Mount
Current critical problems in the area of research and quantitative methods. Topics selected will vary with the interests of students and instructor.
- *282. Critical Problems in Sensation. (3) I. Mr. Jones
Prerequisite: Psychology 201.
283. Language and Communication. (3) II. Mr. Carterette
Prerequisite: Psychology 201.
284. Critical Problems in Perception. (3) I. Mr. Kaswan
Prerequisite: Psychology 201.
285. Seminar in Conditioning. (3) I. _____
Prerequisite: Psychology 200.
286. Seminar in Motivation. (3) I. Mr. Gilhousen
Prerequisite: Psychology 200.
287. Seminar in Higher Mental Processes. (3) II. Mr. Maltzman
Prerequisite: Psychology 218.
- *288. Problems in Behavior Theory. (3) II. Mr. Seward
Prerequisite: Psychology 219.
Critical issues will be examined with emphasis on the experimental strategies necessary to resolve them.
289. Seminar in Comparative Learning. (3) II. Mr. Gilhousen
Prerequisite: Psychology 200.
- *290. Critical Problems in Learning. (3) I. _____
291. Seminar in Somesthesia and the Chemical Senses. (3) II. Mr. Jones
- 401A-401B. Internship in Applied Psychology. (3-6; 3-6) Yr.
Prerequisite: consent of the adviser.
- Section 1. Clinical Psychology. The Staff
Section 2. Psychological Counseling. The Staff
Section 3. Industrial Psychology. The Staff

PUBLIC ADMINISTRATION

For requirements for the degree Master of Public Administration see page 397 of this bulletin.

PUBLIC HEALTH

(Department Office, 1209 Home Economics Building)

John M. Chapman, M.D., M.P.H., Professor of Epidemiology, Professor of Preventive Medicine and Public Health and Professor of Infectious Diseases.

Fred A. Bryan, M.D., Professor of Public Health, Professor of Preventive Medicine and Public Health, and Professor of Medicine.

Albert F. Bush, M.S., Professor of Sanitary Engineering and Professor of Engineering.

* Not to be given, 1961-1962.

- Wilfrid J. Dixon, Ph.D., *Professor of Biostatistics and Professor of Preventive Medicine and Public Health.*
- Gladys A. Emerson, Ph.D., *Professor of Nutrition.*
- Jean S. Felton, M.D., *Professor of Occupational Health, Professor of Preventive Medicine and Public Health, and Associate Professor of Medicine.*
- Lenor S. Goerke, M.D., M.S.P.H., *Professor of Public Health (Chairman of the Department) and Professor of Preventive Medicine and Public Health (Chairman of the Department).*
- Wendell H. Griffith, Ph.D., *Professor of Public Health Nutrition, Professor of Chemistry and Professor of Physiological Chemistry.*
- Edward B. Johns, Ed.D., *Professor of School Health Education and Professor of Physical Education.*
- John F. Kessel, Ph.D., *Professor of Infectious Diseases—Parasitology and Tropic Diseases.*
- Paul A. Lembecke, M.D., M.P.H., *Professor of Public Health and Professor of Preventive Medicine and Public Health.*
- Aaron F. Rasmussen, Ph.D., M.D., *Professor of Infectious Diseases—Virology.*
- Frank F. Tallman, M.D., *Professor of Public Health Psychiatry and Professor of Psychiatry.*
- Wilton L. Halverson, M.D., Dr.P.H., *Professor of Public Health and Professor of Preventive Medicine and Public Health, Emeritus.*
- Roslyn B. Alfin-Slater, Ph.D., *Associate Professor of Nutrition.*
- John Beeston, M.B., D.P.H., *Associate Professor of Public Health and Associate Professor of Preventive Medicine and Public Health.*
- Ralph Goldman, M.D., *Associate Professor of Geriatrics and Associate Professor of Medicine.*
- Alfred H. Katz, M.A., D.S.W., *Associate Professor of Public Health, Associate Professor of Social Welfare in Medicine and Associate Professor of Social Welfare.*
- Frank J. Massey, Ph.D., *Associate Professor of Biostatistics (Vice-Chairman of the Department), and Associate Professor of Preventive Medicine and Public Health.*
- Edward L. Rada, Ph.D., *Associate Professor of Food Economics.*
- Wilfred Sutton, Ed.D., *Associate Professor of School Health Education and Associate Professor of Physical Education.*
- Marian Swendseid, Ph.D., *Associate Professor of Public Health Nutrition and Physiological Chemistry.*
- Daniel M. Wilner, Ph.D., *Associate Professor of Behavioral Studies in Public Health and Associate Professor of Preventive Medicine and Public Health.*
- Henry H. Work, M.D., *Associate Professor of Public Health Psychiatry and Associate Professor of Psychiatry.*
- Olive Jean Dunn, Ph.D., *Assistant Professor of Biostatistics and Assistant Professor of Preventive Medicine and Public Health.*
- Lonis W. Liverman, M.S.W., *Assistant Professor of Public Health and Assistant Professor of Social Welfare in Medicine.*
- Frederick J. Post, Ph.D., *Assistant Professor of Sanitary Science and Assistant Professor of Preventive Medicine and Public Health.*
- Leo G. Reeder, Ph.D., *Assistant Professor of Public Health, Assistant Professor of Preventive Medicine and Public Health, and Lecturer in Sociology.*
- Miriam G. Wilson, M.D., *Assistant Professor of Pediatrics.*
- John N. Belkin, Ph.D., *Lecturer in Public Health and Professor of Entomology.*
- Richard H. Brenneman, Ph.D., *Lecturer in Occupational Health.*
- Edith M. Carlisle, Ph.D., *Lecturer in Public Health Nutrition.*
- Robert T. P. de Treville, M.D., *Lecturer in Occupational Health.*
- Kenneth M. Eastman, B.S., *Lecturer in Hospital Administration.*
- Dean W. Gilman, M.D., *Lecturer in Public Health.*

- John R. Goldsmith, M.D., *Lecturer in Public Health.*
 Hyland J. Hebert, M.D., *Lecturer in Public Health.*
 Herbert L. Herschensohn, Sc.B., M.D., *Lecturer in Public Health, Associate Clinical Professor of Preventive Medicine and Public Health, and Associate Clinical Professor of Medicine.*
 Gerald A. Heidbreder, M.D., M.P.H., *Lecturer in Public Health and Assistant Clinical Professor of Infectious Diseases.*
 Rutherford T. Johnstone, A.B., M.D., *Lecturer in Public Health, Clinical Professor of Preventive Medicine and Public Health, and Clinical Professor of Medicine.*
 Paul LeVan, M.D., *Lecturer in Venereal Disease Control and Associate Clinical Professor of Medicine.*
 Hallett A. Lewis, M.D., *Lecturer in Occupational Health.*
 Edward P. Luongo, M.D., *Lecturer in Public Health, Associate Clinical Professor of Preventive Medicine and Public Health, and Associate Clinical Professor of Medicine.*
 Harold Mazur, M.D., M.P.H., *Lecturer in Public Health.*
 Florence C. McGucken, M.S., *Lecturer in Nutrition (Dietetics).*
 Byron O. Mork, M.D., M.P.H., *Lecturer in Public Health and Associate Clinical Professor of Preventive Medicine and Public Health.*
 Agnes A. O'Leary, R.N., M.P.H., *Lecturer in Public Health and Associate Professor of Public Health Nursing.*
 Paul F. O'Rourke, M.D., M.P.H., *Lecturer in Public Health.*
 Harriett B. Randall, M.D., *Lecturer in Public Health.*
 Ernest M. Sable, A.B., M.P.H., *Lecturer in Hospital Administration.*
 Ralph E. Sachs, M.D., *Lecturer in Public Health.*
 Charles Senn, B.S. (C.E.), M.S. (P.A.), *Lecturer in Public Health.*
 George W. Stevenson, M. D., *Lecturer in Public Health and Assistant Professor of Pharmacology.*
 Leo Tepper, M.D., *Lecturer in Tuberculosis Control.*
 Robert E. Thomas, M.D., *Lecturer in Community Mental Health.*
 Packard Thurber, Jr., M.D., *Lecturer in Public Health and Associate Clinical Professor of Preventive Medicine and Public Health.*
 J. Albert Torribio, M.S.S.W., M.S.W., *Lecturer in Health Education.*
 Edward J. Zaik, M.S., M.D., *Lecturer in Public Health, Associate Clinical Professor of Preventive Medicine and Public Health, and Associate Clinical Professor of Medicine.*

Letters and Science List.—Course 5, 100, 110, 147, 160A are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

School of Public Health

Curriculum requirements for the Bachelor of Science degree and the Master of Science degree are described in the ANNOUNCEMENT OF THE SCHOOL OF PUBLIC HEALTH and on pages 63-67 of this bulletin.

LOWER DIVISION COURSE

- 5. Individual and Community Health.** (3) I, II. Mr. Beeston
 An introduction to the understanding of the equilibrium between the internal forces in Man and the external forces in his environment which relate to health, and to the evolution, prevention, and control of disease.

UPPER DIVISION COURSES

- 100. Principles of Public Health.** (3) I, II. Mr. Beeston
 The identification of health service needs and the philosophy, principles and methods of community organization concerned with meeting these needs.

106. Economic Problems of Families. (3) I. Mr. Rada

Prerequisite: Economics 1A-1B.

An analysis of the major economic problems of production, income, and consumption affecting individuals and different types of American families.

107. Family Finance. (3) II. Mr. Rada

Prerequisite: Economics 1A-1B, and course 106 or consent of the instructor.

Management of household income and assets in relation to expenditures. The role of savings, consumer credit, personal investment, home ownership, insurance, social security, and taxes in household financial planning.

108. Housing of American Families. (3) I. Mr. Rada

Prerequisite: Economics 1A-1B; three field trips to be arranged.

The economic history of housing, standards of housing, essentials of healthful housing, supply and demand factors affecting housing prices, economic costs, government activities affecting housing; prevention and abolition of slums.

102A-102B. Medical Record Library Science. (3-3) Yr. Mr. Lembcke and the Staff

Lectures, two hours; laboratory, three hours. Prerequisite: enrollment as a major in public health.

Nosology; principles of coding, indexing and filing systems in medical records libraries, and their use in research and education.

110. Environmental Health. (3) I, II. Mr. Post

Prerequisite: Bacteriology 1, or Zoology 1A and Chemistry 1A.

The fundamentals of environmental sanitation, including an introduction to the relationship of the physical environment to preventive medicine.

112. Public Health Engineering. (3) I. Mr. Senn

Prerequisite: course 110, and consent of the instructor.

Public Health engineering principles for nonengineers, relating to surveys, reviews and sanitary control of water supplies, waste disposal, ventilation and air pollution, drainage and building design and equipment.

134. Community Health Education. (3) I, II. Mr. Beeston, Mr. Torribio

Lectures, two hours; laboratory, three hours.

The theory, principles, and practices of education and community organization involved in promoting health. Consideration of health facts and fallacies, communication, and motivation of individuals, groups, and communities.

147. Principles of Epidemiology. (3) I, II. Mr. Heidbreder, Mr. Chapman

Lectures, two hours; laboratory, three hours. Prerequisite: Bacteriology 1, Zoology 1A-1B, course 160A.

Introduction to epidemiology including study of factors governing the occurrence of infectious and noninfectious diseases in populations. Laboratory problems illustrative of basic principles of epidemiology.

153. Public Health Microbiology. (4) I. Mr. Post

Lectures, three hours; laboratory, three hours. Prerequisite: Bacteriology 1, Chemistry 1A-1B; primarily for seniors or graduate students.

Principles of microbiology relevant to sanitation of water, sewage, soil, refuse, milk and foods.

160A. Introduction to Biostatistics. (3) I, II. Mr. Massey, Mrs. Dunn

Lectures, two hours; laboratory, three 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.

160B. Introduction to Biostatistics. (3) I, II. Mr. Massey, Mrs. Dunn
Lectures, two hours; laboratory, three hours. Prerequisite: course 160A, or consent of the instructor.

Introduction to analysis of variance, regression, correlation, sequential analysis, distribution-free methods, bioassay.

160C. Introduction to Biostatistics. (3) I. Mrs. Dunn, Mr. Massey
Lectures, two hours; laboratory, three hours. Prerequisite: courses 160A, 160B, or consent of the instructor.

Experimental design and analysis of variance as applied in modern research; linear and multiple regression, complete and incomplete block design, factorial experiments, Latin squares, analysis of covariance, multiple comparisons, and related topics.

161. Demography. (3) II. Mrs. Dunn, Mr. Massey
Lectures, two hours; laboratory, three hours. Prerequisite: course 160A, or consent of the instructor.

The description of human populations including elements of vital statistics, demography and life tables. Methods of sampling from human populations with appropriate procedures for estimating parameters and for testing hypotheses.

170. Occupational Health. (2) I, II. Mr. Bryan, Mr. Felton
A survey of the field of occupational health and hygiene. Discussion of occupational diseases and hazards, their evaluation, and methods of control; plant medical services and other organizations concerned with occupational health problems.

180. Survey of Public Health. (3) I, II. Mr. Lembecke and the Staff
Lectures, three hours. Prerequisite: B.N., senior standing in the School of Nursing, or consent of the instructor.

Principles of epidemiology, public health administration, and occupational health.

198. Special Courses. (1-5) I, II. The Staff

199. Special Studies. (1-5) I, II. The Staff
Prerequisite: senior standing and consent of the Chairman of the Department.

GRADUATE COURSES

200A-200B. Principles of Health Administration and Organization. (3-3) Yr. Mr. Goerke, Mr. Wilner
Lectures, two hours; laboratory, three hours. Prerequisite: consent of the instructor.

The study of administrative theory, principles and practice in providing health services. Special consideration is given to the use of managerial techniques and procedures by social institutions organized to integrate medical programs of prevention, therapy, and rehabilitation.

201A. Hospital Administration. (3) I. Mr. Lembecke
Lectures, two hours; laboratory, three hours. Prerequisite: consent of the instructor. On completion of course 201A, students will take 201B or 201C according to their particular interest and background.

Principles of the organization and administration of general hospitals and medical care agencies.

201B. Hospital Administration. (3) II. Mr. Lembecke

Lectures, two hours; laboratory, three hours. Prerequisite: course 201A.

Principles of the organization and administration of general hospitals and medical care agencies.

201C. Mental Hospital and Health Program Administration. (3) II.

Mr. Thomas, Mr. Lembecke

Lectures, two hours; laboratory, three hours. Prerequisite: course 201A.

Study of the principles involved in planning, organizing, and administering institutional, outpatient, and preventive programs in the mental health field. Lectures, discussion, case studies, and field observation.

202A-202B. Medical Care Administration. (2-2) Yr. Mr. Lembecke

Prerequisite: consent of the instructor.

Medical economics, private, and governmental medical care programs, and education in medicine and the allied professions are studied, together with methods and results of evaluating the quality of medical care.

203A-203B. Maternal and Child Health. (2-2) Yr. Mrs. Wilson and the Staff

Prerequisite: consent of the instructor.

Study of medical and social programs affecting the life and health of mothers and children; problems of fertility, conception, and pregnancy wastage, and the association of abnormal maternal factors with premature birth; and with later abnormalities in children.

210. Environmental Health. (3) II. Mr. Senn

Prerequisite: course 110, or equivalent.

Theoretical considerations of the complex relationship of the physical environment to preventive medicine and public health.

213A. Environmental Science. (2) I. Mr. Bush

Prerequisite: course 112, or equivalent, or consent of the instructor.

