

**General
Catalogue**

**DEPARTMENTS AT
LOS ANGELES**

Fall and Spring Semesters
1959-1960

JULY 1, 1959

Price Fifty Cents

LOS ANGELES, CALIFORNIA

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Changes in the list of Officers of Administration and Instruction may be made subsequent to the date of publication, July 1, 1959.

GENERAL INFORMATION

Letters of inquiry concerning the University of California, Los Angeles, should be addressed to the Registrar, 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.



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

General Catalogue

DEPARTMENTS AT LOS ANGELES

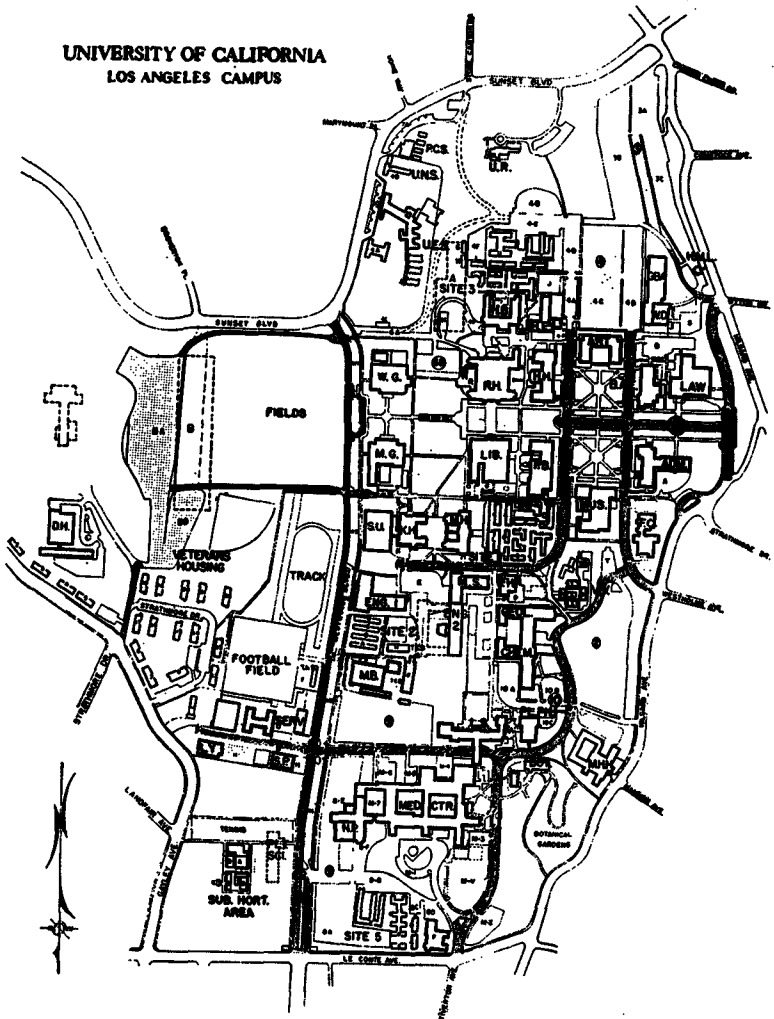
Fall and Spring Semesters

1959-1960

JULY 1, 1959

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	MG	MED. CTR. MEDICAL CENTER	SITE 1	TEMPORARY BUILDINGS
CVC	CYCLOTRON	MHH	MEN'S GYMNASIUM	IM	AIR SCIENCE & TACTICS
DH	DYKSTRA HALL	MH	MIRA HERSHEY HALL	SITE 2	TEMPORARY ENGINEERING BUILDINGS
ENG 1	ENGINEERING 1	MUS	MUSIC	SITE 3	TEMPORARY BUILDINGS
ENG 2	ENGINEERING 2	PB	PHYSICS-BIOLOGY	3U	NUMERICAL ANALYSIS
FG	FACULTY CENTER	PL. PH.	PLANT PHYSIOLOGY	3V	THEATER ARTS
FH	FRANK HALL	PL. SCI	PLANT SCIENCES	SITE 5	TEMPORARY BUILDINGS
GEO	GEOLOGY	PGS	PSYCHOLOGY CLINIC SCHOOL	SAB	UNIVERSITY EXTENSION
GBA	GRADUATE SCHOOL OF BUSINESS ADMINISTRATION	RH	ROYCE HALL	SD	MEDICAL SCHOOL-HOSPITAL
HH	HAINES HALL	SERV	SERVICE BUILDINGS	SE	ATOMIC ENERGY PROJECT
HE	HOME ECONOMICS	SP	STEAM PLANT	SF	MEDICAL SCHOOL
HML	HOME MANAGEMENT LAB.	SU	STUDENT UNION		
HB	HUMANITIES	TAB	TEMPORARY ATHLETIC BUILDING		
RH	KERCKHOFF HALL	UES	UNIVERSITY ELEMENTARY SCHOOL		
LY	LAUNDRY	UNS	UNIVERSITY NURSERY SCHOOL		
LAW	LAW				

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CALENDAR, 1959-1960

1959

FALL SEMESTER

Aug. 8, Monday	Application for admission to graduate standing in the fall semester, with complete credentials, must be filed on or before this date (April 15 for Social Welfare and July 15 for Engineering and Nursing).
Aug. 14, Friday	Last day to file applications for readmission in graduate standing by students returning after an absence (July 15 for Engineering).
*Aug. 15, Saturday	Applications for admission to undergraduate standing in the fall semester, with complete credentials, must be filed on or before this date (March 15 for the College of Engineering, and July 15 for the registered nurses' program in the School of Nursing).
Aug. 27, Thursday	Last day to file applications for readmission in undergraduate standing by students returning after an absence (March 15 for the College of Engineering).
Sept. 7, Monday to Sept. 12, Saturday	} Counseling of students.
Sept. 8, Tuesday	Examination in English for foreign students.
Sept. 9, Wednesday	Examination in Subject A.
Sept. 14, Monday	Fall semester begins.
Sept. 14, Monday to Sept. 16, Wednesday	} Registration of all students who did not register by mail, for details, see REGISTRATION CIRCULAR and official bulletin boards.
Sept. 18, Friday	Special examination in Subject A.
Sept. 21, Monday	Instruction begins.
Oct. 2, Friday	Last day to file registration packets or to change study lists <i>without fee</i> .
Oct. 5, Monday	Last day to file applications for advancement to candidacy for the master's degree to be conferred in January, 1960.
Oct. 6, Tuesday	Last day to add courses to study lists.
Oct. 6, Tuesday	Last day to file registration packets without penalty of lapse in status as a student in the University.
Oct. 15, Thursday	Last day to file applications for foreign language screening tests to be given October 24.
Oct. 24, Saturday	Foreign language screening tests.
Oct. 24, Saturday	Last day to file <i>without fee</i> notice of candidacy for the bachelor's degree to be conferred in January, 1960.
Oct. 26, Monday 8:00 p.m.	} Last day to drop courses from study lists without penalty of grade F (failure).
Nov. 14, Saturday	End of mid-term period.
Nov. 26, Thursday Nov. 27, Friday	} Thanksgiving holiday—academic and administrative holiday.
Nov. 26, Thursday to Nov. 28, Saturday	} Fall recess.
Dec. 1, Tuesday	Last day to file in final form with the committee in charge theses for the doctor's degree to be conferred in January, 1960.
Dec. 12, Saturday	Last day to file notice of candidacy for the bachelor's degree to be conferred in January, 1960.
Dec. 21, Saturday to Jan. 2, Saturday	} Christmas recess.
Dec. 24-25, Thursday and Friday	} Christmas holiday—academic and administrative holiday.

* March 7, Saturday, qualifying examination for admission to the College of Engineering in the fall semester, 1959. April 12, 1960, last day to file application for admission or readmission to the College of Engineering in the fall semester, 1960. April 2, Saturday, qualifying examinations for admission to the College of Engineering in the fall semester, 1960.

Dec. 31—Jan. 1, Thurs. and Fri. } New Year's holiday—academic and administrative holiday.

1960

Jan. 4, Monday Classes resume.
 Jan. 4, Monday Last day to file in final form with the committee in charge theses for the master's degree to be conferred in January, 1960.
 Jan. 16, Saturday Instruction ends.
 Jan. 18, 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, 1960.
 Jan. 18, Monday to Jan. 28, Thursday } Final examinations, fall semester.
 Jan. 28, Thursday Fall semester ends.