Advanced study of relationship of the physical environment to man.

213B. Environmental Science. (2) II. Mr. Post

Prerequisite: course 153, or equivalent, or consent of the instructor.

Advanced study of the relationship of the biological environment to man.

220A-220B. Occupational Health Administration. (2-2) Yr.

Prerequisite: consent of the instructor.

Mr. Felton and the Staff

Detailed consideration of the philosophy, organization, and operation of an occupational health program in various types of manufacturing industry, distributive trades, commerce, public utilities, and research installations.

221A-221B. Occupational Environmental Control. (2-2) Yr.

Mr. Bryan and the Staff

Lecture, one hour; laboratory, three hours. Prerequisite: consent of the instructor.

The identification, measurement, evaluation, and control of physical and chemical environmental factors affecting the health of industrial workers. Development and use of control measures and devices providing a safe occupational environment.

222. Air Pollution. (2) II. Mr. Bryan and the Staff

Lecture, one hour; laboratory, three hours. Prerequisite: consent of the instructor.

Consideration of air pollution in cities as a health and control problem. The

effects of exposure of the population to air pollutants produced by industrial wastes or manufacturing methods.

223. Occupational Radiologic Safety. (2) I. Mr. Bryan
Prerequisite: consent of the instructor.

Uses of radioisotopes and various radiation-producing devices in industry. Types of radiation, their sources, detection, measurement, and monitoring. Biologic effects and methods of protection against typical radioactive materials and sources.

224. Industrial Toxicology. (3) I. Mr. Stevenson, Mr. Bryan, Mr. Felton
Lectures, two hours; laboratory, three hours. Prerequisite: consent of the instructor.

The use of chemical and clinical laboratory techniques in the investigation of toxic manifestations of industrial hazards.

225. Occupational Psychiatry. (2) II. Mr. Felton, Mr. Tidd, Mr. Tallman
Prerequisite: Psychology 1A and 33 or equivalent, or Sociology 131, and consent of the instructor.

A consideration of the emotional problems of the worker as a factor in his ability to produce satisfactorily. The recognition, control, referral, and emergency treatment of the emotional and psychiatric problems of the industrial worker.

234. Community Health Education. (2) I. Mr. Beeston
Prerequisite: consent of the 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.

235. Health Education in Clinical Settings. (2) II. Mr. Beeston
Prerequisite: 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.

240A-240B. Biostatistics. (3-3) Yr. Mr. Dixon, Mr. Massey
Prerequisite: courses 160A, 160B, 160C, Mathematics 4A, or consent of the instructor.

Quantitative methods in public health, medicine, and the biological sciences, statistical theory and application of problems in the design and analysis of experiments and surveys.

241. Advanced Biostatistics. (3) I. Mrs. Dunn
Prerequisite: Statistics 131A-131B, Mathematics 108, plus the equivalent of 6 units of statistical methods.

Topics in probability and distribution theory leading toward multivariate analysis as it is used in biological and medical situations.

242. Multivariate Biostatistics. (3) II. Mrs. Dunn
Prerequisite: course 241 or equivalent.

Multivariate analysis including topics from: component analysis, factor analysis, discriminant functions, analysis of dispersion, canonical analysis.

243. Mathematical Theory of Epidemics. (3) I. Mr. Massey
Prerequisite: courses in upper division mathematics including statistics and probability.

Mathematical theory used in epidemic situations. Deterministic and stochastic models. Problems involved in applying the theory.

245. Research Methods in Community Health. (2) II.

Prerequisite: course 160A, or equivalent. Mr. Reeder and the Staff

Preparation for planning and conducting research projects; methods and techniques of community health research including discussion of current research projects and presentation of students' own research plans.

246. Introduction to Epidemiology. (3) I.

Mr. Chapman and the Staff

Lectures, two hours; laboratory, three hours. Prerequisite: D.V.M., D.D.S., or M.D. degree; consent of the instructor.

247. Advanced Epidemiology. (3) II.

Mr. Chapman

Lectures, two hours; laboratory, three hours. Prerequisite: course 246 or 147, or equivalent; consent of the instructor.

Advanced study of epidemiology of acute and chronic disease including epidemiologic research methods and appraisal of current knowledge.

248A. Advanced Problems in Epidemiology; Chronic Disease. (2) I.

Mr. Chapman and the Staff

Prerequisite: course 247; consent of the instructor.

Detailed study of selected epidemiologic problems with critical evaluation of current research; emphasis on chronic disease epidemiology including cancer, cardiovascular disease, mental illness, and injury.

248B. Advanced Problems in Epidemiology; Infectious Disease. (2) II.

Mr. Chapman and the Staff

Prerequisite: course 247; consent of the instructor.

249. Society, Culture, and Health. (2) I.

Mr. Reeder

Prerequisite: consent of the instructor.

Relationship of 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.

252A-252B. Seminar in Public Health Psychiatry. (2-2) Yr.

The Staff

Prerequisite: consent of the instructor.

Study of community problems in mental disease, retardation, deviations, and delinquency, and the social agencies that have been developed to meet them. Covers also such areas as marriage counseling, divorce, psychological problems of aging, and forensic psychiatry. Emphasis is placed on the role of research in public health psychiatry.

253A-253B. Seminar in Medical Care Administration. (2-2) Yr.

Prerequisite: enrollment in course 202A-202B. Mr. Lembecke and the Staff

Advanced study, by the seminar method, of the areas of medical care described for course 202A-202B.

256A-256B. Seminar in International Health. (2-2) Yr.

Prerequisite: consent of the instructor.

Mr. Halverson and the Staff

A survey and analysis of the problems and implications, and current research in the field of world health and population levels, and a study of the origin, orientation and purpose of the multilateral and bilateral agencies functioning in this field.

257A-257B. Seminar in Health Administration and Organization. (2-2) Yr.

Mr. Goerke, Mr. Lembecke and the Staff

(Numbered course 259A-259B prior to 1960-1961.)

Prerequisite: consent of the instructor, and enrollment in course 200A-200B.

Advanced study of the areas of health administration and organization described for course 200A-200B.

- 261A-261B. Seminar in Community Health Education.** (1-1) Yr.
Prerequisite: consent of the instructor. Mr. Beeston and the Staff
- 265A-265B. Seminar in Epidemiology.** (2-2) Yr.
(Numbered course 249 prior to 1960-1961.) Mr. Chapman and the Staff
Prerequisite: consent of the instructor.
- 269A-269B. Seminar in Biostatistics.** (1-1) Yr.
Mr. Dixon, Mrs. Dunn, Mr. Massey
Prerequisite: consent of the instructor.
- 274A-274B. Seminar in Occupational Health.** (1-1) Yr. Mr. Felton
Prerequisite: consent of the instructor.
A consideration of the problems, methodology, and research literature of occupational health as they relate to contemporary clinical findings, research needs, and control measures. A study of the interrelationships of current professional literature and the work scene in surrounding industries.
- 280A-280B. Seminar in Environmental Health.** (1-1) Yr. Mr. Post
Prerequisite: consent of the instructor.
- 290. Special Group Studies.** (1-5) I, II. The Staff
Prerequisite: consent of the instructor.
A. Community and Institutions.
B. Environmental Health.
C. Epidemiology of Specific Diseases.
D. Hospital Administration.
E. International Health.
F. Maternal and Child Health.
G. Medical Care Administration.
H. Occupational Health.
J. Public Health Psychiatry.
- 297. Individual Studies for Graduate Students.** (1-5) I, II. The Staff
Prerequisite: consent of the instructor.
- 299. Research for Thesis or Dissertation.** (1-5) I, II. The Staff
Prerequisite: consent of the instructor.
- 402A-402B. Medical Records Analysis and Research.** (3-3) Yr.
Mr. Lembcke and the Staff
Lectures, two hours; laboratory, three hours. Prerequisite: consent of the instructor.
Medical and administrative research, using clinical records. Design and use of special records for anterospective studies. Analysis of hospital services. Introduction to the principles of medical auditing.

RADIOLOGY

(Department Office, B5-117 Medical Center)

- Leslie R. Bennett, M.D., *Professor of Radiology.*
Andrew H. Dowdy, M.D., D.Sc., *Professor of Radiology (Chairman of the Department).*
Moses A. Greenfield, Ph.D., *Professor of Radiology.*
Raymond L. Libby, Ph.D., *Professor of Radiology.*
Bernard J. O'Loughlin, M.D., Ph.D., *Professor of Radiology.*
Justin J. Stein, M.D., *Professor of Radiology.*
Ross Golden, M.D., D.Sc., *Visiting Professor of Radiology.*

Leo G. Rigler, M.D., *Visiting Professor of Radiology.*

Gerald M. McDonnell, M.D., *Associate Professor of Radiology.*

Amos Norman, Ph.D., *Associate Professor of Radiology.*

Richard E. Ottoman, M.D., *Associate Professor of Radiology and Anatomy.*

Richard F. Riley, Ph.D., *Associate Professor of Radiology and Physiological Chemistry.*

William N. Hanafee, M.D., *Assistant Professor of Radiology.*

Edward A. Langdon, M.D., *Assistant Professor of Radiology.*

Joseph L. Westover, M.D., *Assistant Professor of Radiology.*

Requirements for Admission to Graduate Status

Candidates for admission to graduate status in the Department of Radiology must conform to the general requirements set by the Graduate Division for admission to such status. In addition to meeting the requirements of the Graduate Division, the student must have received the bachelor's degree from one of the colleges of this University, based on a curriculum that includes the requirements for full graduate status in a department of his major subject, or must have pursued successfully an equivalent course of study elsewhere.

All students admitted to graduate status in the Department of Radiology are required, during their first semester in residence, to take a preliminary examination in the physical, chemical, and biological foundations of medical physics and the radiological sciences. Satisfactory performance in these examinations is prerequisite to continuation of graduate standing in the department. These examinations are designed to evaluate the scientific competence of the student and to facilitate the work of the staff in recommending a study program which will most effectively aid his development.

Areas of Study.—Study in the fields of radiation physics, radiation biology and radiation chemistry will be open to qualified candidates.

Requirements for the Degree of Master of Science in Radiology

1. General University Requirements. Candidates for the Master of Science degree in the radiological sciences must conform to the general requirements set by the Graduate Division for this degree. The candidate may elect either Plan I (thesis) or Plan II (comprehensive final examination) as set forth on pages 70-71 of this bulletin.

2. Departmental Requirements.

- (a) Satisfactory completion of requisite departmental courses.
- (b) Satisfactory completion of work in a minor field.
- (c) Reading knowledge of one foreign language pertaining to the field of study.
- (d) A thesis (Plan I) or a comprehensive final examination (Plan II).

Requirements for the Doctor's Degree in Medical Physics (Radiology)

1. General University Requirements. Candidates for the doctorate in Medical Physics (Radiology) must conform to the general requirements set by the Graduate Division for this degree. It should be noted that the student must pass a series of written and oral examinations before admission to candidacy.

2. Departmental Requirements.

- (a) Admission to Candidacy. Admission to candidacy is granted only after the student has passed a qualifying oral examination in the physical, biological, and chemical foundations of medical physics. This examination may not be taken more than twice. The student's guidance committee will be appointed by the chairman of the department upon admission to regular status in the department.
- (b) Course Requirements.
 - (1) Satisfactory completion of requisite departmental courses.
 - (2) Satisfactory completion of such courses as the guidance commit-

tee may recommend as appropriate for the development of the student.

- (c) Foreign Languages. A reading knowledge of French and German normally is required.
- (d) General. Prospective candidates for the doctor's degree are responsible for completion of all technical requirements for this degree.

It should be noted that the doctorate in Medical Physics (Radiology) is not granted merely upon completion of routine requirements as to examinations, courses and dissertation; fulfillment of such requirements is a prerequisite. The doctor's degree will be granted only to students who have clearly demonstrated both an adequate grasp of a broad field of knowledge and their ability to contribute to that field of knowledge by original and independent research.

GRADUATE COURSES

200. Radioactivity—Principles and Measurements. (2) I.

Mr. Greenfield and the Staff

This course gives the necessary physical and mathematical background for the use of radiation techniques and isotopes in biological research and measurements of nuclear radiations.

201. Applied Nuclear Physics. (2) II.

Mr. Libby and the Staff

Isotope methodology in biological research; instrumentation, detection and the quantitative determination of radioactivity.

202A–202B. Clinical Radioisotopes. (1–5) I, II. Mr. Bennett and the Staff

Application of radioisotopes to clinical problems. Course intended for physicians and radiation physicists.

204A–204B. Introduction to Foundations of Radiobiology. (2) I, II.

Mr. Riley

Effects on chemical and biological systems; this course is intended primarily for residents in radiology and graduate students. Moderately advanced courses in physics, mathematics and chemistry will be required. Consent of instructor needed.

206A–206B. Radiological Physics. (2) I, II.

Mr. Greenfield and the Staff

Production of X rays, interaction of X rays and X rays with matter, and so forth. Laboratory includes instruction in necessary mathematical techniques, measurement of quality and quantity of X rays, study of electrical components used in X-ray generators.

206C–206D. Radiological Physics Laboratory. (2) I, II.

Mr. Greenfield and the Staff

Isodose determination in phantoms, X-ray and isotope dosimetry, calibration of instruments, radiation surveys, problems in scanning.

209. The Quantitative Culture of Mammalian Cells. (2) I or II. Mr. Norman

Techniques for quantitative studies on mammalian cells in vitro with applications to radiation biology, genetics and virology. By permission of instructor.

211. Roentgenoscopy. (2–6) I or II.

Mr. O'Loughlin and the Staff

A survey of the mobility and density characteristics of various fluids, fat protein and mineral solids naturally occurring in the body, with more intensive study of their interrelationships and their similar tissues will also be explored. Dynamic physiological and pathological changes will be studied.

212. Radiation Therapy. (2–6) I or II.

Mr. Stein

A survey of basic principles of radiobiology, with special attention to reactions of neoplastic and inflammatory processes to ionizing radiation of

various types. The distribution and summation of radiation effects and their relationship to the growth of cancer will be intensively studied. The systemic effects of radiation, radiation sickness, and the pharmacological problems posed will be of particular interest.

213. Roentgen Diagnosis. (2-6) I or II. Mr. O'Loughlin and the Staff

Deliberate analysis of the graphically recorded changes noted roentgenoscopically as well as the tissue changes apparent with various disease entities. An attempt is made to understand the pathogenesis of these processes and to arrive at diagnostic and prognostic conclusions in each instance. Anatomical development is also studied, and differentiation between normal and abnormal growth is estimated.

214A-214B. Pediatric Radiology. (1) I, II. Mr. O'Loughlin
Special methods in diseases in children.

218A-218B. Analytic Roentgenology. (2) I, II. Mr. Dowdy and the Staff
Analytic studies of current autopsy and surgical material and the related roentgenograms.

220A-220B. Forensic Radiology, History and Ethics. (1) I, II. Mr. Golden and Mr. Rigler

The history of radiology up to the present. Forensic and ethical problems in radiology. Special attention will be given to the radiologist's relations with his patient, his colleagues and the state.

260A-260B. Radiology Seminar. (1-3) I, II. Mr. Dowdy and the Staff

Joint critical study by students and instructors of the fields of organized knowledge pertaining to radiology. Periodic contributions are made by visiting professors. Research in progress is discussed.

297A-297B. Research for Individual Graduate Students. (1-6) I, II. The Staff

299. Research on Dissertation. (1-6) I, II. The Staff

PROFESSIONAL COURSES

403A-403B. Combined Diagnostic Conference. (5) I, II. Mr. O'Loughlin and the Staff

Group analysis of diagnostic problems found in hospital and clinical practice.