1959

SPRING SEMESTER

Dec. 1, Tuesday Applications for admission to graduate standing in the spring semester, with complete credentials, must be filed on or before this date.

1960

Jan. 4, Monday Last day to file applications for readmission in graduate standing by students returning after an absence.
 Jan. 11, Monday Last day for resident students to file applications for undergraduate scholarships for the academic year 1960-1961.
 *Jan. 15, Friday Applications for admission to undergraduate standing in the spring semester, with complete credentials, must be filed on or before this date (November 17 for the College of Engineering, and January 2 for the registered nurses' program in the School of Nursing).
 Jan. 15, Friday Last day to file applications for readmission in undergraduate standing by students returning after an absence. (November 17 for the College of Engineering.)
 Jan. 25, Monday to Jan. 30, Saturday } Counseling of students.
 Jan. 27, Wednesday Examination in English for foreign students.
 Feb. 1, Monday Examination in Subject A.
 Feb. 1, Monday Spring semester begins.
 Feb. 2, Tuesday } Registration of all students who did not register by mail. For details, see REGISTRATION CIRCULAR and official bulletin boards.
 Feb. 3, Wednesday }
 Feb. 5, Friday Special examination in Subject A.
 Feb. 8, Monday Last day to file applications for fellowship and graduate scholarships tenable at Los Angeles for 1960-1961.
 Feb. 8, Monday Instruction begins.
 Feb. 15, Monday Last day to file applications for advancement to candidacy for the master's degree to be conferred in June or in August, 1960.
 Feb. 19, Friday Last day to file registration packets or to change study lists *without fee*.
 Feb. 22, Monday Washington's Birthday—academic and administrative holiday.
 Feb. 24, Wednesday Last day to add courses to study lists.
 Feb. 24, Wednesday Last day to file registration packets without penalty of lapse in status as a student in the University.
 Feb. 25, Thursday Last day to file applications for foreign language screening tests to be given March 5.
 Mar. 1, Tuesday Last day for entering students to file application for undergraduate scholarships or for Alumni Association scholarships for the academic year 1960-1961.
 Mar. 5, Saturday Foreign language screening tests.

* November 7, 1959, Saturday, qualifying examinations for admission to the College of Engineering in the Spring semester, 1960.

Calendar

Mar. 14, Monday 8:00 p.m.	} Last day to drop courses from study lists without penalty of grade F (failure).
Mar. 19, Saturday	Last day to file <i>without fee</i> notices of candidacy for the bachelor's degree to be conferred in June, 1960.
Apr. 8, Friday	Last day to file in final form with the committee in charge theses for the doctor's degree to be conferred in June, 1960.
Apr. 9, Saturday	End of mid-term period.
April 11, Monday to April 16, Saturday	} Spring recess.
Apr. 25, Monday	Last day to file with the committee in charge theses for the master's degree to be conferred in June, 1960.
May 7, Saturday	Last day to file notice of candidacy for the bachelor's degree to be conferred in June, 1960.
May 27, Friday	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, 1960.
May 27, Friday	Instruction ends.
May 28, Saturday to June 8, Wednesday	} Final examinations, spring semester.
May 30, Monday	Memorial Day—academic and administrative holiday.
June 9, Thursday	Spring semester ends.

THE REGENTS OF THE UNIVERSITY

REGENTS EX OFFICIO

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Governor of California and President of
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State Capitol, Sacramento 14

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State Capitol, Sacramento 14

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1199 Sherwood rd, San Marino

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President of the University
714 University Hall, Berkeley 4
2147 Administration bldg,
Los Angeles 24

APPOINTED REGENTS

The term of the appointed Regents is sixteen years, and terms expire March 1 of the years indicated in parentheses. The names are arranged in the order of original accession to the Board.

EDWIN W. PAULEY, B.S. (1970)
717 N Highland av, Los Angeles 88

VICTOR R. HANSEN, LL.E. (1962)
Apt. 605, 2000 Connecticut av,
NW Washington, D.C.

CORNELIUS J. HAGGERTY (1966)
Room 810, 995 Market st,
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JESSE H. STEINHART, A.B., LL.B. (1962)
111 Sutter st, San Francisco 4

DONALD H. McLAUGHLIN, B.S., M.A.,
Ph.D., D.Eng. (1966)

100 Bush st, San Francisco 4
GUS OLSON, B.S. (1960)

Clarksburg

GERALD H. HAGAR, A.B., J.D. (1964)
1421 Central bldg, 14th and Broadway,
Oakland 12

HOWARD C. NAFFZIGER, B.S., M.S., M.D.
(1968)
Room 417, 58 Sutter st, San Francisco 4

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401 S Broadway, Los Angeles 18

MRS. DOROTHY B. CHANDLER (1970)
202 W First st, Los Angeles 58

THOMAS M. STORKE, A.B. (1960)
Santa Barbara News-Press,
De La Guerra plaza, Santa Barbara

MRS. CATHERINE HEARST (1974)
701 N Canon dr, Beverly Hills

SAMUEL B. MOSHER, B.S. (1972)
811 W Seventh st, Los Angeles 17

JOHN E. CANADAY, A.B. (1974)
Lockheed Aircraft Corporation,
2555 N Hollywood way, Burbank

PHILIP L. BOYD, A.B. (1972)
3900 Market st, Riverside

JERD F. SULLIVAN, JR. (1964)
Crocker-Anglo National Bank,
1 Montgomery st, San Francisco 4

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State Capitol, Sacramento 14

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615 University Hall, Berkeley 4

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615 University Hall, Berkeley 4

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615 University Hall, Berkeley 4

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Assistant Counsel of the Regents
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590 University Hall, Berkeley 4

UNIVERSITY OF CALIFORNIA

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Herman A. Spindt, Ph.D., *Director of Admissions and Director of Relations with Schools.*

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Edgar L. Lazier, Ph.D., *Associate Director of Admissions.*
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Milton E. Hahn, Ph.D., *Dean of Students.*
Byron H. Atkinson, M.A., *Associate Dean of Students and Dean of Men.*
Nola-Stark Cavette, Ed.D., *Associate Dean of Students and Dean of Women.*
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Aubrey L. Berry, Ed.D., *Assistant Manager of the Bureau of School and College Placement.*
Donald P. LaBoskey, A.B., *Placement Office Manager.*
Glady's M. Jewett, Ph.D., *Counseling Center Manager.*
Donald S. MacKinnon, M.D., *Director, Student Health Service.*

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Roy Bainer, M.S., *Assistant Dean of the College of Engineering (Resident at Davis).*

- Francis E. Blacet, Ph.D., *Divisional Dean of Physical Sciences, College of Letters and Science.*
- Llewellyn M. K. Boelter, M.S., *Dean of the College of Engineering.*
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- Roy M. Dorcus, Ph.D., *Divisional Dean of Life Sciences, College of Letters and Science.*
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- Max S. Dunn, *Associate Dean of the Graduate Division, Southern Section.*
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- John Field, II, Ph.D., *Associate Dean of the School of Medicine.*
- Clarence Fielstra, Ph.D., *Assistant Dean of the School of Education.*
- Raymond H. Fisher, Ph.D., *Assistant Dean of the Graduate Division.*
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- Lenor S. Goerke, M.D., M.S.P.H., *Associate Dean of the School of Public Health.*
- Warren A. Hall, Ph.D., *Assistant Dean of Undergraduate Studies, College of Engineering.*
- Lulu Wolf Hassenplug, M.P.H., *Dean of the School of Nursing.*
- Robert W. Hodgson, M.S., *Dean of the College of Agriculture.*
- Donald S. Howard, Ph.D., *Dean of the School of Social Welfare.*
- David F. Jackey, Ph.D., *Dean of the College of Applied Arts.*
- Neil H. Jacoby, Ph.D., *Dean of the School of Business Administration and Dean of the Graduate School of Business Administration.*
- Edwin A. Lee, Ph.D., *Dean of the School of Education, Emeritus.*
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- Frank W. McKee, Ph.D., *Assistant Dean of the School of Medicine.*
- William W. Melnitz, Ph.D., *Assistant Dean of the College of Applied Arts.*
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- Wesley L. Orr, C.E., *Assistant Dean of the College of Engineering.*
- Thomas A. Petit, Ph.D., *Acting Assistant Dean, School of Business Administration.*
- Joel J. Pressman, M.D., *Assistant Dean of the School of Medicine.*
- George W. Robbins, M.B.A., *Associate Dean of the School of Business Administration.*
- J. Wesley Robson, Ph.D., *Associate Dean of Student Affairs, College of Letters and Science.*
- Franklin P. Rolfe, Ph.D., *Divisional Dean of Humanities, College of Letters and Science.*
- May V. Seagoe, Ph.D., *Assistant Dean of the School of Education.*
- Eli Sobel, Ph.D., *Associate Dean, Special Gifted Student and Honors Programs, College of Letters and Science.*
- Thomas H. Sternberg, M.D., *Assistant Dean for Postgraduate Medical Education, School of Medicine.*
- Arvo Van Alstyne, A.B., LL.B., *Assistant Dean of the School of Law.*
- Samuel J. Wanous, Ph.D., *Assistant Dean of the School of Education.*
- Stafford L. Warren, M.D., *Dean of the School of Medicine.*
- Howard E. Wilson, Ph.D., *Dean of the School of Education.*

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 eight campuses—Berkeley, San Francisco, Mt. Hamilton, 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; new campuses are in the planning stage. Recent state-wide enrollment approximated 43,500. 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 1882 to a new site on North Vermont Avenue. Through legislative action made effective by the Governor's signature on July 24, 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, a School of Education, and a Graduate Division. Successively added were a College of Engineering, schools of Law, Medicine, Nursing, Public Health, Social Welfare, and a Graduate School of Business Administration.

Today.—Dominated by the majestic towers of Boyce 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 62 departments, 12 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 the Dickson Art Center, a Music Building, the Mathematical Sciences Building and the Western Data Processing Center. Other buildings under construction or scheduled include an additional Engineering-Physical Sciences unit, a Botany Building, a Faculty Center, a Life Science Graduate Instruction and Research unit, a Neuropsychiatric unit, the Dykstra and Sproul Residence halls, a Student Union Building, a Graduate Social Science-Humanities Library, and a Theater Arts Building.

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 viable 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*, Airportransit, 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 page 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, and presocial welfare.

The *College of Applied Arts* offers curricula leading to the degrees of Bachelor of Arts and Bachelor of Science and the following preprofessional curricula: prenursing, preoccupational therapy, preoptometry, and prepublic health.

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

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 for 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 Public Administration, Master of Social Welfare, Doctor of Education, and Doctor of Public Health.

THE UNIVERSITY LIBRARY

The University Library has approximately 1,375,000 accessioned volumes and regularly receives about 19,000 periodicals and newspapers.

In the Main Library, books, except for bound periodicals, circulate for a three-week period. Circulation rules are posted in the library. All graduate students have access to the book stacks on presentation of registration cards. Undergraduate honor students are admitted to the stacks on presentation of registration cards properly stamped by the Registrar's Office.

An open-shelf collection of materials of interest primarily to undergraduate students is available in the College Library in the Main Library Building.

The Graduate Reading Room provides special study facilities for graduate students, and assigned seats are available here to a limited number of students; application should be made to the librarian in charge of the room.

The Main Library's Department of Special Collections contains rare books and rare and early pamphlets, maps, manuscripts, and the University Archives.

The Government Publications Room in the Main Library is a depository for the official publications of the United States Government, the United Nations and certain of its specialized agencies, and the State of California, and

also receives selected publications of the other states and territories and of foreign governments.

Branch libraries in Agriculture, Art, Biomedicine, Chemistry, Education, Engineering, English, Geology, Home Economics, Industrial Relations, Meteorology, Music, Physics, Theater Arts, and the University Elementary School are housed in the quarters of their respective departments. 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 and Zoology. Hours are posted and also listed in the library handbook, *Know Your Library*. Branch libraries serve primarily the schools and departments in which they are situated, but their resources are available to all students and faculty of the University.

The Law Library is housed in the Law Building and serves all students and faculty of the University. Hours of service are the same as those of the University Library.

Supplementing the University Library is the William Andrews Clark Memorial Library* of about 65,000 books, pamphlets, and manuscripts, featuring English culture of the seventeenth, eighteenth, and nineteenth centuries, and the history of Montana. Materials in the library do not circulate, and admission is by card only, application for which should be made to the University Librarian. Leaflets descriptive of the Clark Library are available upon application to the University Librarian.

PUBLIC LECTURES, CONCERTS, 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. Every year three young artists, chosen by competitive audition in the Young Artists Contest, are presented as a special feature of the concert series of the Committee on Fine Arts Productions. The Department of Music offers Tuesday Noon Recitals and Friday Noon Organ Recitals weekly throughout the year. The Tuesday Recitals feature the A Cappella Choir, the Madrigal Singers, the Glee Club, the University Band, the University Symphony Orchestra, opera workshop, individual student artists, and members of the music faculty. All of these events are open to the public.

The Art Galleries, in the Art Building, 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, sculpture, architecture, industrial design and the crafts. The Galleries are open from 12:30 to 5 p.m. Mondays through Fridays and from 2 to 5 p.m. Sundays.

Dance recitals are presented regularly under the auspices of the Department of Physical Education and the Dance Wing of the Campus Theater.

A series of four plays is presented each semester by the Department of Theater Arts.

SUMMER SESSIONS

During the summer the University conducts at Los Angeles a six-week and an eight-week session. In 1959 the Summer Sessions will begin Thursday, June

* This library is not on the University campus but is situated at 2205 West Adams Boulevard (Telephone REpublic 1-8520 or REpublic 1-8529). From the Los Angeles campus, it may be reached by Metropolitan Transit Authority bus to Western Avenue transferring to the "84" bus; from downtown, by the "11" bus. The library is open Mondays through Saturdays from 8 A.M. to 5 P.M.

18. The Summer Sessions bulletin is obtainable after February 15 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 sessions are referred to pages 6 C-15 C 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, 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.

Six 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 administers the University's programming in the field of educational television; 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. Lectures, singly or in series, may be arranged for clubs and organizations.
6. 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: 405 Hilgard Avenue, Los Angeles 24 (BRadshaw 2-6161 or GRanite 3-0971, extension 721); 813 South Hill Street, Los Angeles 14 (MAdison 3-6123; University of California, Berkeley 4; University Extension Building, University of California, Riverside; 129 East Carrillo Street, Santa Barbara.

ADMISSION TO THE UNIVERSITY

IN UNDERGRADUATE STATUS

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, and the applicant who wishes to enter the University must fulfill the general requirements for admission as set forth below.

Every new student must also 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 University. Vaccination should be completed prior to registration.

ADMISSION PROCEDURE

1. Formal application must be filed with the Director of Admissions, 1147 Administration Building, University of California, Los Angeles 24. Application blanks will be supplied by the Office of Admissions upon request. The application must be filed during the semester preceding that 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 filing dates, see "Special Requirements for Engineering," page 12 C. 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 made payable to The Regents of the University of California.
2. Official transcripts of record should be sent directly to the Office of Admissions from the graduating high school and from each college attended. College transcripts must be endorsed by the proper authority and should include a statement of good standing or honorable dismissal from the last college attended.
3. Report of the College Entrance Examination Board should be presented. Effective with the fall semester of 1960, all undergraduate applicants must present a satisfactory score in the College Entrance Examination Board Scholastic Aptitude Test. Arrangements to take the test, and to have the scores transmitted to the University, are made with the Educational Testing Service, P.O. Box 27896, Los Angeles 27, California, or P.O. Box 592, Princeton, New Jersey. Scores will be regarded as official only if received directly from the Educational Testing Service. The fee for the aptitude test is to be paid to the Educational Testing Service.

Aptitude Test Dates for 1960

Test Dates	Application Deadlines
Saturday, December 5, 1959	November 7, 1959
Saturday, January 9, 1960	December 12, 1959
Saturday, February 6, 1960	January 9, 1960
Saturday, March 12, 1960	February 13, 1960
Saturday, May 21, 1960	April 23, 1960
Wednesday, August 10, 1960	July 13, 1960

ADMISSION IN FRESHMAN STANDING

An applicant who has attended a junior college, four-year college, university, extension classes of college level, or any comparable institution since graduating from high school is subject to regulations governing admission in advanced standing (see page 10 C). Such college attendance may not be disregarded, whether or not any courses were completed.

Requirements

1. *College Entrance Examination Board Scholastic Aptitude Test* (see above).
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 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. For information concerning the accrediting of schools, principals may communicate with the Office of Relations with Schools, Berkeley or Los Angeles. For schools outside California, regional or other accrediting agencies are consulted; the University makes the final decision regarding acceptability. If the high school from which the applicant graduated is not accredited, the Office of Admissions will, upon request, instruct the student regarding the procedure he should follow.
3. *Subject Requirements.*—For admission, the University requires satisfactory completion of the pattern of courses set forth below. (See, however, alternate methods of admission, page 8 C). 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 selecting courses to fulfill this pattern.