404A-404B. Radiation Therapy Conference. (1) I, II. Mr. Stein and the Staff

Presentation of selected current therapeutic problem cases of general interest.

405. Consultative Tumor Board. (1-3) I or II. Mr. Dowdy and Mr. Stein
Presentation of tumor cases for diagnosis and appropriate therapy with discussion of differential diagnosis and combinations of therapy such as surgery, X ray, radium therapy, and isotopes.

413. Radiation Safety. (0) I or II. Mr. Libby and the Staff

This course is designed to instruct graduate students, residents, technicians and others in methods of safely handling and confining radioactive materials.

451A, 451B, 451S. Seminar in Radiology. (10) I, II. Mr. Dowdy and the Staff

The Seminar in Radiology will consist of daily clinical teaching exercises.

RESIDENCY TRAINING AND POSTDOCTORAL GRADUATE WORK

A four-year residency training program is offered in the Department of Radiology. This program, which covers all the divisions of Radiology and the Seminar in Radiology (Radiology 451A, 451B, 451S), leads to a certificate awarded by the School of Medicine and the Department of Radiology. Requests for information concerning prerequisites and application for appointment may be addressed to the office of the Chairman, Department of Radiology, University of California, Los Angeles 24, California.

RESEARCH

Investigative activities are encouraged throughout the department, and other departments are encouraged to make use of the personnel and facilities of the Department of Radiology in research pertaining to radiology.

ROMANCE LANGUAGES AND LITERATURES*The Degree of Doctor of Philosophy in Romance Languages and Literatures*

Candidates for the degree of Doctor of Philosophy in Romance languages and literatures will be accepted with major fields in French, Italian, or Spanish. The requirements listed below should be regarded as minimum requirements; guidance committees may supplement those listed.

I. Minimum prerequisites for admission to candidacy:

1. A reading knowledge of Latin (equivalent at least to that gained in two high school years), French, German, Italian, and Spanish to be tested by a written examination.
2. An A.B. degree, with the equivalent of a major in French, Italian, or Spanish at the University of California.
3. The satisfactory completion of one year's work in the Graduate Division of the University or in another recognized graduate school.
4. The passing of qualifying examinations according to the regulations of the University.

II. Minimum requirements for the degree:

1. Two years of graduate study according to the regulation of the University as contained on pages 71-74 of this bulletin. An additional year of foreign study is recommended.
2. Within the general field of Romance languages and literature, specialization in one or more of the Romance literatures or in Romance philology.

A. Requirements for candidates whose principal interest is literary:

- (a) A specific knowledge of French, Italian, and Spanish literatures.

Each guidance committee will advise the candidate how best to meet the requirements in each of the fields.

- (b) A specific knowledge of the philology of the major field.

B. Requirements for candidates whose principal interest is philological:

- (a) A specific knowledge of Vulgar Latin, Old French, Old Provençal, Old Italian, and Old Spanish.

- (b) A specific acquaintance with French, Italian, Spanish, and Old Provençal literatures, with a special emphasis on the literature of the language of the student's main interest.

Each guidance committee will advise the candidate how best to meet the requirements in each of the fields.

‡ See also French (page 227), Italian (page 275), and Spanish (page 440).

SANSKRIT

For courses in Sanskrit, see under Department of Classics.

SCANDINAVIAN LANGUAGES

For courses in Scandinavian Languages, see under Department of Germanic Languages.

SLAVIC LANGUAGES

(Department Office, 332 Royce Hall)

Kiril Taranovski, Ph.D., *Professor of Slavic Languages.*

———, *Visiting Professor of Slavic Languages.*

Kenneth E. Harper, Ph.D., *Associate Professor of Slavic Languages.*

Vladimir Markov, Ph.D., *Assistant Professor of Slavic Languages.*

Dean S. Worth, Ph.D., *Assistant Professor of Slavic Languages.*

Gertrude H. Worth, Ph.D., *Assistant Professor of Germanic and Slavic Languages.*

———, *Instructor in Slavic Languages.*

Nina M. Wiren, *Associate in Slavic Languages.*

Letters and Science List.—All courses in Slavic Languages are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

Preparation for the Major.—Courses 1, 2, 3A-3B, 18A-18B, and History 146A-146B (to be taken in the sophomore year).

The Major.—(1) Requirement in language: courses 103A-103B (or, with permission of the chairman, 104A-104B), 122A-122B, and four units chosen from courses 104A-104B, 111A-111B, 112A-112B, 124A-124B. (2) Requirement in literature: course 130 and 9 units chosen from courses 132, 137, 138, 143A-143B, 145, 147, 149, 150.

Admission to Graduate Status

The completion of the undergraduate major or its equivalent with a minimum grade-point average of 2.5 is required. Students entering from other institutions may be required to take a placement examination in Russian language and literature before enrolling in courses.

Requirements for the Master's Degree

1. For the general requirements, see pages 69-71. The department follows Plan II (comprehensive examination).

2. Application for advancement to candidacy may be made when the student has passed the reading examination in French or German.

3. *Language requirements: The student must demonstrate*

(a) fluent reading, writing and speaking knowledge of Russian (normally equivalent to completion of courses 104B and 120) and

(b) a reading knowledge of one western or southern Slavic language (normally equivalent to completion of course 111A-111B or 112A-112B).

4. *Course requirements:* 24 units in Slavic languages, of which at least 12 must be in strictly graduate courses, and to include course 220 and at least one seminar course.

5. A final written examination, based both on course work and on reading suggested by the department, will cover the following fields:

(a) *Linguistics:* an acquaintance with the basic elements of comparative

Slavic linguistics and a thorough knowledge of the history and structure of Russian, including the techniques of historical and structural analysis;

- (b) *Literature*: an acquaintance with the history of Russian literature from its Kievan origins through the Soviet period, and a thorough knowledge of the major developments and figures of the nineteenth and early twentieth centuries.

6. A final oral examination will test the student in the fields of his major interests and on his general background. This examination will be conducted partly in English, partly in Russian.

Requirements for the Doctor's Degree

General Requirements.—See pages 71–74 of this bulletin.

Foreign Languages.—French and German are required.

Qualifying Examinations.—The nature and scope of a series of written qualifying examinations will be prescribed for each candidate by the department. All candidates are expected to have a sound general knowledge of both Slavic philology and Slavic literary history, at least equivalent to that required for the master's degree at this University. In particular, candidates specializing in Slavic literatures will be expected to demonstrate thorough knowledge of the history and structure of the language in which their major literature is written. In addition, candidates specializing in linguistics and literary history respectively will be expected to demonstrate a more detailed mastery of either:

- (a) *Slavic Linguistics*, including (a) Old Church Slavic and Comparative Slavic Linguistics and (b) the history and structure of one major and two minor Slavic languages (one each from the Eastern, Western, and Southern groups), which presupposes (c) reading knowledge of a third Slavic language in addition to Russian and the second language chosen for master's degree; or
- (b) *Slavic Literatures*, including (a) the entire body of Russian literature from its origins until the present and (b) basic knowledge of the principles and problems of comparative Slavic literary history, which presupposes (c) knowledge of the major figures and developments in the literature of a second Slavic country.

LOWER DIVISION COURSES

- 1. Beginning Russian.** (4) I, II. The Staff
The first course in the Russian language. To meet five times a week.
- 1G. Elementary Russian—Reading Course for Graduate Students.** (No credit) I, II. The Staff
Four hours a week.
- 2. Elementary Russian.** (4) I, II. The Staff
Prerequisite: course 1.
Continuation of course 1. To meet five times a week.
- 3–4. Second-Year Russian.** (4–4) Yr. Beginning either semester. The Staff
Prerequisite: courses 1, 2. Upper division students who are not majors in Slavic languages may receive upper division credit for this course. To meet five times a week.
- 18A–18B. Elementary Russian Conversation.** (1–1) Yr. The Staff
Prerequisite: grade A or B in course 2 or permission of the department.
A course in Russian conversation designed to accompany the lectures and recitations of courses 2 or 3A. Open only to students who are taking 2 or 3A.

UPPER DIVISION COURSES

- 103A-103B. Third-Year Russian.** (3-3) Yr. Mrs. Worth
Prerequisite: course 3-4.
- 104A-104B. Fourth-Year Russian.** (3-3) Yr. Mr. Worth
Prerequisite: course 103A-103B.
- 111A-111B. Elementary Polish.** (3-3) Yr. _____
Prerequisite: course 4, or consent of the instructor.
Basic course in the Polish language.
- *112A-112B. Elementary Serbocroatian.** (3-3) Yr. Mr. Taranovski
Prerequisite: course 4, or consent of the instructor.
Basic course in the Serbocroatian language.
- 119A-119B. Intermediate Russian Conversation.** (2-2) Yr. Mrs. Wiren
Prerequisite: courses 1, 2, and 18A-18B, or the equivalent.
- 120A-120B. Advanced Russian Conversation.** (2-2) Yr. Mrs. Wiren
Prerequisite: course 119A-119B.
- 122A-122B. The Russian Language.** (3-3) Yr. Mrs. Worth
Prerequisite: course 3-4.
Structure and development.
- 124A-124B. Advanced Russian Composition.** (2-2) Yr. Mr. Markov
Prerequisite: course 103A-103B.
- 130. Survey of Russian Literature to 1917.** (3) I. Mr. Markov
Lectures and reading in English. Required of all majors. Open to all upper division students, and to sophomores with the permission of the instructor.
- 132. Russian Literature since 1917.** (3) II. Mr. Harper, Mr. Markov
A survey of Soviet literature. Lectures and reading in English. Open to all upper division students.
- *137. The Russian Drama.** (3) II. Mr. Harper
A survey of Russian drama from the seventeenth century to the twentieth. Lectures and reading in English.
- 138. Russian Folk Literature.** (3) II. Mr. Markov
Prerequisite: course 4, or consent of the instructor.
Analysis of and reading in the various genres of Russian folk prose and poetry. Conducted in Russian.
- 143A-143B. Russian Novelists of the Nineteenth Century.** (2-2) Yr. Mr. Markov
Lectures and reading in English. Open to all upper division students. Course 143A is not prerequisite to 143B.
- *145. Tolstoy.** (3) II. Mr. Harper
A study of Tolstoy's principal novels, short stories, plays, and essays, in English. Open to all upper division students.
- *147. History of Russian Poetry.** (3) I. Mr. Markov
The development of epic, lyric, and dramatic poetry.

* Not to be given, 1961-1962.

- *149. **Readings in Russian Poetry.** (3) II. Mr. Markov
Prerequisite: courses 4 and 147, or consent of the instructor.
Analysis of representative Russian lyric poetry in the original; versification, imagery, style. Conducted in Russian.
150. **Survey of Polish Literature.** (3) II. _____
Lectures and reading in English.
199. **Special Studies.** (1-3) I, II. The Staff
Prerequisite: senior standing and consent of the department.
220. **Old Church Slavic.** (3) I. _____
221. **Old Russian.** (3) II. Mr. Taranovski
Prerequisite: course 220.
- *222. **Comparative Slavic Linguistics.** (3) II. Mr. Taranovski
Prerequisite: course 220. Recommended: Linguistics 180.
The development of Common Slavic from Indo-European and its divergence into the separate Slavic languages.
- 225A, B, C. **The Structure of Modern Russian.** Mr. Taranovski, Mr. Worth
- 225A. **Phonetics and Phonology.** (2) I. Mr. Taranovski
- 225B. **Morphology.** (2) II. Mr. Taranovski
- 225C. **Syntax.** (2) II. Mr. Worth
227. **Eastern Slavic Languages.** (3) I. Mrs. Worth
Historical dialectology and synchronic comparison of the three Eastern Slavic languages (Russian, Ukrainian, Belorussian).
228. **Slavic Poetics.** (3) II. Mr. Taranovski
Selected topics in the structure and development of Slavic metrical systems. Conducted in Russian.
- *229. **History of the Russian Language.** (3) I. Mr. Taranovski, Mrs. Worth
Selected topics in the historical phonology, morphology, syntax, and lexicology of Russian, with emphasis on the development of the literary language.
240. **Old Russian Literature.** (3) I. Mr. Worth
Translated and original literature of the Kievan period.
241. **Russian Literature of the XIV-XVII Centuries.** (3) II. Mr. Worth
Literature of the feudal period and the rise of Muscovite literature.
242. **Eighteenth-Century Russian Literature.** (3) I. Mr. Markov
Prose, poetry, and drama of the Classical period.
243. **Pushkin.** (3) II. Mr. Harper, Mr. Markov
- *246. **Symbolism and Post-Symbolism.** (3) II. Mr. Markov
- *265. **Seminar in the Russian Novel.** (3) I. Mr. Harper
266. **Seminar in Russian Poetry.** (3) I. Mr. Taranovski, Mr. Markov
- *267. **Seminar in Russian Criticism.** (3) I. Mr. Harper

* Not to be given, 1961-1962.

- 270. Seminar in Structural Analysis. (3) II.** Mr. Worth
Selected problems in the structural analysis of Russian and/or other modern Slavic languages.
- 271. Seminar in Historical Linguistics. (3) I.**
Prerequisite: course 220. Mr. Taranovski, Mrs. Worth
Selected problems in the historical development of Russian and/or other Slavic languages.
- *273. Seminar in Russian Epic Tradition. (3) II.** Mr. Worth
Textual analysis, reconstruction, and literary significance of the *Igor' Tale*, *Zadonščina*, *Skazanie o Mamaevom Pobojšše* and connected works.
- 297. Individual Studies for Graduate Students. (2-6) I, II.** The Staff

SOCIAL WELFARE

(Department Office, 238 Business Administration-Economics Building)

- Donald S. Howard, Ph.D., L.H.D., *Professor of Social Welfare.*
Karl de Schweinitz, L.H.D., *Professor of Social Welfare, Emeritus.*
Mary E. Duren, M.S., *Acting Dean of the School of Social Welfare and Associate Professor of Social Welfare.*
Olive M. Stone, Ph.D., *Associate Professor of Social Welfare.*
Harry H. L. Kitano, Ph.D., *Assistant Professor of Social Welfare.*
Herman Piven, M.A., *Acting Assistant Professor of Social Welfare.*
Jean A. Shores, M.A. *Assistant Professor of Social Welfare.*
Walter C. Bailey, Ph.D., *Lecturer in Social Welfare.*
Roger O. Egeberg, M.D., *Lecturer in Social Welfare and Clinical Professor of Medicine.*
Mildred T. Faris, M.A. *Lecturer in Social Welfare.*
Ralph L. Goff, M.S.W., *Lecturer in Social Welfare.*
Martin B. Loeb, Ph.D., *Lecturer in Social Welfare.*
Judd Marmor, M.D., *Lecturer in Social Welfare and Clinical Professor of Psychiatry.*
Robert Brockman, M.S.W., *Associate in Social Welfare.*
Mary Alice Kahne, M.S.W., *Associate and Field Work Supervisor.*
Katherine M. Kolodziejcki, M.S.W., *Associate in Social Welfare.*
Peter M. Sandi, M.S.W., Jur.D., *Associate in Social Welfare.*
Shirley J. Hook, M.S.W., *Associate in Social Welfare.*
Edith Shapiro, M.S.W., *Associate in Social Welfare.*
Winifred E. Smith, M.S.W., *Associate in Social Welfare.*



Alfred H. Katz, D.S.W., *Associate Professor of Social Welfare in Medicine and Associate Professor of Social Welfare.*

For information concerning the School of Social Welfare, see the ANNOUNCEMENT OF THE SCHOOL OF SOCIAL WELFARE, LOS ANGELES, and pages 67-69 of this bulletin.