- (a) History 1 unit. —This requirement must be satisfied by one unit of United States history or one unit of United States history and civics.
- (b) English 3 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) Mathematics 2 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 following 1 (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 a minimum of 15 standard entrance units.

4. *Scholarship Requirements for California Residents.*—An average grade of B (3.0, based on a marking system of four passing grades) in the (a) to (f) subjects listed above, which are taken in the tenth, eleventh, and twelfth years is required. Courses taken in the ninth year or used as additional elective units 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 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.

5. *Scholarship Requirements for Out-of-State Applicants.*—A scholarship average of 3.4, instead of the 3.0 specified above, is required plus an average score of 500 or above in the College Entrance Examination Board Scholastic Aptitude Test (see also section on "Limitation of Enrollment of Out-of-State Applicants," page 12 C).
6. *Alternate Methods of Admission* (if not qualified under Method I described above).

METHOD II—Achieve a scholarship rank in the highest tenth of his graduating class with a substantial academic preparation (not less than 10 units in courses designated by the high school principal as college preparatory in nature and chosen from the fields of English, mathematics, science, foreign language, and social science), although he need not complete the exact pattern of subjects (a) to (f) listed above.

METHOD III—Complete not less than 12 high school units of grade A or B in the work of the tenth, eleventh, and twelfth years with not more than 2 units of subject deficiencies in the required list (a) to (f) and in addition must receive in the (a) to (f) subjects applied no grades lower than C and an average of at least grade B. (Grades earned in courses such as physical education, study period, work experience, military science, R.O.T.C., and religion are *not* to be counted under this method.)

METHOD IV—1. In the (a) to (f) subjects completed in the tenth, eleventh, and twelfth years, achieve a scholarship standing:

- (a) with no grade lower than C,
- (b) with no more than $\frac{1}{2}$ unit of scholarship deficiency, i.e., not more than $\frac{1}{2}$ unit below B average, and

2. Complete not less than 6 high school units of grade A or

B selected from the following 10 units of 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, limit 2 units, of which one must be United States history.

Alternate Patterns

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.

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 is communicated promptly to school authorities in California by the Office of Relations with Schools.

Also the Director of Admissions is charged by the Board with the authority and responsibility for waiving minor deficiencies when justification is evident in the form of unusual academic transcripts of record or recommendations.

Agricultural Experimental Plan.—(Applicable to high school students starting program prior to 1960). Applicants for admission to freshman standing in the College of Agriculture may meet the minimum subject requirements prescribed in Method I by substituting for the (e) foreign language requirement either (1) two years of agriculture or home economics or (2) one year of mathematics or laboratory science in addition to that required under (f). Such substitute courses must be passed with grades not lower than C. Under this plan the grades received in the additional mathematics or science will be used in meeting the B average minimum scholarship requirement, but grades received in agriculture or home economics will not be so used. A student admitted under this plan must realize that if, after registration in the College of Agriculture, he wishes to transfer to another college of the University, he must meet one of the regular methods of admission.

Preparation for University Curricula

In addition to those subjects required for admission to the University outlined on page 7 C, 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 Director of Relations with Schools, Berkeley or Los Angeles.

A statement of the requirements for the bachelor's degree is contained in this bulletin, in the **ANNOUNCEMENT OF COURSES AND CURRICULA**, and in the announcement of each school or college of the University. A copy of the desired announcement may be obtained from the Office of the Registrar on the campus on which the school or college is located.

Honors at Entrance

All entering freshmen are considered for Honors at Entrance on the basis of their high school records. Honors recognition at the time of admission is given to entering freshman students with outstanding high school scholastic records. Certificates are presented to the honors recipients shortly after registration in the University.

Admissions by Examination

Applicable to High School Graduates Who Are Residents of California and Ineligible on Their School Records

The University of California does not itself offer entrance examinations, but accepts on all campuses the results of examinations given by the Educational Testing Service for the College Entrance Examination Board. Information about dates and places of examination may be secured from the Educational Testing Service, P.O. Box 592, Princeton, New Jersey, or P.O. Box 27896, Los Angeles 27, California. Definite arrangements to take the tests must be made at least four weeks prior to the date of the tests. If the applicant has completed all of the subjects in the (a) to (f) list with grades of C or better, but is deficient in the scholarship average, he may clear his admission requirements by standard scores of 500 or above on the Scholastic Aptitude Test and on three achievement tests in subject fields. If the (a) to (f) list of subjects has not been completed with grades of C or better, the applicant should consult the Office of Admissions in regard to the tests he must take. If the applicant graduated from an unaccredited high school, he should consult with the Office of Admissions regarding the tests he must take.

ADMISSION IN ADVANCED STANDING

Requirements for California Residents

- 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, must present evidence that:
 - He has satisfied, either through high school or college courses, the subjects required for admission of high school graduates in freshman standing (see page 7 C).
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.
 - 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 average 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 grade points by the total number of units undertaken. Courses completed with a grade lower than C may be repeated but the units and grade points count each time the course is taken.
 - He is entitled to return as a student in good standing to the last college attended.
- 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 either:

(1) A minimum of 30 units of transfer courses with a grade-point average of 2.4 plus a satisfactory score on the College Entrance Examination Board Scholastic Aptitude Test. (See page 6 C for further information.)

or

(2) Sixty units or more of transfer courses with a grade-point average of 2.4.*

(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.

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 there the lower division requirements of the college in which they wish to register.

Special Requirements for Out-of-State Applicants

(See also page 12 C)

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

(1) A grade-point average of 2.8* must be maintained in college subjects acceptable for transfer credit, plus an average score above 500 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 the high school scholarship requirements listed on page 8 C.

Applicants with 60 or more units of acceptable college courses will still be admitted in the 1959 fall semester under the regulations for California students (see page 10 C).

CREDIT FOR WORK TAKEN IN OTHER COLLEGES

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; students who intend to complete their advanced studies at the University will frequently find it to their advantage to complete the first two years of their college course in one of the many excellent California public junior colleges.

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 preparatory 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 Admission will be considered unofficial. A statement of good standing from the last college attended must also be sent.

* All undergraduate applicants will be required to submit a report of their scores on the College Entrance Examination Board Scholastic Aptitude Test beginning with the fall of 1960.

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 some 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 correspondence courses in University Extension.

SPECIAL REQUIREMENTS FOR ENGINEERING

The Engineering Qualifying Examination must be taken by all applicants for admission to the College of Engineering at either the lower division or upper division level. The examination is to be taken the semester previous to that in which the applicant desires to register. The dates of the examinations and the dates for filing applications for admission are included in the calendar on page ix. 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. For details regarding the qualifying examinations and selective admission requirements see page 35.

Out-of-state applicants are permitted to use the engineering examination both for the engineering requirements and for the nonresident examination requirements.

Under the terms of an agreement between the State Board of Education and The Regents of the University of California, the College of Engineering will limit admission to the beginning freshman semester and to the upper division. Admission to the upper division will be to a particular curriculum selected by the College.

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 as measured by scholastic record and aptitude tests.

Admission to 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 above 500 on the College Entrance Examination Board Scholastic Aptitude Test (see Admission in Freshman Standing, page 7 C).

Admission with Advance Standing.—A grade-point average of 2.8* must be

* 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; and E and F yield no points.

maintained in college subjects acceptable for transfer credit plus an average score above 500 on the College Entrance Examination Board Scholastic Aptitude Test. If less than 30 semester units of acceptable transfer courses are presented, the requirements for admission to freshman standing listed above must also be satisfied. (Applicants with 60 units or more of college transfer credit will still be admitted under the regulations for California students through the fall semester of 1959.) See also page 10 C for detailed description of admission with advanced standing.

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 a regular session 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 Registrar and must be filed with that office by August 15 for the fall semester and by January 15 for the spring semester.

ADMISSION OF SPECIAL AND LIMITED STUDENTS

Occasionally it is possible to admit to *special* or *limited* status an applicant who does not desire a degree but has some definite and limited objective that could be met by completing university courses. Such applicants may or may not have college degrees. The conditions for admission of each applicant under these classifications are assigned by the officer in charge of admissions. Ordinarily, a personal interview is required before final action can be taken. The consent of the Dean of the college or school concerned is also necessary.