GRADUATE COURSES

201A. The Dynamics of Personal Well-Being. (2) I.

Problems of normal growth of individuals as revealed in fundamental human experiences; behavior, growth, and change in the individual in contemporary society; requirements for individual and group well-being.

* Not to be given, 1961-1962.

201B. Social, Economic, and Cultural Factors Affecting Social Work. (2) I.

The effects of various social, economic, and cultural factors and values upon the nature and needs of individuals, groups, and communities served by social workers, the effects of these factors upon the nature of the services rendered and upon the nature and programs of the agencies rendering them.

202B. Social Aspects of Physical and Mental Health. (2) II.

Prerequisite: course 201A.

An orientation course directed toward an understanding of contemporary theories and therapies in the control and treatment of mental and emotional disabilities and the social implications of medical and psychological factors.

***204A. The Social Welfare Worker and the Law. (2) I.**

Law as an expression of social purpose; responsibility of social welfare workers to operate within the law and to interpret legal limitations upon and resources available to persons served; analysis of substantive law most frequently encountered in social welfare work.

210A. Social Welfare Programs. (2) II.

Brief survey of the historical development of social welfare programs, with emphasis on the contemporary structure and operations of welfare agencies; with interrelationship and responsibilities of federal, state and local governments, relationships between governmental and voluntary services; critical analysis of various types of service and the bases upon which these are made available.

210B. Criteria for Social Welfare Programs. (2) II.

Prerequisite: course 210A.

Discussion of standards by which effectiveness and adequacy of social welfare programs may be evaluated. Efforts will be made to help students become capable of judging the merits and weaknesses of various social welfare programs.

220A. Generic Concepts of Social Work Methods. (2) I.

The interindividual, group, and intergroup processes used by the social work practitioner in his day-to-day work in a social agency. An introduction to the distinctive characteristics of social work methods and to the basic concepts generic to all social work methods.

221A-221B. Social Casework. (2-2) Yr.

Introduction to the professional principles, methods, and techniques which form the basis of social casework practice. Emphasis is upon understanding the individual who presents the social problem, upon work with individuals in a group setting, and upon the use of agency services and community resources in the helping process. Concurrent field work is required.

221C. Advanced Social Casework. (2-2) Yr.

Prerequisite: course 221A-221B.

Examination and discussion of increasingly difficult case material illustrating principles of casework practice; critical analysis of the professional content of social casework and of the role of the professional caseworker in the helping process. Diagnosis and casework treatment with increased focus on the worker-client relationship and its manipulation in helping the client. Concurrent field work is required.

223A. Social Welfare Planning. (2) II.

The interrelationship and significance of community forces in determining the character and extent of social-work programs; the methods and processes

* Not to be given, 1961-1962.

by which cooperative action is achieved in determining social needs and in developing resources to meet them.

***226A. Administration of Social Welfare Services. (2) II.**

General principles of administration applicable to both public and private agencies; determining (or ascertaining) an agency's purpose and role; methods of carrying out that role effectively.

***230A. History of Social Welfare. (2) I.**

An introduction to the history of social welfare, with particular reference to movements, organizations, leaders, and literature in the United States and the United Kingdom.

***250A. Seminar: Philosophy of Social Work. (2) II.**

Prerequisite: one year of full-time graduate study in a school of social welfare.

Critical analysis of the values underlying professional work, of the current and probable future roles of social welfare in the domestic and international scenes, and of social work's actual and potential contribution to the development and execution of broad social policy.

252A. Seminar: Social Casework. (2) I, II.

Prerequisite: course 221A-221B and consent of the instructor.

Advanced and specialized areas of technical or professional study in social casework. Course may be repeated provided duplication of subject matter is avoided.

260. Seminar in Social Welfare. (2) I, II.

Prerequisite: one year of full-time graduate study in a school of social welfare and consent of the instructor.

Advanced and specialized areas of technical or professional study. Course may be repeated provided duplication of subject matter is avoided.

280A. Social Welfare Research and Statistics. (2) II.

Sources, nature, uses, and limitations of social welfare statistical and research information and of broader social data relevant to social welfare activities. Application of selected statistical methods to and interpretation of social welfare data. Intensive analysis of major methods of research applicable to the field of social work.

280B-280C. Advanced Social-Work Research. (2-2) Yr.

Prerequisite: course 280A.

Application of research methods to selected social welfare problems through individual or group study projects.

401A-401B. Field Work. (2-6; 2-6) Yr.

Prerequisite: consent of the department.

The basic concepts and principles—scientific, philosophical, and professional—of the first graduate year program, as learned through planned experiences in a social agency. The application and use of these concepts and principles in the practice of social work.

401C-401D. Advanced Field Work. (2-6; 2-6) Yr.

Prerequisite: course 401A-401B and consent of the department.

The basic concepts and principles of the curriculum leading to the degree of Master of Social Welfare as learned through planned experiences in a social

* Not to be given, 1961-1962.

agency. The individual professional discipline of the social worker developed through integration of knowledge, skill, and philosophy. Identification from the data of professional experience of significant questions for individual and organizational study and research.

SOCIOLOGY

For courses in sociology, see under Department of Anthropology and Sociology, page 90.

SPANISH AND PORTUGUESE

(Department Office, 5303 Humanities Building)

†William E. Bull, Ph.D., *Professor of Spanish.*

Carlos Clavería, Doctor en Letras, *Professor of Spanish.*

John A. Crow, Ph.D., *Professor of Spanish.*

John E. Englekirk, Ph.D., *Professor of Spanish (Chairman of the Department).*

*Ernest H. Templin, Ph.D., *Professor of Spanish.*

Marion Albert Zeitlin, Ph.D., *Professor of Spanish and Portuguese.*

Hermenegildo Corbató, Ph.D., *Professor of Spanish, Emeritus.*

Manuel Pedro González, Ph.D., *Professor of Spanish-American Literature, Emeritus.*

Anna Krause, Ph.D., *Professor of Spanish, Emeritus.*

José R. Barcia, Licenciado en Filosofía y Letras, *Associate Professor of Spanish.*

Donald F. Fogelquist, Ph.D., *Associate Professor of Spanish.*

Stanley L. Robe, Ph.D., *Associate Professor of Spanish.*

Aníbal Sánchez-Reulet, Ph.D., *Associate Professor of Spanish.*

James Richard Andrews, Ph.D., *Assistant Professor of Spanish.*

Samuel G. Armistead, Ph.D., *Assistant Professor of Spanish.*

Claude L. Hulet, Ph.D., *Assistant Professor of Spanish.*

Carlos Otero, Ph.D., *Assistant Professor of Spanish.*

*Joseph H. Silverman, Ph.D., *Assistant Professor of Spanish.*

Maria L. de Lowther, M.A., *Assistant Professor of Spanish, Emeritus.*

Leonor Montau, A.B., *Associate in Spanish.*

Charles M. Vance, M.A., *Associate in Spanish.*



Virginia G. Baños, Ph.D., *Lecturer in Spanish.*

SPANISH

Letters and Science List.—All undergraduate courses in Spanish and Portuguese except Spanish 370 are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

Preparation for the Major.—(1) Spanish 1, 2, 3, 4, 25A–25B or 100, and 42, 44, or the equivalent, to be tested by examination. (2) English 1A–1B. (3) A minimum of two years of a second foreign language in high school, or of two semesters at the college level, or English 46A–46B, or History 8A–8B.

Students who wish to make Spanish their major subject must have maintained at least an average grade of C in the college courses in Spanish taken prior to admission to the upper division.

The Major.—Required: 102A–102B, 146, and 15 additional units elected

† Absent on leave, 1961–1962.

* In residence spring semester only, 1961–1962.

from courses 104A-104B through 149. Students entering upper division without credit for 25A-25B may offer 101A-101B instead. Spanish 108 may not be counted on the 15 elective units. Although such specialization is not required, students desiring to specialize in Spanish literature may choose the elective units from courses 105 to 120; those desiring to specialize in Spanish-American literature, from courses 120 to 136. With the permission of the department a maximum of 4 units of upper division work in literature in French, Italian, or Portuguese, in folklore, or in linguistics and general philology, may be included among the elective units.

All Spanish majors preparing for the general secondary credential are required to take Spanish 100 before the end of the junior year and will normally take Spanish 147 and 148 in the senior year. Other requirements for the general secondary credential are courses 104A-104B, 108, and 149 or 256.

Students planning to obtain the Master of Arts degree in Spanish may find it advisable to elect Spanish 115 before graduation.

As general electives the department recommends courses in (1) philosophy; (2) English literature; (3) French, German, Greek, Italian, Latin, and Portuguese language and literature; (4) the history, anthropology, geography, political institutions, and international relations of Spain or Spanish-American countries.

Students who fail to maintain at least an average grade of C in the Spanish courses taken in the upper division will, upon approval of the Dean of the College of Letters and Science, be excluded from the major in Spanish.

Requirements for Admission to Graduate Courses

The requirement is ordinarily the undergraduate major in Spanish, or its equivalent, with a minimum grade-point average of 2.75. This requirement is prerequisite to the 24 units demanded for the M.A. degree. If the candidate is deficient in this prerequisite, he must fulfill it by undergraduate work which is not counted toward his graduate residence.

Requirements for the General Secondary Credential

Consult the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES.

Requirements for the Master's Degree

1. For the general requirements, see page 69. The department normally operates under Plan II, but in exceptional cases, and with the approval of the chairman of the department, Plan I may be followed as described on page 70. The Master's Comprehensive Examination consists of two three-hour written examinations, which are given in the next-to-the-last week preceding the final examination period of each semester. The student will be expected to show (1) a fair knowledge of the history of the Spanish language and a general acquaintance with the history of Spanish literature; (2) a more thorough acquaintance with the authors, works, and movements of either (a) Spanish literature or (b) Spanish-American literature. A list of suggested readings in the literature of the student's choice will be provided and will constitute the basis for part of the examination.

2. Departmental requirements: (a) All students must complete courses 115, 119, and either 149 or 256. (b) Students specializing in Spanish literature must complete at least 8 units chosen from courses 201A-201B, 203A-203B, 209A-209B, 210A-210B, 215A-215B, and 220. (c) Those specializing in Spanish-American literature must complete at least 8 units chosen from courses 220, 240, 241, 242, 243A-243B, 245, 246, 247, 248, 249. (d) The remaining units of the required 24 may include, with the approval of the graduate adviser, a maximum of 6 units of upper division or graduate courses in the history, geography, anthropology, political institutions, or international relations of Spain or the Spanish-American countries, in Portuguese and Brazilian literature and language, in other literatures, or in philosophy.

Requirements for the Doctor's Degree in Hispanic Languages and Literature

For the general requirements, see page 71.

I. Minimum prerequisites for admission to candidacy:

1. In addition to Spanish and Portuguese, a knowledge of Latin equivalent at least to that gained in two high school years, and a reading knowledge of French and another foreign language to be determined by the committee in charge on the basis of the field of the candidate's specialization. This reading knowledge will be tested by written examination.
2. A bachelor's degree with a major in a field acceptable to the Department of Spanish.
3. The satisfactory completion of one year's work in the Graduate Division of the University of California or in another recognized graduate school.
4. The passing of qualifying examinations according to the regulations of the University.

II. Minimum requirements for the degree:

1. Two years of graduate study according to the regulations of the University as contained on pages 71-74 of this bulletin. An additional year of foreign study is recommended.

2. Course 256.

3. Within the field of Hispanic languages and literature, specialization in either Spanish or Spanish-American literature.

A. *Requirements for candidates whose principal interest is the literature of Spain:*

- a. A general knowledge of the history and development of the Spanish language.
- b. A thorough knowledge of Spanish literature.
- c. A general knowledge of Spanish-American and Portuguese literature.
- d. A general knowledge of another literature related to the candidate's major field; or a thorough knowledge of a more limited period of such other literature; or a related non-literary field chosen with the approval of the doctoral committee.

B. *Requirements for candidates whose principal interest lies in the literature of Spanish America:*

- a. A general knowledge of the history and development of the Spanish language.
- b. A thorough knowledge of the literature of Spanish America.
- c. A general knowledge of the literature of Spain and of Brazil.
- d. A general knowledge of another literature related to the candidate's major field; or a thorough knowledge of a more limited period of such other literature; or a related non-literary field chosen with the approval of the doctoral committee.

Requirements for the Doctor's Degree in Romance Languages and Literature

See page 432 of this bulletin.

LOWER DIVISION COURSES

The prerequisites for the various lower division courses are given in each case.

All entering or transfer students who, because of speaking the Spanish language natively, of travel or residence in Spanish-speaking countries, or be-

cause of any other reason, consider themselves able to take a more advanced course than that for which they have formal prerequisites should consult the chairman of the department for assignment to a course of the proper level.

1. Elementary Spanish—Beginning. (4) I, II. The Staff

This course corresponds to the first two years of high school Spanish. Sections meet five hours weekly, including one hour of oral practice.

1G. Elementary Spanish—Reading Course for Graduate Students. The Staff
(No credit) I, II.

Four hours a week.

2. Elementary Spanish—Continued. (4) I, II. The Staff

Prerequisite: course 1, two years of high school Spanish, or the equivalent. Sections meet five hours weekly, including one hour of oral practice.

3. Intermediate Spanish. (4) I, II. The Staff

Prerequisite: course 2, three years of high school Spanish, or the equivalent. Sections meet five hours weekly, including one hour of oral practice.

4. Intermediate Spanish—Continued. (4) I, II. The Staff

Prerequisite: course 3, four years of high school Spanish, or the equivalent.

8A–8B. Elementary Spanish Conversation. (1–1) Yr. Beginning each semester. The Staff

Classes meet two hours weekly. Open to students who have completed Spanish 3 or its equivalent. Those with grade A or B in Spanish 2 may be admitted.

8C. Advanced Spanish Conversation. (1) I, II. The Staff

Classes meet two hours weekly. Open to students who have completed course 8B.

25A–25B. Composition and Prose Reading. (2–2) Beginning either semester. Mr. Crow

Prerequisite: course 4 or the equivalent. Designed especially for freshmen and sophomores who propose to make Spanish their major subject.

42. Spanish Civilization. (3) I. Mr. Bull, Mr. Armistead

Prerequisite: sophomore standing. Conducted in English. No knowledge of Spanish required. Required of major students in Spanish.

A study of the growth and development of Spanish culture in its most important manifestations.

44. Latin-American Civilization. (3) II. Mr. Crow, Mr. Fogelquist

Prerequisite: sophomore standing. Conducted in English. No knowledge of Spanish required. Required of major students in Spanish.

Origins and main currents of Latin American culture.

UPPER DIVISION COURSES

Prerequisite: 16 units of lower division Spanish or the equivalent.

100. Advanced Grammar. (3) I, II. Mr. Robe, Mr. Armistead

Prerequisite: course 4 or the equivalent. Required of students working for the general secondary credential.

101A–101B. Intermediate Composition and Conversation. (2–2) Yr.

Beginning either semester. Mrs. Baños, Mr. Otero

May not be taken concurrently with or following 146. May not be counted on the 15 elective upper division units required for the major.

- 102A-102B. Introduction to Spanish Literature. From the Middle Ages to the Present.** (3-3) Beginning either semester.
Mr. Barcia, Mr. Silverman, Mr. Otero, Mr. Clavería
Prerequisite: course 42. Required of all major students in Spanish.
- 104A-104B. Introduction to Spanish American Literature. From the Beginnings to the Present.** (3-3). Beginning either semester.
Mr. Crow, Mr. Fogelquist, Mr. Englekirk
Prerequisite: course 44 or the equivalent. Required of all credential majors.
- 105. Spanish Literature from 1850-1900. Realism and Naturalism.** (3) I.
Prerequisite: course 102B. Mr. Clavería
- 106. Spanish Literature from 1700-1850. Neo-Classicism and Romanticism.**
(3) II. Mr. Clavería
Prerequisite: course 102B.
- 108. The Folk Song in Spain and Spanish America.** (1) II. Mr. Crow
Class meets two hours weekly. Required of credential candidates. May not be counted on the 15 elective upper division units required for the major.
A study of the origins and development of Spanish folk music and of the different types of folk songs and folk poetry peculiar to the various regions of Spain and Spanish America.
- 110. Contemporary Spanish Literature.** (3) II. Mr. Barcia
Prerequisite: course 102B.
- 115. Don Quijote.** (3) II. Mr. Andrews, Mr. Templin
Prerequisite: course 102A. Students planning to get the M.A. in Spanish are expected to take this course or offer an equivalent.
- 117. Spanish Literature of the Siglo de Oro.** (3) I.
Prerequisite: course 102A. Mr. Andrews, Mr. Templin
- 119. Readings in Spanish Literature of the Middle Ages.** (3) I.
Prerequisite: course 102A. Mr. Zeitlin, Mr. Andrews, Mr. Armistead
- 120. Literary Criticism in Spain and Spanish America.** (3) II, Mr. Andrews
- 130. Main Literary Currents in Spanish America.** (3) II. Mr. Fogelquist
- 132. The Spanish American Novel.** (3) I. Mr. Fogelquist
- 134. The Spanish American Short Story.** (2) I. Mr. Sánchez-Reulet
- 136. The Spanish American Essay.** (2) II. Mr. Sánchez-Reulet
- 146. Advanced Composition and Style.** (3) I, II. Mr. Hulet
Prerequisite: courses 25A-25B, 100, or 101A-101B.
- 147. Grammar for Teachers.** (2) I, II. Mr. Bull, Mr. Robe
Prerequisite: course 100.
- 148. Phonetics.** (1) I, II. Mr. Robe
Class meets two hours weekly.
- 149. Introduction to the History of the Spanish Language.** (1) I.
Mr. Silverman, Mr. Armistead
Meets requirement in philology for the general secondary credential and the master's degree.
- 150A-150B. Spanish and Spanish American Literature in English Translation.** (2-2) Yr. Mr. Silverman, Mr. Hulet

199. **Special Studies in Spanish.** (1-3) I, II. The Staff
Prerequisite: senior standing and consent of the instructor.

GRADUATE COURSES

- *201A. **Studies in Spanish Poetry.** (2) I. Mr. Templin
The *Cancioneros* and the *Romancero*.
- *201B. **Studies in Spanish Poetry.** (2) II. Mr. Templin
The *Siglo de Oro*, especially in relation to the Baroque.
- 203A-203B. **Studies in Spanish Literature of the Nineteenth Century.**
(2-2) Yr. Mr. Clavería
- 209A-209B. **The Spanish Drama of the Golden Age.** (2-2) Yr. Mr. Templin
- *210A-210B. **Studies in Contemporary Spanish Literature.** (2-2) Yr.
Mr. Barcia
- 215A-215B. **Studies in Spanish Prose Writers of the Golden Age.** (2-2) Yr.
Mr. Barcia
220. **The Spanish Chroniclers of the Americas.** (2) II. Mr. Robe
240. **Studies in the Contemporary Novelists of Spanish America.** (2) II.
Mr. Crow
241. **Studies in the Spanish-American Short Story.** (2) I.
Mr. Crow, Mr. Fogelquist
- *242. **Studies in the Contemporary Poets of Spanish America.** (2) II.
Mr. Fogelquist
- 243A-243B. **The Modernista Movement in Spanish America.** (2-2) Yr.
Mr. Fogelquist
245. **The Contemporary Mexican Novel.** (2) II. Mr. Englekirk
- *246. **Argentine Literature.** (2) I. Mr. Sánchez-Reulet
247. **The Gaucho Epic.** (2) I. Mr. Sánchez-Reulet
248. **Studies in Major Figures of Spanish American Literature.** (2) II.
Mr. Crow
- *249. **Mexican Literature.** (2) II. Mr. Englekirk
255. **Contemporary Spanish Linguistics.** (2) II. Mr. Bull
256. **Spanish Historical Grammar.** (3) II. Mr. Zeitlin
A knowledge of Latin is indispensable. Meets requirement in philology for the general secondary credential and for the master's degree. Required of all doctoral candidates.
- 290A-290B. **Special Study and Research.** (2-6; 2-6) Yr. The Staff

PROFESSIONAL COURSE IN METHOD

370. **The Teaching of Spanish.** (3) I. Mr. Bull
Prerequisite: course 147 or consent of instructor.
Required of all candidates for the general secondary credential whose

major subject is Spanish. Should be taken concurrently with the student teaching in Spanish.

PORTUGUESE

LOWER DIVISION COURSES

- | | |
|--|-------------|
| 1. Elementary Portuguese—Beginning. (4) I. | Mr. Zeitlin |
| 2. Elementary Portuguese—Continued. (4) II.
Prerequisite: course 1 or the equivalent. | Mr. Zeitlin |
| 3. Intermediate Portuguese. (4) I.
Prerequisite: course 2 or the equivalent.
Grammar, composition, and the reading of texts. | Mr. Zeitlin |

UPPER DIVISION COURSES

- | | |
|--|-------------|
| 122. Survey of Portuguese Literature. (3) I.
Prerequisite: course 3 or the equivalent. | Mr. Zeitlin |
| 123. Survey of Brazilian Literature. (3) II.
Prerequisite: course 3 or the equivalent. It is advisable that students also offer course 122 as a prerequisite. | Mr. Zeitlin |
| 199. Special Studies in Portuguese. (1-3) I, II.
Prerequisite: senior standing and consent of the instructor. | Mr. Zeitlin |

RELATED COURSES (See page 231)

- | | |
|--|--------------|
| French 201. History of the French Language. (3) I, II. | Mr. Williams |
| French 202. Old French. (3) I, II. | Mr. Williams |

SPEECH

For courses in Speech, see under Department of English.

SUBJECT A: ENGLISH COMPOSITION

(Department Office, 306 Royce Hall)

———, *Chairman, Committee on Subject A.*

Everett L. Jones, M.A., *Supervisor of Instruction in Subject A.*

Ella O. Hutchins, M.A., *Associate in Subject A.*

Gretchen G. Martin, M.A., *Associate in Subject A.*

Cathleen H. Wheat, Ph.D., *Associate in Subject A.*

Hortense H. Williams, M.A., *Associate in Subject A.*

Subject A. (No credit) I, II.

The Staff

Fee, \$35.

Three hours weekly for one semester. Although this course yields no credit, it displaces 2 units on the student's program. Every student who does not pass the examination in Subject A is required to take, in the semester immediately following this failure, the course in Subject A. Sections are limited to thirty students. For further details see page 23C of this bulletin.

Training in correct writing, including drill in sentence and paragraph construction, diction, punctuation, grammar, and spelling. Weekly compositions and written tests on the text.

THEATER ARTS

(Department Office, 107 Building 3U)

- Walden Boyle, Ph.D., *Professor of Theater Arts.*
 Ralph Freud, *Professor of Theater Arts.*
 Edward Hearn, M.A., *Professor of Theater Arts.*
 Walter Kingson, Ed.D., *Professor of Theater Arts.*
 William Melnitz, Ph.D., *Professor of Theater Arts.*
 George M. Savage, Ph.D., *Professor of Theater Arts.*
 Samuel Selden, Litt.D., *Professor of Theater Arts (Chairman of the Department).*
 Kenneth Macgowan, LL.D., *Professor of Theater Arts, Emeritus.*
 †Arthur Friedman, Ph.D., *Associate Professor of Theater Arts.*
 John Jones, M.A., *Associate Professor of Theater Arts.*
 John P. Driscoll, Ph.D., *Assistant Professor of Theater Arts.*
 Raymond Fielding, Ph.D., *Assistant Professor of Theater Arts.*
 Henry Goodman, Ph.D., *Assistant Professor of Theater Arts.*
 †Hugh Gray, *Assistant Professor of Theater Arts.*
 James V. Hatch, Ph.D., *Assistant Professor of Theater Arts.*
 Richard C. Hawkins, M.A., *Assistant Professor of Theater Arts.*
 Melvyn Helstien, M.F.A., *Assistant Professor of Theater Arts.*
 Patricia Hungerland, M.A., *Assistant Professor of Theater Arts.*
 Charles Lown, Jr., Ph.D., *Assistant Professor of Theater Arts.*
 Francis W. Sturcken, Ph.D., *Assistant Professor of Theater Arts.*
 A. V. Wollock, M.A., *Assistant Professor of Theater Arts.*
 Colin Young, M.A., *Assistant Professor of Theater Arts.*
 †John W. Young, M.A., *Assistant Professor of Theater Arts.*
 Dorothy Arzner, *Lecturer in Theater Arts.*
 Marvin S. Borowsky, A.B., *Lecturer in Theater Arts.*
 Burdette Fitzgerald, M.A., *Lecturer in Theater Arts.*
 Morton B. Miller, M.A., *Lecturer in Theater Arts.*
 Jack Morrison, M.A., *Lecturer in Theater Arts.*
 Charlotte Motter, M.A., *Lecturer in Theater Arts.*
 William Perlberg, *Lecturer in Theater Arts.*
 Ted Post, *Lecturer in Theater Arts.*
 J. Palmer Schoppe, *Lecturer in Theater Arts.*
 George Seaton, *Lecturer in Theater Arts.*
 William Shull, B.S., *Lecturer in Theater Arts.*
 L. S. Trimble, M.S., *Lecturer in Theater Arts.*
 Dorothy Foulger, B.A., *Associate in Theater Arts.*

College of Letters and Science

Letters and Science List.—Courses 5A, 5B, 101, 102, 104, 105A, 105B, and 105C are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

College of Fine Arts

The Department of Theater Arts bases its work in theater, motion pictures, television, and radio 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

† Absent on leave, 1961-1962.

the College of Fine Arts (see page 39), a common core of major courses, and certain controlled upper division electives in the major:

The Lower Division Courses.—5A, 5B, 20A, 30, 7 units from 40A-G, and Humanities 1A-1B.

The Upper Division Courses.—105A or 105B or 105C, according to the student's major interest; 130, 147, 150; seven units from 170A or 170B or 170C; Classics 113; English 113A, 113B, 117J; and controlled upper division electives in theater arts to bring the total to 39 units.

The major requires 43 units in theater arts courses, 15 in the lower division and 28 in the upper division. *In no case may more than 50 units in theater arts apply on the 120-unit total required for the bachelor's degree.*

A maximum of 12 units from the following courses may apply on the 120-unit total: 40A to 40G and 140A, B, C, E, F, 143, and 144.

Students majoring in theater arts may not offer a minor in English.

General Secondary Teaching Credential

The Department also provides a specialization in Language Arts (Theater Arts and English) for those students seeking a general secondary credential. In addition to pursuing the following program, the student must interview a credential adviser in the School of Education concerning required courses in education.

The Lower Division Courses.—Courses 5A, 5B, 20A, 30, 40A, 40B, 40E, 40F; English 1A, 1B, 46A, 46B, Journalism 2.

The Upper Division Courses.—Courses 103, 105A, 130, 147, 150, 170A, (7 units); Classics 113; English 106L, 113A, 113B, 117J, and 3 units from 131, 132, 190A, 190B; and approved electives chosen from Education 130 and upper division courses in theater arts to bring total to 39 units.

Graduate Courses.—At least 6 units completed in graduate status, including Theater Arts 200, 231, and 2 units chosen from 270, 272, and 299.

Graduate Division

Admission to Graduate Status

In addition to general requirements of the Graduate Division, the applicant must:

1. Have completed the undergraduate theater arts major or its equivalent.
2. Provide the department with the results of certain diagnostic tests and letters of reference. Information regarding this requirement should be obtained from the chairman of the department at least three months prior to the beginning of the semester in which the student plans to enroll.

Requirements for the Master's Degree

The Department of Theater Arts follows Plan I or Plan II. (See page 70.)

The program requires at least one year (two semesters) of intensive study and laboratory exercises. In addition to the minimum courses for completion of the master's degree, the chairman of the department, in consultation with the other members of the student's advisory committee, may prescribe such additional courses as he believes are necessary to satisfy the educational needs of the student. All students are required to take an active part in the production program of the department as partial fulfillment of the degree requirements. In planning his course of study, the student will place his emphasis upon the theater, motion pictures, television, or radio. Any extensive concentration in one area of study, such as theatrical and dramatic history and literature or playwriting, ordinarily extends the student's residency. Students who wish to place their major emphasis on playwriting must submit a long play or a number of short plays for admission to the program.

AREAS OF INSTRUCTION

- The Department of Theater Arts offers courses in the following areas:
- History, Theory, and Criticism.*—Courses 5A–5B, 102, 104, 105A, 105B, 105C, 108, 119, 134, 160.
- Writing.*—Courses 30, 130, 132, 181.
- Directing.*—Courses 150, 151, 152A, 152B, 152C.
- Acting.*—Courses 20A–20B, 120, 121A, 121B, 121C.
- Design.*—Courses 141, 147, 148A–148B, 180.
- Workshops.*—Courses 117, 170A, 170B, 170C, 171, 172, 182.
- Theater Arts Techniques.*—Courses 40A, 40B, 40C, 40D, 40E, 40F, 40G, 140A, 140B, 140C, 140E, 140F, 143, 144.
- Courses to Serve Other Departments.*—Course 101.
- Teacher Preparation and Professional Courses.*—Courses 103, 118A, 118B, 445, 473.

LOWER DIVISION COURSES

5A–5B. History of Theater Arts. (2–2) I, II.

Lecture, two hours; laboratory, two hours.

The history of the development of theater, motion pictures, radio, and television as composite arts and social institutions. A study of the evolution of these arts as influenced by different cultures, traditions, and technologies.

5A. Development of the stage from the primitive theater to the present day. Mr. Goodman

5B. Development of motion pictures and broadcasting from their beginnings to the present day. Mr. Fielding

20A. Acting Fundamentals. (2) I, II.

Mrs. Fitzgerald, Mrs. Foulger, Mr. Goodman, Mr. Morrison

Lecture, two hours; laboratory, three hours.

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.

20B. Acting Fundamentals. (2) I, II.

Mrs. Foulger, Mr. Helstien

Lecture, two hours; laboratory, three hours. Prerequisite: 20A or the consent of the instructor.

Intensive application of acting techniques through study and performance of selected scenes from stage, motion picture, and television scripts, involving problems of style in a wide range of dramatic materials.

30. Fundamentals of Dramaturgy. (2) I, II.

Mr. Borowsky

A course designed to stimulate the student's critical and creative faculties through the analysis of basic dramatic forms and the preparation of original material.

40A–B–C–D–E–F–G. Theater Arts Techniques.

Only 7 units from the following list of courses (40A–G) may be applied toward the A.B. degree.

40A. Scenery. (2) I, II.