Prospective students who believe that special or limited status might meet their needs are urged to communicate with the Office of Admissions before filing application, explaining their plans and objectives so they may be advised as to how to proceed. *The following restrictions should be noted:* neither special nor limited status may be used as probationary status for either undergraduate or graduate admission. Students may not be admitted to either status for the purpose of taking elementary courses in art, music, theater arts, or foreign language. Admission is rarely granted for more than one semester and program and grade requirements are set in advance and must be strictly adhered to. Transcripts of record of all work beyond the eighth grade will ordinarily be required. The applicant may be required to take aptitude tests and the examination in Subject A. Students will not be admitted if their needs can be met by University Extension.

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 and official certificates and detailed transcripts of record should be submitted to the Office of Admissions (undergraduates) or to the Dean of the Graduate Division (graduates) 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 be of assistance to him in obtaining the necessary passport visa.

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. This regulation applies to both undergraduate and graduate foreign students. An applicant's knowledge of English is tested by an oral and written examination given by the University of California. The admission of an applicant who fails to pass this examination will be deferred until such time as he has gained the required proficiency in 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 Entrance Examination Board Tests.—*Scholastic Aptitude Test:* Beginning with the 1960 fall semester this examination will be required of all foreign students applying for admission who have been in the United States for at least one year. *Achievement Tests:* These examinations plus the Scholastic Aptitude Test may be used at the discretion of the Director of Admissions in addition to a foreign student's academic records in determining eligibility for admission to the University.

College of Engineering.—Any applicant for admission to the College of Engineering who wishes to satisfy the entrance examination requirement before coming to this country, should take the verbal and mathematical sections of the Scholastic Aptitude Test and the three achievement tests of English composition, advanced mathematics, and physics, of the College Entrance Examination Board.

Special advisers have been 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, Administration Building, Room 2248.

ADMISSION IN GRADUATE STANDING

Graduate students may be admitted as regular graduates or as unclassified graduates.

Applications for admission to regular 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 Public Administration, or Master of Social Welfare, for the degree of Doctor of Education, Doctor of Public Health, or for the degree of Doctor of Philosophy, for the Certificate in Social Welfare 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 3, 1959, for the fall semester, and not later than December 1, 1959, for the spring semester. Corresponding days will be set for subsequent semesters. Because of the time required to process an application and to prepare the registration forms, applications and/or transcripts received after the deadline date will be considered only as time permits, and in the order received.

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 to those maintained at the University of California; (2) that the record of scholarship is satisfactory; 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 the undergraduate program has not been of such a char-

acter 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 outside it. 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.

An applicant who fails to qualify for regular graduate status may, at the discretion of the Dean of the Graduate Division, be admitted as an *unclassified* graduate student. Unclassified graduate status is considered to be temporary or transitory in character, and will be granted only when the record of the applicant gives promise that his unclassified status can be terminated within a reasonable period of time, either through qualification for regular graduate status or through completion of the objectives stated in his application.

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.

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 1, respectively. Attention is called to the fact that new students expecting to enter the *College of Engineering, School of Law, School of Medicine, School of Nursing, 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 27 for the fall semester and not later than January 15 for the spring semester. For graduate students, these dates are August 14 and January 4, respectively. Students planning to reënter 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 enrolled 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.

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 reëntrant 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

Upon admission, every undergraduate student in the lower division, man or woman, must, unless officially notified of exemption, report immediately to the proper officer for enrollment in physical education,* in accordance with the directions in the REGISTRATION CIRCULAR or the announcements which may be posted on the bulletin boards. The student must list the course physical education upon his study card with other University courses. Upon petition a student more than twenty-three years of age at the time of admission will be excused from physical education.

Information concerning the requirements in physical education, including a statement of the grounds upon which a student may be excused from this work, may be obtained from the Registrar.

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 the ANNOUNCEMENT OF COURSES AND CURRICULA.

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, ordnance and fire control, 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.

* The University requirements in physical education referred to in this section cover Physical Education 1, a 3-unit course which is required of students in each semester of the freshman and sophomore years, irrespective of the total number of units of credit received in these courses.

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 State 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

A unit of the Air Force Reserve Officers' Training Corps was established on the Los Angeles campus of the University in September, 1947.

A four-year course leading to a commission in the Air Force Reserve is offered to qualified and interested students. The purpose of this 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 potential flying officers is receiving increased emphasis. The A.F.R.O.T.C. program is divided into two parts; (1) a two-year basic course of Foundations of Air Power indoctrination and (2) a two-year Advanced Course, that prepares selected cadets for Air Force Officer duty.

Entrance into the Advanced Course is based on academic standing, aptitude and physical qualifications. To qualify physically, a basic cadet applicant must have a visual acuity of not less than 20/20 bilaterally (uncorrected) for pilot training, and 20/50 bilaterally, correctable with eyeglasses to a vision of not less than 20/20 bilaterally for observer training. A number of outstanding students may also be enrolled in the Advanced Course from the basic course to train for nonflying officer positions.

More detailed information is available elsewhere in this bulletin or in the ANNOUNCEMENT OF COURSES AND CURRICULA, DEPARTMENTS AT LOS ANGELES.

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 19 C 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 once 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, 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 2:00 to 4:00 p.m., Monday or Thursday, in Room 174 Haines Hall.

DEGREES AND TEACHING CREDENTIALS

Detailed statements of requirements for bachelor's degrees issued by the University will be found in this bulletin or in the ANNOUNCEMENT OF COURSES AND CURRICULA, DEPARTMENTS AT LOS ANGELES, under headings of the several colleges and departments; for the master's degrees and the doctor's degrees, see the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION, and 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, LOS ANGELES.

Degree Residence†

Every candidate for a bachelor's degree is required to have been enrolled in that college of the University in which the degree is to be taken during his two final semesters of residence; the last 24 units must be done while so enrolled. It is permissible to offer two six-week summer sessions or one eight-week summer session attended in previous years as equivalent to one semester; but the student 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.

† 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 the ANNOUNCEMENT OF COURSES AND CURRICULA, DEPARTMENTS AT LOS ANGELES.

All graduates receiving bachelor's degrees in any one calendar year—January 1 to December 31—are considered as belonging to the "class" of that year.

CHANGE OF COLLEGE OR MAJOR

A student may be transferred from one college or major or 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 the ANNOUNCEMENT OF COURSES AND CURRICULA, DEPARTMENTS AT LOS ANGELES.

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 University 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

* 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.

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 of Engineering and the School of Business Administration, is limited to a program of 12 units each semester, to which may be added the required $\frac{1}{2}$ -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.

College of Applied 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.

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 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 $17\frac{1}{2}$ 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.

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. These designations may also be used in reporting upon the results of lower division courses outside the major taken by students in regular 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

† The assignment of grade points indicated in this section is the four-point system which became effective July 1, 1957.

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 undergraduates 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, exclusive of required physical education.

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.

* 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 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 the 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 the 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 33 C.

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 37 C. Membership in the Graduate Students Association (fee, \$2 for all rights and privileges) is required of all graduate students; see page 37 C. 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 \$200‡ 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.

§ 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.

‡ Graduate students pay the full amount of \$200 regardless of the number of units undertaken unless for reasons of health or 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 for reduction to one-half the amount. If an undergraduate student registers for less than 12 units the tuition fee is \$17 a unit or fraction of a unit, with a minimum of \$84.

A student entering the University for the first time should read carefully the rules governing the determination of residence (see page 29 C), 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 California 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 regular graduate status [except in the professional schools, e.g., Law, Medicine, Education (leading to the Ed.D. degree), and 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 academic higher degrees. No graduate student in regular graduate status, 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. 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. Applicants for this privilege will be required to have sent to the Dean of the Graduate Division confidential letters about themselves from persons who are thoroughly acquainted with their personalities and their intellectual achievements. 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.

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 15 C.

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.

Fee required of applicants for teaching positions who register with the Office of Teacher Placement, \$5, to cover the clerical cost of correspondence and copying of credentials.

Tuition fee for Government students, \$200.

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 20005 and 20007 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.

* 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.

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.

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 nonresident 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

Suitable living accommodations for out-of-town students are extremely limited in comparison to the total student enrollment with the problem of providing adequate housing facilities becoming increasingly difficult. Prospective students should give considerable thought and planning to their housing needs.

Living accommodations for students who do not live with friends or relatives are provided in a number of ways—in Mira Hershey Hall for undergraduate women; in Clarence Dykstra Hall, the new residence hall for 800 undergraduate men students; 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 Veterans Housing Project for married students. Information concerning any of these accommodations may be obtained from the Housing Office, Room 1228, Administration Building, University of California, Los Angeles 24. Office hours are: Monday through Friday, 8 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 Housing Office. Arrangements for such accommodations cannot be made by mail but must be made by the individual directly with the landlord. Students and landlords are both advised to have a clear understanding, preferably in writing, as to prices, intended length of tenancy, charges to be made during vacation periods, etc.