Mr. Lown, Mr. Schoppe and Staff

Lecture, two hours; laboratory, two hours, plus assignments.

The analysis, planning and execution of staging concepts; the consideration of materials, construction methods, shop procedures and budget.

40B. Sound. (1) I, II.

Mr. Driscoll, Mr. Sturcken and Staff

Lecture, one hour; laboratory, two hours, plus assignments.

Procedures and techniques related to audio recording and reproduction. The integration of sound with other elements of production.

40C. Camera. (2) I, II.

Mr. Fielding, Mr. Wollock

Lecture, two hours; laboratory, three hours.

Principles of lighting, pictorial composition, and camera operation.

40D. Editing. (2) I, II.

Mr. Driscoll

Lecture, two hours; laboratory, three hours, plus additional hours to be arranged.

Editing principles and techniques. Laboratory practice in the creative and mechanical aspects of editing.

40E. Stage Lighting. (2) I, II.

Mr. Sturcken

Lecture, two hours; laboratory, two hours, plus assignments.

The design and application of stage lighting, including the study of instruments, control, color, and procedure.

40F. Costuming. (2) I, II.

Mrs. Hungerland

Lecture, two hours; laboratory, two hours, plus assignments.

Costume analysis and construction techniques. Laboratory practice in the making of a costume from design to performance.

40G. Studio Operations. (2) I, II.

The Staff

Lecture, two hours; laboratory, three hours.

Practice in the use of equipment and techniques necessary for studio and remote broadcasting.

UPPER DIVISION COURSES

101. Introduction to Theater Arts. (2) I, II.

Mr. Freud

Lecture, two hours; laboratory, two hours.

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. Not open for credit in the theater arts major.

102. History of the European Theater. (2) I.

Mr. Melnitz

A one-semester survey of the development of the theater, with emphasis on the contributions of Europe from the Greeks to the twentieth century, based upon the most authoritative critical studies in the field.

103. Theater Arts in the Secondary Schools. (3) I, II.

Miss Motter

Prerequisite: 30, 105A or 105B or 105C, 130 and 150.

Sec. 1. Limited to language arts (theater arts-English) majors. I.

Sec. 2. Limited to majors other than language arts (theater arts-English) majors. II.

Critical examination of the theater arts in the secondary field; study and discussion of production, direction and acting in the secondary school.

104. History of the American Theater. (2) II.

Mr. Freud

The history of the American theater from the Revolutionary War to the present.

105A-B-C. Main Currents in Theater Arts. (2-2-2) I, II.

The student is required to take one of the following three courses.

105A. Main Currents in Theater.

Mr. Goodman

Lecture, two hours.

Critical examination of the leading theories of theater from 1887 to the present; study and discussion of modern styles of production. Required of theater majors only.

105B. Main Currents in Motion Pictures.

Mr. Gray

Lecture, two hours; laboratory, two hours.

An historical and critical survey, with examples, of the motion picture to date both as a medium of mass communication and entertainment and as a developing art form. Required of motion picture majors only.

105C. Main Currents in Television-Radio.

Mr. Kingson

Lecture, two hours; laboratory, two hours.

Critical survey of radio and television here and abroad. Consideration of the social responsibilities and educational implications of broadcasting. Required of television-radio majors only.

108. Documentary and Education Film. (2) I, II.

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 for child and adult audiences.

117. Marionettes and Puppetry. (2) I, II.

Mr. Helstien

Lecture, two hours; laboratory, four hours. Prerequisite: courses 40A and 40E; or consent of the instructor. May be repeated for a maximum total of 4 units credit.

Study of the history and practice of the art of puppetry. An examination of the materials and methods of construction. Staging of puppet and marionette productions as laboratory practice.

118A-118B. Creative Dramatics. (2-2) I, II.

Mrs. Fitzgerald

Lecture, two hours; laboratory, one hour. Prerequisite: 118A to precede 118B.

Studies of the principles and procedures of the informal approach to children's drama through creative interpretations of literature.

119. Children's Theater. (2) I, II.

Mrs. Fitzgerald, Mr. Helstien

Theories and principles of production in the formal theater arts for children. Analysis and evaluation of appropriate theatrical forms.

120. Advanced Acting. (3) I, II.

Mr. Freud, Mrs. Foulger

Lecture, two hours; laboratory, six hours. Prerequisite: course 20A and the consent of the instructor.

Advanced study and practice in the art of acting.

121A, B, C. Problems of Acting in the Theater Arts.

Lecture, two hours; laboratory, four hours. Prerequisite: courses 20A, 120 and consent of the instructor.

121A. Advanced Problems in Acting for the Stage. (3) I, II.

Mrs. Foulger

121B. Advanced Problems in Acting for Motion Pictures and**Television and Radio. (3) I, II.**

Mr. Wollock

(Former number, 121C.)

121C. Special Problems in Acting for Theater Arts. (2) I, II.

Staff

(Former number, 122.)

Intensive study of effective speech and movement in both dramatic and nondramatic performance for stage, motion pictures, television and radio.

130. Problems of Writing for Theater Arts. (3) I, II.

Mr. Borowsky, Mr. Hatch, Mr. Hawkins Mr. Savage

Prerequisite: course 30 or the equivalent.

Application of dramaturgic principles to the preparation of material for production in theater arts.

- 132. Writing for Motion Pictures and Television.** (3) I, II. Mr. Hatch
Prerequisite: courses 30, 130 and consent of the instructor.
Advanced course in the preparation of screenplays under supervision.
- 134. Manuscript Evaluation for Production.** (2) I, II. Mr. Savage
(Former number 134A-134B.)
Prerequisite: courses 30, 130 and consent of the instructor. May be repeated for a maximum total of 4 units credit.
Principles and practices in the evaluation of manuscripts for theater, motion pictures, television, or radio production.
- 140A. Advanced Scenery.** (2) II. Mr. Lown
Lecture, two hours; laboratory, two hours. Prerequisite: course 40A.
Study of technical methods of staging theater productions, including design analysis related to production rigging, shifting, and construction techniques.
- 140B. Advanced Motion Picture Sound.** (2) I, II. _____
Lecture, three hours; laboratory, three hours. Prerequisite: course 40B or consent of the instructor.
An advanced study of the creative use of sound, including the technical procedures of motion picture sound recording and reproduction.
- 140C. Advanced Motion Picture Photography.** (2) I, II. Mr. Fielding
Lecture, three hours; laboratory, three hours, plus additional hours to be arranged. Prerequisite: course 40C.
The theories and disciplines of the cinematographic process. Control of photographic image through studio lighting, pictorial composition, camera movement and sensitometry.
- 140E. Advanced Stage Lighting.** (2) I. Mr. Hearn
Prerequisite: course 40E or consent of the instructor.
The study of stage lighting as an art; the interpretation of a script through the control of light and color in relation to design, actor, and audience.
- 140F. Advanced Costuming.** (2) I, II. Mrs. Hungerland
Lecture, two hours; laboratory, two hours. Prerequisite: course 40F or consent of the instructor.
Advanced study of historical costume and the interpretation of theatrical costume design through the use of patterns, fabrics, and related costume techniques.
- 141. Costume Design for Theater.** (2) I, II. Mr. Jones
Lecture, one hour; laboratory, three hours.
Design of costumes for theatrical presentations. The study of the use of silhouette, fabrics, color, and decoration as related to theatrical characterization.
- 142A. Color Cinematography.** (2) I, II. Mr. Trimble
Prerequisite: course 40C or consent of the 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.
- 142B. Color Cinematography.** (2) II. Mr. Fielding
Lecture, two hours; laboratory, three hours. Prerequisite: courses 40C, 140C, 142A and consent of the instructor.
A laboratory course in the creative applications of color cinematography.

The use of contemporary color film stocks, optical systems, single and multi-film color cameras, and studio production techniques to enhance the visualization of dramatic statements.

143. Scene Painting. (1) I, II.

Mr. Lown

Lecture, one hour; laboratory, one hour.

The study of scenic painting techniques and materials and their relation to the interpretation of scenic design.

144. Make-Up for Theater, Television and Motion Pictures. (1) I, II.

Lecture, one hour; laboratory, one hour.

Mr. Jones

The art of make-up and its relation to the production as a whole. History, aesthetics, materials, and procedures of make-up.

146. Cinematic Effects. (2) I.

Mr. Fielding

Lecture, two hours; laboratory, three hours. Prerequisite: consent of the instructor.

A study of the theory and literature of special processes in contemporary cinematography. Evaluation and experimental use of these processes.

147. Design for Theater Arts. (3) I, II.

Mr. Schoppe

Lecture, two hours; laboratory, three hours. Prerequisite: course 40A or consent of the instructor.

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. Translation of ideas into visual form.

148A-148B. Problems in Design for Theater Arts. (3-3) I, II.

Lecture, two hours; laboratory, three hours. Prerequisite: courses 40A, 147 and consent of the instructor.

148A. Advanced study in design for theater.

Mr. Jones

148B. Advanced study in design for motion pictures and television.

Mr. Schoppe

150. Direction for Theater Arts. (3) I, II.

Mr. Hawkins, Mr. Hearn, Mr. Helstien, Mr. Selden, Mr. Wollock

Lecture, two hours; laboratory, three hours. Prerequisite: courses 30 and 130.

A basic study of the director's function in the interpretation of dramatic material for an audience.

151. Motion Picture Editing. (3) I, II.

Mr. C. Young

(Former number 140D.)

Lecture, two hours; laboratory, three hours, plus additional hours to be arranged. Prerequisite: course 40D and consent of the instructor.

A study of the role of editing in the creation of the motion picture. Laboratory practice in the creative aspects of film editing.

152A. Advanced Theater Direction. (3) I, II.

The Staff

Lecture, two hours; laboratory, to be arranged. Prerequisite: courses 30, 130, 150, and 170A.

Special problems in the direction of the one-act play for the stage.

152B. Advanced Motion Picture Direction. (3) I, II.

Miss Arzner, Mr. J. Young

Lecture, two hours; laboratory, to be arranged. Prerequisite: courses 30, 40C, 40D, 130, 150, and 170B.

A study of the director's use of the motion picture medium in the interpretation of dramatic material.

- 152C. Advanced Television Direction.** (3) I, II. Mr. Miller
Lecture, two hours; laboratory, to be arranged. Prerequisite: courses 30, 130, 150, and 170C.
A study of the director's use of the television medium in the interpretation of dramatic material.
- 160. The Role of Management in Theater Arts.** (2) I, II.
Lecture, two hours; quiz section, one hour. Mr. Kingson, Mr. Morrison
A study of the artistic, social, and economic criteria for decision-making in the administration of the theater arts and the processes for carrying out those decisions. Considerations governing decisions affecting management of the various producing bodies in the theater arts.
- 170A, B, C. Workshop in Theater Arts.** (1-4) I, II.
Lecture, two hours; laboratory, six hours. Prerequisites: courses 30, 130 and 150; to 170B add courses 40C and 40D. May be repeated for a total maximum of 7 units credit.
Production in the theater arts. The translation of ideas and concepts into their ultimate dramatic form.
- 170A. Workshop in Theater.** Mr. Lown, Mr. Sturcken
170B. Workshop in Motion Pictures. Mr. Driscoll, Mr. Fielding
170C. Workshop in Television. Mr. Miller, Mr. Wollock
- 171. Advanced Theater Arts Workshop.** (1-3) I, II.
Mr. Hawkins, Mr. Morrison and Mr. Wollock in charge
Lecture, two hours; laboratory, six hours. Prerequisite: consent of the staff. May be repeated for a total maximum of 6 units credit.
Advanced production in theater arts.
- 172. Radio Workshop.** (3) I, II. Mr. Miller
Lecture, two hours; laboratory, four hours. Prerequisite: consent of the instructor.
A basic laboratory course offering practice in the preparation of radio programs.
- 180. Animation Design in Theater Arts.** (3) I, II. Mr. Shull
Lecture, three hours; laboratory, three hours.
History and use of speech, rhythm, and graphic design to form effective communication on film.
- 181. Writing for Animation.** (3) I, II. Mr. Shull
Lecture, three hours; laboratory, three hours. Prerequisite: course 180 and consent of the instructor.
Research and practice in creative writing and planning for the animated film.
- 182. Animation Workshop.** (3) I, II. Mr. Shull
Lecture, three hours; laboratory, three hours. Prerequisite: course 180 and consent of the instructor.
Organization and integration of the various creative arts used in animation to form a complete study of a selected topic.
- 199. Special Studies in Theater Arts.** (1-4) I, II. The Staff
Prerequisite: senior standing and consent of the instructor.

GRADUATE COURSES

- 200. Bibliography and Methods of Research in Theater Arts.** (2) I, II.
Mr. Goodman, Mr. Gray, Mr. Hatch

- 201. The Background of Theatrical Art.** (3) I, II. Mr. Boyle
An analysis of the aesthetic principles and content of the theater.
- 206A-206B. Advanced Playwriting.** (3-3) Yr. Mr. Savage, Mr. Selden
Guided completion of a full-length play, or study and preparation for the writing of a thesis play.
- 220. Policies and Problems of Television and Radio Broadcasting.** (3) II. Mr. Kingson
Advanced study in comparative radio and television broadcasting, with special emphasis upon British, Canadian, Continental, and Australian systems.
- 231. The Teaching of Secondary School Dramatics.** (2) II. Mr. Morrison
Study of current methods and problems of production as related to teaching on the secondary level. Restricted to candidates for teaching certificates and approved theater arts majors.
- 235. Advanced Motion Picture Editing.** (3) I, II. Mr. C. Young
Prerequisite: courses 40D, 151, and consent of the instructor.
Study and analysis of the editor's creative contribution to the structure and final form of the picture. The basis of rhythmic and dynamic montage, and application of all types of special effects.
- 239. Film Aesthetics.** (3) I. Mr. Gray
Study and analysis of the film in relation to other art forms.
- 240. Technical Methods and Practices in the Theater.** (3) I, II. Mr. Hearn
Advanced studies in theater production planning and budgeting, theater architecture, stage design and lighting.
- 270. Seminar in the Documentary and Educational Film.** (3) I, II. ———
Analysis of the nonfiction film in relation to the development of documentary and educational film scripts.
- 271. Seminar in the Fiction Film.** (3) II. Mr. Gray
Analysis of the technique employed in the fictional film; exercise in the preparation of story material and the development of fictional scripts.
- 272. Seminar in Theater History.** (3) I, II. Mr. Freud, Mr. Melnitz
Exploration of a selected area of theatrical history. Guided reading in University, Clark, and Huntington libraries. Presentation of fully annotated written report of independent investigation.
- 290. Research Projects in Theater Arts.** (1) I, II.
Section 1. In Theater. Mr. Melnitz, Mr. Morrison and Staff
Section 2. In Motion Pictures. Mr. Hawkins
Section 3. In Television or Radio. Mr. Hatch
- 291. Production Planning in Theater Arts.** (1) I, II.
Section 1. In Theater. Mr. Hearn and Staff
Section 2. In Motion Pictures. Mr. Hawkins
Section 3. In Television or Radio. The Staff
- 292. Advanced Programs in Nondramatic Television and Radio.** (3-5) I, II. Mr. Miller
A lecture and projects course in the writing and production of documentary programs. The course is designed to explore the field of documentary radio programs from the standpoint of subject matter and develop new techniques in writing and production.

299A-299B. Special Problems in Theater Arts. (2-5; 2-5) I, II. The Staff
Practical creative work in the area of theater arts which the student has designated his area of emphasis. Study may be pursued in the following areas: theatrical production, motion picture production, audio-visual educational production, television production, radio writing and production, and original research in theater arts.

PROFESSIONAL COURSES

445. Motion Picture Techniques for Research and Instruction. (3) _____

(Summer only)

(Former number 145.)

Lecture, two hours; laboratory, three hours.

An elementary course in the making of educational, scientific, and documentary films intended to serve workers in the professions. Class projects in the writing, planning, photography, editing, and recording of research and instructional films. Not open for credit in the Theater Arts major.

473. Workshop in Educational Television and Radio. (3) I, II. Mr. Kingson
(Former number, 173.)

Lecture, two hours; laboratory, four hours.

Backgrounds of educational television in the United States and abroad. New applications of broadcast and closed-circuit television in the school and college curriculum. Production, distribution and utilization of instructional television.

REQUIRED COURSES IN OTHER DEPARTMENTS

Humanities 1A-1B. World Literature. (3-3) Yr.

Mr. Pasinetti

Classics 113. Ancient Drama. (2) I.

Mr. Travis

English 113A. British and Continental Drama, 1500-1850, (3) I, II.

Mr. Smith, Mr. Wadsworth

English 113B. Modern Drama. (3) I, II.

Mr. Smith, Mr. Wadsworth

English 117J. Shakespeare. (3) I, II.

The Staff

RELATED COURSE IN OTHER DEPARTMENTS

English 106D-106E. Fundamentals of Dramatic Writing. (3-3) Yr.

Mr. Savage

TURKISH

For courses in Turkish, see under Department of Near Eastern and African Languages.

ZOOLOGY

(Department Office, 2203 Life Sciences Building)

Gordon H. Ball, Ph.D., *Professor of Zoology.*

†George A. Bartholomew, Ph.D., *Professor of Zoology.*

John N. Belkin, Ph.D., *Professor of Entomology.*

Theodore H. Bullock, Ph.D., *Professor of Zoology.*

†Raymond B. Cowles, Ph.D., *Professor of Zoology.*

Frederick Crescitelli, Ph.D., *Professor of Zoology.*

Waldo H. Furgason, Ph.D., *Professor of Zoology (Life Sciences).*

† Absent on leave, 1961-1962.

‡ In residence fall semester only, 1961-1962.

- Theodore L. Jahn, Ph.D., *Professor of Zoology.*
 Edgar L. Lazier, Ph.D., *Professor of Zoology.*
 A. Mandel Schechtman, Ph.D., *Professor of Zoology.*
 Fritiof S. Sjöstrand, M.D., Ph.D., *Professor of Zoology.*
 Clara M. Szego (Clara Szego Roberts), Ph.D., *Professor of Zoology.*
 Bennet M. Allen, Ph.D., *Professor of Zoology, Emeritus.*
 Loye Holmes Miller, Ph.D., *Professor of Biology, Emeritus.*
 Bernard C. Abbott, Ph.D., *Associate Professor of Zoology.*
 Nicholas E. Collias, Ph.D., *Associate Professor of Zoology.*
 †Thomas R. Howell, Ph.D., *Associate Professor of Zoology and Curator of the Dickey Ornithological Collection.*
 Blaine H. Levedahl, Ph.D., *Associate Professor of Zoology.*
 Otto H. Scherbaum, Ph.D., *Associate Professor of Zoology.*
 †Henry J. Thompson, Ph.D., *Associate Professor of Botany (Life Sciences).*
 Boyd W. Walker, Ph.D., *Associate Professor of Zoology.*
 Sarah Rogers Atsatt, Ph.D., *Associate Professor of Zoology, Emeritus.*
 David P. Bloch, Ph.D., *Assistant Professor of Zoology.*
 Albert A. Barber, Ph.D., *Assistant Professor of Zoology.*
 Richard A. Boolootian, Ph.D., *Assistant Professor of Zoology.*
 Elof A. Carlson, Ph.D., *Assistant Professor of Zoology.*
 *Malcolm S. Gordon, Ph.D., *Assistant Professor of Zoology.*
 †Donald Heyneman, Ph.D., *Assistant Professor of Zoology.*
 Jack W. Hudson, Ph.D., *Visiting Assistant Professor of Zoology.*
 Thomas W. James, Ph.D., *Assistant Professor of Zoology.*
 J. Lee Kavanau, Ph.D., *Assistant Professor of Zoology.*
 Kenneth S. Norris, Ph.D., *Assistant Professor of Zoology.*
 Richard W. Siegel, Ph.D., *Assistant Professor of Zoology.*
 Frederick B. Turner, Ph.D., *Visiting Assistant Professor of Zoology.*
 Peter P. Vaughn, Ph.D., *Assistant Professor of Zoology.*
 Vladimir Walters, Ph.D., *Assistant Professor of Zoology.*
 Kenneth W. Allen, Ph.D., *Lecturer in Zoology.*



- Jowett C. Chao, Ph.D., *Associate Research Zoologist.*
 Maria Seraydarian, Ph.D., *Associate Research Zoologist.*
 Lyle Herbst, M.A., *Lecturer in Life Sciences.*
 John B. Loefer, Ph.D., *Research Associate.*

Letters and Science List.—All undergraduate courses in this department except 11H, 136, and 370 are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

Preparation for the Major.—Required: courses 1A, 1B, Chemistry 1A, 1B, Physics 2A, 2B, or 1A, 1B, 1C, 1D. Recommended: German, French, and English 1B, or English 106S.

The Major.—Twenty-two units of upper division work in zoology and 6 units of upper division work chosen from zoology or from approved related courses in anthropology, bacteriology, botany, chemistry, entomology, home economics, mathematics, paleontology, physics, or psychology. Of the 22 upper division units in zoology, at least one course must be taken in each of the following groups:

- Group 1: Courses 101A, 109A, 142.
- Group 2: Courses 100A, 106.
- Group 3: Courses 112, 134.
- Group 4: Course 130A.

† Absent on leave, 1961–1962.

* In residence spring semester only, 1961–1962.

Honors in Zoology.—A limited number of students who are qualified to carry out independent research may become candidates for Honors in Zoology. Candidates must take at least 6 units of Honors Research (Zoology 190) during the senior year. At the discretion of the staff, Honors students may be exempted from certain courses otherwise required for the major. During their final term, Honors candidates are required to submit and to defend orally before a faculty committee a written thesis describing the results of their research. Prerequisites for admission to candidacy for Honors in Zoology are a cumulative grade-point average of 3.0 in Zoology courses and permission of the Departmental Honors Committee. Applications for admission to Honors work should be made during the second semester of the junior year.

Curriculum for Medical Technologists. For details, see pages 15 and 110.

Graduate Study

The department grants advanced degrees in zoology with specialization in the following fields: animal behavior, biophysics, embryology and immunobiology, comparative physiology, cytology, electron microscopy and ultrastructure, endocrinology, entomology, general physiology, genetics, herpetology, histology, ichthyology, invertebrate zoology, mammalogy, neurophysiology, ornithology, parasitology, physiological ecology, protozoology and protozoan physiology, radiation biology, vertebrate paleontology and vertebrate morphology, and vertebrate physiology.

Arrangements may be made for a limited number of students to major in zoology at the University of California, Los Angeles, and to do their research on the San Diego campus of the University in ichthyology, fishery biology, invertebrate zoology, marine biology, or marine biochemistry under the direction of members of the staff of the Scripps Institution of Oceanography.

Requirements for the General Secondary Credential

Consult the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES.

Requirements for the Master's Degree

In addition to the general requirements of the Graduate Division, the department may require written or oral examinations of any candidate for the master's degree. There is no foreign language requirement for the master's degree in zoology.

Requirements for the Doctor's Degree

In addition to the general requirements of the Graduate Division, students intending to become candidates for the Ph.D. degree must pass a written qualifying examination administered by the department.

LOWER DIVISION COURSES

1A. General Zoology. (4) I, II. Mr. Allen, Mr. Boolootian

Lecture, two hours; laboratory, six hours; field trip.

Principles of animal biology, with emphasis on the invertebrates. Offered primarily for zoology majors, premedical, and pre dental students.

1B. General Zoology. (4) I, II. Mr. Gordon, Mr. Hudson

Lecture, two hours; laboratory, six hours. Prerequisite: course 1A.

Principles of animal biology, with emphasis on comparative gross and microscopic anatomy and physiology of the vertebrates.

4. Histological Technique. (2) I. Mr. Bloch

Lecture and laboratory, six hours. Prerequisite: course 1B or the equivalent, or consent of the instructor.

15. Elementary Zoology and Physiology. (5) I, II.

Lecture, three hours; laboratory, six hours. Not open to premedical, pre-dental, or zoology majors. Mr. Barber, Mr. Levedahl

25. General Human Anatomy. (3) I, II.

(Former number, 35.) Mr. Vaughn, Mr. Walters
Lecture, two hours; laboratory, three hours. Prerequisite: course 15 and sophomore standing.

UPPER DIVISION COURSES

100A. Vertebrate Embryology. (4) I.

(Formerly numbered 100.) Mr. Schechtman
Lecture, two hours; laboratory, six hours. Prerequisite: courses 1A, 1B, or the equivalent.

Study of embryologic development of the main classes of vertebrates, with emphasis in the laboratory on the amphibian, bird, and mammal.

100B. Mammalian Embryology. (3) II.

Mr. Schechtman
Lecture, two hours; laboratory, three hours. Prerequisite: course 100A.
The development of mammals, with emphasis on man and common laboratory mammals; selected topics on the physiology of the fetus and placental function.

101A. Introduction to General Physiology. (3) I, II.

Mr. Scherbaum
Prerequisite: courses 1A, 1B, or the equivalent. Chemistry 1A, 1B, 5A, 8; Physics 2A, 2B, or the equivalent are recommended.
Special emphasis on the physical and chemical properties of protoplasm; osmotic relations and permeability of living cells; physiological action of ions and principles of enzyme action.

101B. General Physiology. (3) II.

Mr. Crescitelli
Prerequisite: course 101A.
Continuation of course 101A with emphasis on oxidation-reduction systems, excitation, inhibition, respiration, and muscle contraction.

101C. Laboratory in General Physiology. (3) II.

Mr. Levedahl
Laboratory, six hours; discussion, one hour. Prerequisite: course 101A, 101B. Course 101B may be taken concurrently.

102. Vertebrate Physiology. (3) I.

Mr. James
Prerequisite: upper division standing.
Physiology of those systems which are concerned with the integration of body functions and with determination of behavior, with special emphasis on reflexes, motor coordination, and visceral functions. Designed particularly for majors in psychology and related fields. Not open to premedical, pre-dental, or zoology majors.

103. Experimental Embryology. (3) II.

Mr. Kavanau
Prerequisite: courses 1A, 1B, or the equivalent.
Principles governing histological and morphological differentiation; and analysis of the factors involved in growth and differentiation of cells and tissues.

103C. Experimental Embryology Laboratory. (2) II.

Mr. Kavanau
Prerequisite or concurrent: course 103.

106. Comparative Anatomy of the Vertebrates. (4) I, II.

Mr. Vaughn, Mr. Walters
Lecture, two hours; laboratory, six hours. Prerequisite: course 1B.
A study of the major concepts of vertebrate morphology, with particulars

drawn from embryonic and fossil materials, as well as recent adult forms. Laboratory study mainly of the shark and cat.

107. Microanatomy. (4) I. Mr. Sjöstrand

Lecture, two hours; laboratory, six hours. Prerequisite: course 1B.

The structure and activities of cells and tissues, with emphasis on the mammals. Designed for zoology majors.

109A. Comparative Vertebrate Physiology. (3) I. Mr. Abbott, Mr. Gordon

Lecture, two hours; laboratory, one hour lecture-demonstration. Prerequisite: course 1B or equivalent; Chemistry 8; Physics 2A, 2B are recommended.

A survey of the physiology of organ systems of the vertebrates.

109B. Comparative Vertebrate Physiology. (3) II. Mr. Abbott, Mr. Gordon

Lecture, two hours; laboratory, three hours. Prerequisite: course 109A.

A survey of the physiology of organ systems of the vertebrates.

110. Protozoology. (4) II. _____

Lecture, two hours; laboratory, six hours. Prerequisite: course 1A.

111. Parasitology. (2) I.

Prerequisite: course 1A.

Mr. Ball

111C. Parasitology Laboratory. (2) I.

Prerequisite or concurrent: course 111.

Mr. Ball

111H. Laboratory Aide Training in Parasitology. (2) I.

Prerequisite or concurrent: course 111C.

Mr. Ball

For persons intending to become laboratory technologists.

112. Invertebrate Zoology. (4) I.

Lecture, two hours; laboratory and field, six hours. Prerequisite: upper division standing and general zoology.

A survey of structure, classification, natural history, and ecology of invertebrates.

Mr. Boolootian

115. Helminthology. (4) II.

Lecture, two hours; laboratory, six hours. Prerequisite: upper division standing and general zoology.

A general course in the helminth parasites of animals.

Mr. Allen

118A. Introductory Endocrinology. (3) I.

Prerequisite: course 1B or the equivalent. Chemistry 8 recommended.

A survey of the influences of hormonal mechanisms on body structure and function.

Miss Szego

118B. Advanced Endocrinology. (3) II.

Lecture, two hours; discussion and conference, one hour. Prerequisite: course 118A, Chemistry 8.

Continuation of course 118A. Detailed analysis of selected endocrine interrelationships and discussion of current research in the field.

Miss Szego

118C. Endocrinology Laboratory. (3) II.

Laboratory, six hours; discussion, one hour. Prerequisite or concurrent: course 118B and consent of the instructor.

Miss Szego

119. Isotopic Tracers in Biology. (3) I.

Lecture, two hours; discussion or demonstration, one hour. Prerequisite: one of the following: courses 101A, 118A, and 118B; Botany 160A; Bacteriology 106; or Chemistry 108A.

The use of isotopic tracers in the study of biological processes, including

Mr. Barber

methods, problems investigated, interpretation of data, and possible future developments. For majors in the biological sciences.

122. Introduction to the Nervous System. (4) I. Mr. Bullock
Lecture, three hours; laboratory, three hours. Prerequisite: course 1B, 15 or 102.

Structural and functional principles of the nervous system as a general biological phenomenon in vertebrates and invertebrates.

†**123. Invertebrate Embryology. (3) I.** Mr. Kavanau
Lecture, two hours; laboratory, three hours. Prerequisite: course 1A-1B or the equivalent.

Study of the embryonic development of various invertebrates.

125. Heredity and Evolution. (2) II. Mr. Siegel
Prerequisite: junior standing. Not open to students who have taken course 1A, or to majors in zoology, botany, or bacteriology, or to premedical and pre dental students.

A survey of the concepts and facts basic to an appreciation of biologic systems and their evolutionary development.

†**126. Chemical Embryology. (3) I.** Mr. Kavanau
Prerequisite: course 103.

Chemical aspects of sex determination, gametogenesis, fertilization and early embryonic development.

***127. Immunobiology. (3) II.** Mr. Schechtman
Prerequisite: one year of biological sciences, or consent of the instructor. Principles of antibody production and action and the applications of immunological reactions to the solution of biological problems.

129. Application of Optical Instruments to Biological Problems. (2) II. Mr. James

Lecture and demonstration, two hours. Prerequisite: Physics 1D or 2B.

A course designed for students in the biological sciences to acquaint them with the microscope, its potentialities and its limitations.

130A. Introductory Genetics. (2) I, II. Mr. Siegel, Mr. Carlson
Lecture and discussion, two hours. Prerequisite: course 1A or the equivalent.