Prices range from \$80 to \$100 per month for room and board, from \$35 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 Kerekhoff

Hall, the Student Union, or at one of the many restaurants in Westwood Village adjoining the campus.

Mira Hershey Hall (for Women)

At the present time Mira Hershey Hall is the only on-campus residence hall for women operated by the University. The hall has been enlarged recently and redecorated to provide accommodations for 327 undergraduate women. A beautiful new recreation room and cafeteria-style dining room also have been added. If a student is reasonably sure of being accepted by the Office of Admissions for enrollment, an application for residence may be obtained from the Housing Office on or after October 15 for the spring semester and on or after March 15 for the fall semester. Since there will be more applicants for this hall than there are accommodations in the hall, early application is important. The current rate for room and board is \$390 per person per semester during the time the University is in session. Three meals are served daily with the exception of Sundays and University holidays when two meals only are served. Students who plan to join sororities or who are members of campus sororities are not permitted to apply for residence in Mira Hershey Hall.

Clarence Dykstra Hall (for Men)

Clarence Dykstra Hall, the new, ten-story University residence hall for 800 undergraduate men, will open at the beginning of the 1959 fall semester. If a student is reasonably sure of being accepted by the Office of Admissions for enrollment, an application for residence may be obtained from the Housing Office on or after March 15, 1959, for the 1959 fall semester and October 15, 1959, for the 1960 spring semester. Since there will be more applicants for this hall than there are accommodations in the hall, early application is important. The rate for room and board will be \$390 per person per semester during the time the University is in session. Three meals will be served daily with the exception of Sundays and University holidays when two meals only will be served. Students who plan to join fraternities or who are members of campus fraternities are not permitted to apply for residence in Clarence Dykstra Hall.

Sproul Hall (for Men and Women)

Sproul Hall, honoring Robert Gordon Sproul, president emeritus of the University of California, and his wife, is the third on-campus residence hall at University of California, Los Angeles. Sproul Hall has been designed as two connected units, each seven stories high with one serving approximately 400 men and the other 400 women students. The men's wing has been named the Robert Gordon Sproul Wing and the women's wing, the Ida Wittschen Sproul wing. Each unit will have its own lounge and recreation rooms on the main floor. The expected opening date is the beginning of the 1960 spring semester or 1960 Summer Session.

Privately Owned Residence Halls

There are four privately owned and operated residence halls in the vicinity of the University, three being for women and one being for men. One accommodates 56 women students, providing room and 15 meals per week for \$360 per person per semester. Two 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. The one hall for men accommodates 77 students, providing room and 16 meals per week at \$400 per semester.

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.

Cooperatives

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 from three to four hours per week. The cost for board and lodging with two, three, or four in one room is \$60 per month. Information concerning membership application may be secured from the manager at Landfair House, 500 Landfair Avenue, Los Angeles 24.

Fraternities and Sororities

Most of the 35 fraternities and 23 sororities own or lease homes near the campus and provide lodging and meals for their members and pledges. Monthly bills for residents range from \$70 to \$85 per month, depending upon the number of meals served and the social and recreational privileges included. Students interested in affiliating with a fraternity or sorority should register for rushing on forms available at the Office of the Dean of Students. Detailed information concerning membership and deadline dates for rushing registration may also be secured at this office.

Accommodations for Married Students

There is no low-cost housing available near the University for married students. Apartment and house rentals are plentiful but monthly rates are high. 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 Housing Office are available to all students, apartment and house rental listings cannot be sent by mail to interested students. Up-to-date listings are available to any student who desires to call in person at the Housing Office.

Veteran Housing

The University operates a Veterans Emergency Housing Project on the campus consisting of 266 two-room apartments (combination living room-dinette, kitchen, one bedroom, and bathroom with shower) renting at \$33 per month furnished and \$29 per month unfurnished. These are available to Veterans of the United States Army, Air Force, Navy, Marine Corps, or Coast Guard who are married or heads of families, and who are "students"* at the University of California, Los Angeles. Applications may be obtained from the Housing Office during the semester preceding that in which the student plans to enroll and after the student is reasonably sure of being accepted for enrollment by the Office of Admissions. Assignments to the Veteran Housing Project are made on a "desperate need" basis which considers the number of children in the family, lack of suitable income, need for housing, etc. Since it is impossible to make a commitment as to when one might be able to obtain an apartment, a new applicant is advised not to plan on too-early occupancy of these units.

Persons not taking a sufficient amount of work to be classified under the Veterans Program as full-time students *will not* be entitled to housing.

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

* A "student" means any veteran student (regular, special, or graduate) taking a combination of courses during the regular sessions whose study-load determination under the formula of the Office of Special Services shows that he is entitled to be classified as a full-time student. Any combination student (carrying regular and extension courses) ranks as a regular student and is eligible, provided the Office of Special Services classifies him as a full-time student.

accept these accommodations temporarily until more permanent quarters can be located. Listings may be secured from the Housing Office.

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

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 \$200 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. If on-campus parking is required, students must obtain an application form at the Police Office, the Campus Parking Service, the Student Parking Review Board, or at registration.

Applications will be available beginning May 1, 1959. Full instructions and deadline dates for submission of applications are included in the application packet. Approval for issuance of parking permits will be determined by the Student Parking Review Board, on the basis of need, after review and comparison of all applications received. For additional information, inquire at the Campus Parking Service, 14-233 Medical Center.

Since parking permits cannot be approved for all student applicants, 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 schedule 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 forearm 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.

BUREAU OF OCCUPATIONS

Student Employment

Students desiring employment may register with the Bureau of Occupations, in Temporary Building 1G.

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

Students may obtain room and board in exchange for work in private homes. Schedules to twelve hours of work per week in exchange for private room and board, or twenty hours of work per week in exchange for private room and board, transportation costs and \$25 per month, have proven satisfactory in most homes. Usually eight hours of work per week are given in exchange for room only.

In addition, employment is available on an hourly basis in the fields of typing and stenography, bookkeeping, sales and clerical work, care of children, housework, manual labor, tutoring, and other specialized types of work.

Full-Time Placement

Through its full-time placement service, the Bureau of Occupations refers graduates and students to positions in business and professional fields other than teaching or educational research. Seniors are urged to register as soon as possible in their last year in order that they may be referred to employers before graduation. This service is available to students when they leave the University (if in attendance in regular sessions at least one year) or at any later date if they desire an improvement in their employment situation.

BUREAU OF SCHOOL AND COLLEGE PLACEMENT**OFFICE OF TEACHER PLACEMENT**

The Office of Teacher 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. A fee of \$5 is charged each candidate for clerical services; there is no expense to school officials seeking teachers through this office. Communications should be addressed to the Office of Teacher Placement, 123 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 education 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.

Application forms for and information regarding the Graduate Record Examination and the Medical College Admission Test are available in the center.

BUREAU OF VOCATIONAL REHABILITATION

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-207 Administration Building, or by contacting the California Rehabilitation Service Office at 312 West Fifth Street, Los Angeles; telephone MADison 5-2781, Ext. 55. This service may be applied for by both veterans and nonveterans.

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. department on the campus as described on page 19 C.

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 Room 225, 542 South Broadway, Los Angeles 13, 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) should 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-207 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 very 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, 2244 Administration Building, University of California, Los Angeles 24, California. Applications must be filed with the committee during the period of 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 minimum requirements as to scholarship, financial need, and character and promise. The committee will rate all applicants with respect to these criteria and will base its recommendations for awards upon the relative total ratings of all eligible students applying during the periods specified above. Some of the scholarships are restricted to students with special qualifications in addition to those mentioned above; 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. These scholarships are tenable on any campus of the University of California, the applicant specifying which campus at the time of application. 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, and they also are tenable on any of the campuses of the University, with the particular one specified at time of application. 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 the students.

Applications should be filed at least ten 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 annually. 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 co-curricular 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 Kerekhoff Hall, given to the University by Mrs. William G. Kerekhoff of Los Angeles. Also in Kerekhoff Hall are the cafeteria and student store which are owned and operated by the A.S.U.C.L.A. The crowded quarters of Kerekhoff Hall will soon be supplemented by one of the finest student union buildings in the United States.