The principles of heredity and their bearings on reproduction and evolution. Intended primarily for majors in zoology and bacteriology, and pre dental and medical students.

130C. Genetics Laboratory. (2) I. Mr. Carlson
Laboratory, six hours. Prerequisite or concurrent: course 130A.
Breeding experiments to illustrate the principles of genetics.

131A. Developmental Genetics. (2) I. Mr. Carlson
Prerequisite: course 130A or Botany 140.

The interaction of genes, cytoplasm, and environment in the inheritance and determination of cellular characters and differentiation.

***131B. Physiological Genetics. (2) II.** _____
Prerequisite: course 130A or Botany 140.
The roles of genes in the regulation of physiological processes, particularly at the molecular level.

* Not to be given, 1961-1962.

† Given in alternate years, beginning 1961-1962.

‡ Given in alternate years, beginning 1962-1963.

- 132A. General Cytology.** (2) I. Mr. Bloch
Prerequisite: course 1B; Chemistry 8.
The structure and function of cytoplasm and nucleus of animal cells.
- 132B. Nuclear Cytology.** (2) II. Mr. Bloch
Prerequisite: courses 130A, 132A.
The morphology, chemical nature, and functions of the nucleus of animal cells, with emphasis on chromosomal structure and relation to genetics.
- 132C. Cytology Laboratory.** (2) I. Mr. Bloch
Laboratory, six hours. Prerequisite or concurrent: course 132A or 132B.
- *133. Biology of the Cold-blooded Terrestrial Vertebrates.** (4) II. Mr. Cowles
Lecture, two hours; laboratory, six hours; field trips. Prerequisite: course 134.
The systematics, distribution, physiology, and ecology of amphibians and reptiles.
- 134. Biology of the Vertebrates.** (4) I, II. Mr. Collias, Mr. Hudson
Lecture, three hours; laboratory, three hours; field trips. Prerequisite: course 1B.
The adaptations, behavior, ecology, and distribution of vertebrates. This course is prerequisite to courses 133, 135, 136, and 141.
- 135. Ichthyology.** (4) I. Mr. Walker
Lecture, two hours; laboratory, six hours; field trips. Prerequisite: course 134.
The evolution, systematics, ecology, and biology of fishes, with special emphasis on local marine forms.
- 137. Vertebrate Paleontology.** (4) I. Mr. Vaughn
Lecture, three hours; laboratory, three hours. Prerequisite: course 106 or consent of the instructor; recommended, Geology 3 or 101.
Study of the fossil record of the evolution of the vertebrates.
- 138. Biology and Human Welfare.** (3) II. Mr. Turner
Prerequisite: upper division standing, but no prerequisite courses.
History of major contributions of biology to human welfare, health, economics, and philosophy; and a survey of the resulting problems and aspects.
- 139. Biological Effects of Radiation.** (3) II. Mr. Levedahl
Prerequisite: upper division standing.
General biological responses following exposure of plants, animals, and man to ionizing radiations, especially those emanating from products of nuclear reactions.
- 140. Development of Biological Ideas.** (3) I. Mr. Furgasou
Prerequisite: upper division standing and at least one year in the biological sciences.
History of the biological sciences.
- *141. Advanced Ornithology.** (4) II. Mr. Howell
Lecture, two hours; laboratory and field trips, six hours. Prerequisite: course 134 or consent of the instructor.
The systematics, distribution, evolution, and field biology of birds.

142. Comparative Invertebrate Physiology. (4) II. Mr. Bullock
Lecture, two hours; laboratory, six hours. Prerequisite: courses 1A, 1B;
recommended: courses 101, 112.

A survey of the differences in mechanism among animal groups of the
several organ systems, nervous, endocrine, nutritive, respiratory, excretory,
reproductive, circulatory, receptor, effector, etc.

150. General Entomology. (4) II. Mr. Belkin
(Former number, Entomology 100.)

Lecture, two hours; laboratory, six hours, plus several field trips. Prerequi-
site: course 1A or Botany 1 or the equivalent.

The structure, physiology, life history, and classification of insects and
related terrestrial arthropods.

151. Medical Entomology. (4) I. Mr. Belkin
(Former number, Entomology 126.)

Lecture, two hours; laboratory, six hours, plus field trips. Prerequisite:
course 1A or equivalent; recommended, courses 110, 111, 115.

***152. Principles of Systematic Zoology.** (1-3) I. Mr. Belkin
(Former number, Entomology 112A.)

Lecture, three hours. Prerequisite: course 1A or the equivalent.

Taxonomic principles, concepts and methods; nomenclature; bibliographical
methods.

***154. Insect Physiology.** (3) I. _____

Lecture, two hours; laboratory, three hours. Prerequisite: course 1A.

***159. Physical Ecology.** (2) II. Mr. Bartholomew, Mr. Walker
Prerequisite: course 1B.

A survey of the physical and chemical factors of the environment as they
affect the distribution and mode of life on animals.

190. Honors Research in Zoology. (1-5) I, II. The Staff

Prerequisite: senior standing and permission of the Departmental Honors
Committee.

Individual research designed to broaden and deepen the student's knowl-
edge of some phase of zoology.

199. Special Studies. (1-3) I, II. The Staff

Prerequisite: senior standing and consent of the instructor.

GRADUATE COURSES

201. Advanced Cellular Physiology. (3) II. Mr. Jahn
Prerequisite or concurrent: course 101B.

Permeability, salt accumulation, bioelectric phenomena, oxidation-reduction
potentials, effect of temperature and cell metabolism.

***202A-202B-202C. Advanced General Physiology.** (2-2-2) I.

Prerequisite: courses 101A, 101B.

Mr. Crescitelli

Among topics discussed are respiration, enzymes, nerve physiology, vita-
mins, tracer techniques, and physiology of growth.

205. Experimental Cell Biology. (3) II. Mr. James

Lecture, one hour; laboratory, six hours. Prerequisite: course 101A or
equivalent.

The physiology of control mechanisms and the integration of metabolic
systems at the cellular level. Individual experiments will be encouraged.

* Not to be given, 1961-1962.

- 206. Advanced Vertebrate Morphology. (3) I.** Mr. Walters
Lecture, one hour; laboratory, six hours. Prerequisite: course 106.
Problems in vertebrate morphology with emphasis on evolution of the skeleton and muscles. Lectures, discussion, assigned reading and laboratory study of fossil and living vertebrates. Designed for students in vertebrate zoology.
- 208. The Vertebrate Eye. (2) I.** Mr. Crescitelli
The morphology, physiology, and biochemistry of the vertebrate eye with special emphasis on its adaptive features.
- 210. Physiology of Protozoa. (2) I.** Mr. Jahn
Recommended: course 110.
Protoplasmic structure, locomotion, motor responses, respiration, excretion, metabolism, growth and nutrition of protozoa, especially as compared with other groups of organisms.
- *211. The Physiology of Animal Parasites. (2) II.** Mr. Heyneman
Prerequisite: courses 101A, 111.
Lectures on nutrition, metabolism, physiological ecology, and immunology and evolution of parasitic protozoa and helminths.
- 212. Advanced Invertebrate Zoology. (2) I.** Mr. Boolootian
Prerequisite: course 112.
Problems in functional adaptations, anatomy, development, and systematics of invertebrates; intraphyletic relationships as illustrated by an intensive study of one phylum.
- †219. Radiation Biology. (3) I.** Mr. Barber
Lecture, two hours; laboratory, 3 hours. Prerequisite: course 101A or 109, 139 or consent of instructor.
The effects of ionizing and ultraviolet radiation from the points of view of physiology, pathology, cytology, and genetics.
- *230. Advanced Genetics. (2) II.** Mr. Siegel
Prerequisite or concurrent: course 130A or Botany 140.
Elucidation of genetics through the study of experimental animal cytogenetics, chromosomal alteration, position effect, irradiation effects, and mutations.
- *231. Human Familial Genetics. (2) I.** _____
Prerequisite: course 130A.
A survey of human genetics with emphasis on methodology.
- 232. Analytical Cytology. (2) II.** Mr. Bloch
Prerequisite: course 132A or 132B.
Lecture, one hour; laboratory, three hours.
Application of physical and chemical methods to the determination of cell structure and function.
- 234. Electron Microscopy and Ultrastructure. (2) II.** Mr. Sjostrand
Prerequisite: Zoology 107 and consent of the instructor. Recommended: Physics 108B, Biochemistry and Physical Chemistry.
The principles and methods of electron microscopy and the ultrastructure of basic components of cells as revealed by electron microscopy, X-ray diffraction, and polarization microscopy.

* Not to be given, 1961-1962.

† To be given in alternate years beginning, 1962-1963.

237. **The Behavior of Animals.** (3) II. Mr. Collias
Lecture, two hours; laboratory, three hours. Prerequisite: course 134.
Principles of etiology, including ecological significance, underlying mechanisms, and evolution of behavior, with special reference to natural conditions.
- 240A. **Physiology of Contractile Tissues and Muscle.** (3) I. Mr. Abbott
Lecture, two hours; laboratory, three hours. Prerequisite: course 101A.
- 240B. **Comparative Physiology of Circulatory Systems.** (3) II. Mr. Abbott
Lecture, two hours; laboratory, three hours. Prerequisite: course 240A.
242. **Comparative Neurology.** (2) I. Mr. Bullock
Evolution of structure and function of nervous systems in invertebrates and vertebrates, with special reference to the central nervous system.
250. **Survey of Animal Biology.** (2) II. Mr. Furgason
Prerequisite: course 140 and consent of the instructor.
A review of the basic concepts and theories of biological sciences as viewed with historical perspective and as related to contemporary viewpoints.
- 251A-251B. **Seminar in Ecology of Amphibia and Reptiles.** (2-2) Yr. Mr. Cowles, Mr. Norris
*251C-251D. **Seminar in Ecology of Birds and Mammals.** (2-2) Yr. Mr. Bartholomew, Mr. Howell
- 252A-252B. **Seminar in Endocrinology.** (2-2) Yr. Miss Szego
- 253A-253B. **Seminar in Genetics.** (2-2) Yr. Mr. Carlson, Mr. Siegel
Prerequisite: course 131A or 131B.
- 254A-254B. **Seminar in Physiology of Development.** (2-2) Yr. Mr. Kavanau, Mr. Schechtman
- 255A-255B. **Seminar in Protozoology and Parasitology.** (2-2) Yr. Mr. Ball
257. **Seminar in Comparative Physiology.** (2) II. Mr. Bullock
258. **Seminar in Physiology of Sense Organs.** (2) II. Mr. Abbott
- 260A. **Seminar in Ichthyology.** (2) I. Mr. Walker, Mr. Gordon
- 260B. **Seminar in Fisheries Biology.** (2) II. Mr. Walker, Mr. Gordon
261. **Seminar in Cell Physiology.** (2) I. Mr. Jahn
263. **Seminar in Physiology of Microorganisms.** (2) II. Mr. Jahn
- 264A-264B. **Seminar in Kinetics of Biological Systems.** (2-2) Yr. Mr. Levedahl
266. **Seminar in Vertebrate Paleontology.** (2) II. Mr. Vaughn
- 267A-267B. **Seminar in Animal Cytology.** (2-2) Yr. Mr. Bloch
Prerequisite: any of the following: course 132A, 132B, 230, Botany 141.
268. **Seminar on the Invertebrates.** (2) II. Mr. Boolootian
269. **Seminar in Animal Behavior.** (2) I. Mr. Collias
270. **Seminar in the Physiology of Growth.** (2) I. Mr. Scherbaum
- 271A-271B. **Seminar in Entomology.** (2-2) Mr. Belkin
(Former number, Entomology 251A-251B.)
- 290A-290B. **Research in Zoology.** (2-6; 2-6) Yr. The Staff

PALEONTOLOGY

Courses in general and invertebrate paleontology are offered by the Department of Geology (see page 246).

LIFE SCIENCES**1A-1B. Fundamentals of the Life Sciences. (3-3) Yr.**

Lecture, demonstration, discussion, three hours. Mr. Furgason, Mr. Norris

An integrated year-course designed primarily for students who are not majoring in the biological sciences. A nontechnical presentation of the fundamental biological concepts leading to an understanding of living things and man's place in the scientist's view of things. Both semesters must be satisfactorily completed to fulfill the College of Letters and Science requirement of at least 5 units of biological science.

370. Methods and Materials for Teaching Life Science. (3) II. Mr. Herbst

Lecture, demonstration, field trips. Prerequisite: major in biological sciences, senior or graduate status, and one of the following courses: Botany 3, Zoology 112, 133, 134. Required of all prospective life science teachers who wish to secure the general secondary or junior college credential. It must be taken prior to practice teaching courses, Education G377, G378, and G379.

BIOLOGY†**12. Natural History. (3) I, II.**

Mr. Collias, Mr. Turner

Lecture, three hours; demonstration, one hour; one required field trip in the semester. Prerequisite: high school biological science or the equivalent, or consent of the instructor.

The biology of the environment, the common animals and some plants of southern California; their interrelationships, and their relationship to climate.

PLANT SCIENCE**Horticultural Science**

Programs leading to advanced degrees in horticultural science are very flexible, which makes it possible for students to prepare for a variety of employment opportunities in universities, governments, and industries. The specific areas in which advanced degrees are offered include plant biochemistry, chemical and physical basis of morphogenesis and development, genetics and plant breeding, and soil-plant relationships (plant science). Several research assistantships are available to qualified applicants to assist staff members in research projects related to fruit tree and ornamental plants in the areas named above.

Recommendation for acceptance in graduate status is made by a graduate advisory committee in horticultural science. This committee is also responsible for initial guidance of new students, for assignments of instructors-in-charge and for appointment of guidance committees.

Admission to Graduate Status

Applicants with a bachelor's degree in an agriculture, life, natural, or physical science, who have a grade-point average of 2.5 or better in chemistry, mathematics, physics, and in the courses of the major field, and who satisfy the general requirements will be considered for admission to graduate status.

† The attention of nonscience majors is called to Zoology 138, Biology and Human Welfare (see page 462). This course is designed for students not majoring in zoology.

Requirements for the Master's Degree

The general requirements are listed on pages 69-71. Either Plan I or Plan II is followed depending on the discretion of the instructor in charge (see page 70). For those following Plan II, a comprehensive written examination is given toward the end of each semester. Each student is required to pass a written examination before advancement to candidacy in addition to the comprehensive examination. Courses at the University of California at Riverside may be accepted in partial fulfillment of the requirements. A reading knowledge of a foreign language is not required.

Requirements for the Doctor's Degree

For the general requirements see pages 71-74. Students with deficiencies in the following courses or their equivalents will make them up as part of the course work preparation: Botany 1 (General), 6 (Anatomy), 107 (Plant Physiology), 140 (Genetics); Chemistry 1A-1B (General), 8 or 112A (organic), and 5A (quantitative analysis) or 108A (Biochemistry) or 109 (Physical); Mathematics 1, C, and Calculus at least equivalent to Mathematics 37; Physics 2A; Statistics 1. Additional course work, determined in consultation with the guidance committee and depending on areas of interest and prior preparation, will be required in agriculture and botany and in two of the following fields: bacteriology, chemistry, mathematics and statistics, physics, physiological chemistry, and zoology.

A reading knowledge of German is usually required as one foreign language and the second is selected with approval of the guidance committee.

Each student is expected to pass written examinations prior to advancement to candidacy in addition to the oral examination administered by the doctoral committee before admission to candidacy.

After the acceptance of the dissertation, the candidate must pass a final oral examination.

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