OFFICE OF STUDENT ACTIVITIES

The Student Activities Office, located in Room 2225 Administration Building, 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 Assistant Dean of Students, the Student Activities Adviser, the Administrative Assistant to the Dean of Women, 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 ADMISSION TO THE UPPER DIVISION

In order to be admitted to the Upper Division of the College of Letters and Science, students must have completed at least 60 units of college work with a grade-point average in all work done in the University of not less than 2.00 (a C average), and must have satisfied requirements (A), (B), (C), (D), and at least three of the six requirements under (E), (F), and (G) below. However, the remaining requirements from (E), (F), and (G) must be completed prior to graduation. In fields of concentration requiring unusually heavy preparation, additional postponements are possible, as follows: requirements (B), (E), (F), and (G), or any portion of them, may be postponed to the upper division on recommendation of the department and approval of the Executive Committee of the College. While requirement (B) should, so far as possible, be satisfied by work done in the high school, work done prior to graduation from high school will not be counted as part of the 60 units. Students who transfer to the Los Angeles campus of the University of California with the requirements for upper division standing in the College of Letters and Science at Berkeley completed shall be admitted to the Upper Division in this College and not held for the requirements of this section.

(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

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

the University. For further regulations concerning Subject A, see page 20 C of this bulletin.

- (2) *Military Science* (6 units), or *Air Science* (6 units), or *Naval Science* (12 units), 4 semesters (men).
 - (3) *Physical Education*, 4 semesters (2 units).
- (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 60 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.

(E) *Natural Sciences*.

- (1) At least 5 units in physical science chosen from the following:
 - Astronomy 1, 100, 101
 - Chemistry 1A, 2A, 2
 - Geography 1A
 - Geology 2, 3, 101
 - Mathematics, one course (not more than 3 units) from:
 - C, D, 1, 3A, 5A, 5B, 32A, 37, Statistics 1
 - 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

† 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.

Biology 12
 Botany 1, 2, 3
 Life Sciences 1A-1B (both 1A and 1B must be completed to count on science requirement)
 Paleontology 101, 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 1B
 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 142A, 142B
 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 182A, 182B
 Humanities 1A, 1B
 Italian 103A, 103B, 109A, 109B
 Latin 4, 106, 180
 Oriental Languages 112, 132
 Scandinavian 141A, 141B
 Slavic Languages 130, 132, 143A, 143B
 Spanish 102A, 102B, 104A, 104B
- (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, 108A, 108B, 118A, 118B
 Integrated Arts 1A-1B
 Music 20A, 20B, 30A, 30B, 170
 Theater Arts 24, 102

Authorized Exemptions

The following exemptions have been authorized in the fields of concentration listed below. Exemptions granted in one of these fields become requirements for the bachelor's degree if the student changes his field of concentration after attaining upper division standing. Requirements deferred to the upper division must be completed before receipt of the bachelor's degree.

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

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).

Curriculum in Biophysics

Exemptions:

1. Either (F-1), or (F-2); and
2. One of the two groups required 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: Requirement (F-1).*

Curriculum in Physical Sciences-Mathematics

Exemption:

One of the two groups required under (G).

Premedical Curriculum

Exemptions:

1. Either (F-1), or (F-2); and
2. 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.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

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

(A) 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 below), 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 prescribed 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 40-64, 140-166, and 180-195 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.

(B) The candidate shall have completed requirements (A) to (G), inclusive, pages 2 and 3, except for exemptions authorized for his field of concentration (see page 4).

Students who transfer to the Los Angeles campus of the University of California having completed the requirements for upper division standing of the College of Letters and Science at Berkeley shall not be held for the above requirements.

(C) The candidate shall have met the University requirement in American History and Institutions.

(D) 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.

(E) 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 in upper division courses (numbered 100-199) required in the upper division 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 spe-

cifically 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, 1959-1960.

Agriculture:

- Agricultural Economics. 120, 130, 177.
- Botany. All undergraduate courses.
- Entomology. 100, 105, 112A, 126, 134, 144.
- 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.
- Sociology. All undergraduate courses.

Art. 1A, 1B, 5, 10, 45, 100A, 100B, 102A, 102B, 103A, 103B, 104A, 104B, 104C, 104D, 108A, 108B, 114A, 114B, 115, 118A, 118B, 119A, 119B, 119C, 120, 121A, 121B, 121C, 121D, 123, 124, 139A, 139B, 139C, 139D, 190, 199.

Astronomy. All undergraduate courses.

Bacteriology. All undergraduate courses.

Business Administration. 131, 133, 135, 160.

Chemistry. All undergraduate courses.

Classics:

- Classics. All undergraduate courses.
- Latin. All undergraduate courses except 370.
- Greek. All undergraduate courses.

Economics. All undergraduate courses.

Education. 100A-100B, 101, 102, 108, 110A-110B, 170.

Engineering. 1A, 1B, 2, 4A, 15A-15B, 102B, 150, 155A.

English:

- English. All undergraduate courses except 370.
- Speech. All undergraduate courses except 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. 113, 114, 134, 138, 143, 144, 154, 170.

Humanities. All undergraduate courses.

Integrated Arts. 1A-1B.

Italian. All undergraduate courses.

Journalism. All undergraduate courses.

Linguistics and Philology. All undergraduate courses.

Mathematics:

- Mathematics. All undergraduate courses except 370.
- Statistics. All undergraduate courses.

Meteorology. All undergraduate courses.

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

Music. All courses included in the following series: 1A to 31, 100A to 115D, 118, 121 to 139, 170 to 178, 199.

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

Oceanography. All undergraduate courses.

Near Eastern Languages:

Arabic. All undergraduate courses.

Hebrew. All undergraduate courses.

Persian. All undergraduate courses.

Turkish. All undergraduate courses.

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.

Psychology. All undergraduate courses.

Public Health. 5, 100, 106, 110, 145, 147, 160A.*

Slavic Languages. All undergraduate courses.

Spanish and Portuguese:

Spanish. All undergraduate courses except 370.

Portuguese. All undergraduate courses.

Theater Arts. 24, 102, 104, 105, 106, 169

Zoology:

Zoology. All undergraduate courses except 370.

Life Sciences. 1A-1B.

Biology. 12.

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

* Students in the Curriculum in Premedical Studies who choose Public Health as one of their two fields may in addition receive Letters and Science credit for Public Health 160B and 170.

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.

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 after receiving upper division standing will be counted toward the bachelor's degree. Note: 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, interdepartmental, 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

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

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.

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

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
 Biophysics
 Early Childhood Education
 Earth Physics and Exploration Geophysics
 General Elementary Teaching
 International Relations
 Latin-American Studies
 Near Eastern Studies
 Physical Sciences-Mathematics
 Prelibrarianship
 Premedical Studies
 Presocial Welfare
 Public Service
 Religion

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

SPECIAL PROGRAM IN AFRICAN STUDIES

Committee in Charge of the Curriculum: J. S. Coleman (chairman), R. E. Baldwin, J. S. Galbraith, W. R. Goldschmidt, W. Leslau, R. F. Logan, C. R. Nixon, C. Taylor, B. E. Thomas, H. E. Wilson.

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, Near Eastern languages and literature, economics, geography, history, political science, sociology. The student completing this joint course will receive a

† Leading to degree of Bachelor of Science.

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 graduate work in one of the social sciences or Near Eastern languages and literature 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 1A-1B (3-3) 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, or Portuguese is highly recommended.

Upper Division.—The student must fulfill the requirements of a major in a social science or in Near Eastern languages and literature. The following courses are required for the program in African Studies, and may also be used to satisfy requirements of the major whenever relevant: Anthropology 139 (3), Geography 126 (3), History 130 (3), Political Science 156 (3), and two courses outside the major field chosen from Anthropology 123 (3), Anthropology 165 (3), History 158A (3), History 158B (3), Political Science 120 (2), Political Science 152 (3).

CURRICULA LEADING TO DEGREES

CURRICULUM IN ASTRONOMY-MATHEMATICS

Committee in Charge of the Curriculum: S. Herrick (chairman), F. C. Leonard, R. H. Sorgenfrey.

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, 120, 122A-122B, 135, 136, Physics 108B, 121.

CURRICULUM IN ASTRONOMY-PHYSICS

Committee in Charge of the Curriculum: G. O. Abell (chairman), R. W. Leonard, D. S. Saxon, F. A. Valentine.

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-117B (6), 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.

CURRICULUM IN BIOLOGICAL ILLUSTRATION

Committee in Charge of the Curriculum: W. H. Furgason (chairman), C. F. Bridgman, A. J. Salle.

The curriculum in biological illustration offers a minimum four-year program balanced between illustrative drawing techniques 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 2A, 3, 6A, 7A, 16, 44, 45, Zoology 1A-1B, Chemistry 2A.

Upper Division

Required: 36 units of upper division courses, including Art 139A-B-C-D, 137A, 140A, and at least 20 units from zoology, botany, and allied fields. Recommended: Art 141A, 170A; Botany 126, 199; English 106S; Public Health 131, 134, 162; Theater Arts 170; Zoology 140. The student must have his selection of courses approved by his curricular adviser each semester.

CURRICULUM IN BIOPHYSICS

Committee in Charge of the Curriculum: G. A. Bartholomew (chairman), L. P. Delsasso, T. A. Geissman.

This curriculum is designed to furnish a minimum background of information and training essential for undertaking advanced work in biophysics. Some degree of flexibility and program modification is provided through conferences with the Committee.

Biophysics approaches biological problems using the special tools of biology and physics with substantial support from chemistry and mathematics. Preparatory training is therefore somewhat exacting. Students who can decide early on their field of specialization will usually be able to proceed in graduate work with a minimum of time devoted to making up undergraduate deficiencies.

Preparation.—Chemistry 1A-1B (10); Mathematics 1, 3A, 3B, 4A, 4B, (14), or 5A, 5B, 6A, 6B, or their equivalents; Physics 1A-1B-1C-1D (12), or, with the consent of the Committee in charge of the curriculum, 2A-1C-1D (10) or 2A-2B (8); Zoology 1A-1B (8).

Field of Concentration.—Required: Chemistry 5A, 8 or 112A, 110A-110B (12-14); Mathematics 110AB (4) or 110C (3) or 119A (3); Physics 107, 107C, 108B, 116A-116C, 121, 124A, 124C or 108C (19); Zoology 101A-101B-101C, 130A (11). Recommended: Physics 114A (3); Statistics 131A (3); Zoology 102 (3), 119 (3).

CURRICULUM IN EARTH PHYSICS AND EXPLORATION GEOPHYSICS

Committee in Charge of the Curriculum: L. B. Slichter (chairman), J. C. Crowell, J. Kaplan.

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 2L (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 (4), 103 (3), 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), 126 (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. Hockett, H. L. Kostanick, Miss A. B. Nisbet, F. H. Sherwood, Miss V. Richard (secretary).

Lower Division Adviser: Mrs. M. Dodge, Room 200, Moore Hall.

Upper Division Adviser: Miss V. Richard, Room 200, Moore Hall.

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 10; 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

* 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.

sophomores), 100B, 110A-110B, 139B, 147, E335A-E335B (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 139A, 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
(b) English	6	Additional units in one of	
Geography	6	above departments (other	
History	6	than Phys. Ed.) already	
Additional units in one of		chosen by the student.....	3
above	3		—
6 units from one of the follow-			27
ing: Anthro., Phys. Ed.,		(d) Same as (c) except that His-	
Poli. Sci. or Soc.	6	tory may be substituted for	
	—	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 Credentials office, School of Education, Room 200, 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, 128A, 147EC, EC335A-EC335B (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 128B 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 INTERNATIONAL RELATIONS

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

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. Students interested in preparing for the American Foreign Service examinations should consult the adviser with respect to additional courses.

Lower Division

Required: Political Science 1-2 (3-3); History 1A-1B, 5A-5B, or 8A-8B (3-3); Economics 1A-1B (3-3); Geography 1A-1B (3-3). Recommended: Anthropology 1-2 (3-3).

Upper Division

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

I. General requirements (24 units): (a) Political Science 125 (3) and 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, including 6 units of history and 3 of economics or 6 of economics and 3 of history: History 140B (3), 141H (3), 142A-142B (3-3), 178A-178B (3-3); Economics 107 (3), 108 (3), 195 (3), 196 (3), 197 (3).

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

(a) *Far Eastern Affairs:* Political Science 136 (3), 138 (3), 158 (3), 159 (3); History 191A-191B (3-3), 192A-192B (2-2), 193 (3), 194A-194B (3-3), 195A-195B (2-2); Geography 124A-124B (3-3).

(b) *Latin-American Affairs:* Political Science 126 (3), 150A-150B (3-3); History 148 (3), 160 (3), 162A-162B (3-3), 166A-166B (2-2), 169 (3); Geography 122A-122B (3-3).

(c) *European Affairs:* Political Science 154 (3), 155A (3), 157 (3); History 141D (3), 141F (3), 141G (3), 141H (3) [if not offered under I; above], 142A-142B (3-3) [if not offered under I, above], 143D (3), 146A-146B (3-3); Geography 123A-123B (3-3), 173 (3).

(d) *British Empire Affairs:* Political Science 120 (2), 152 (3), 153 (2); History 130 (3), 151A-151B (3-3), 156 (3), 157 (3), 158A-158B (3-3), 159 (3), 196B (3); Geography 125 (3)

The following courses may be applied to any area requirement other than that in Latin-American Affairs: Political Science 151 (3); History 134A-134B (3-3), 135 (2), 138A-138B (2-2).

Recommended: Political Science 102 (3), 112 (3), 120 (2).

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 language: French, German, Spanish, Russian, or Italian. With permission, candidates may offer other languages not native to them.

CURRICULA IN LATIN-AMERICAN STUDIES

Committee in Charge of the Curricula: H. J. Bruman (chairman), R. L. Beals, R. D. Hussey, 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 1A; 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 1B; 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 1B, Political Science 1 and 2 (or 1 and 103), and Economics 1A-1B (or 1 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 a 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 science 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 119A*; Economics 195, 196, 197; Folklore 101; Geography 113, 122A-122B*, 131, 165, 175, 199*; History 160*, 162A-162B*, 166A-166B*, 169*, 178A-178B, 188, 199* (Section 9); Linguistics and Philology 170, 171; 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), L. Binder, J. C. Greenfield, I. A. Kavar, 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 5A-5B or Arabic 3A-3B; 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, 182A-182B, and 4 in Arabic literature, Arabic 142A-142B; 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; Art 121D; Classics 102A-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, F. C. Leonard, 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 or 101 or 102 (3 or 4) and 170 (3), 370 (3); 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 12 units may be replaced by 12 units of upper division work selected from Astronomy 102, 112, 115, 117A, 117B, 118; Chemistry 108A, 108B, 109; Physics 121.

CURRICULUM IN PRELIBRARIANSHIP

Committee in Charge of the Curriculum: L. C. Powell (chairman), H. A. Steiner, H. T. Swedenberg.

Advisers: Mr. Powell in charge.

The prelibrarianship curriculum is designed to meet the needs of students who plan to pursue a general course in a graduate library school. The requirements of library schools and the demands of the profession indicate the desirability of a broad background in liberal arts subjects for students who plan to enter the general field of public and university library work. Proficiency in at least one foreign language is advantageous.

Students who intend to specialize in scientific, industrial, or other technical fields of librarianship should complete a major in the appropriate subject under the direction of the department concerned, rather than pursue the prelibrarianship curriculum. Students primarily interested in public school librarianship are advised to complete the requirements for a general teaching credential as described in the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES. A major in a subject field is also desirable for some phases of university library work.

Students interested in librarianship as a career should be advised that, in general, applications for admission to the accredited library schools from persons more than thirty-five years of age are considered only when the applicants hold responsible library positions from which they can obtain leaves of absence.

To be admitted to the prelibrarianship curriculum a student must file a "Prelibrarianship Plan" which has been approved by an authorized library adviser, and which meets general requirements stated as follows:

- (1) One year in each of two of the following languages: French, German, Italian, Russian, Spanish. Additional study in at least one of the two languages is strongly recommended.
- (2) Lower division courses:

(a) Requirements of the College of Letters and Science.	Economics 1A
(b) Prerequisites for upper division courses selected by the student.	English 1B, 31, 46A-46B
(c) Recommended electives:	Speech 1
Astronomy 1	Philosophy 6A-6B
Bacteriology 6	Physics 10
Life Sciences 1A	
Botany 1	
Chemistry 2	
Geology 2	
- (d) Ability to type is recommended by many library schools and is generally recognized as an asset to the professional librarian.

(3) Upper division courses: At least 36 upper division units chosen from the fields listed below, with no less than 12 units in one field, and no less than 6 units in each of four other fields. The particular choice of courses should be determined by the student in consultation with a library adviser on the basis of the student's individual interest and needs. (Courses marked with asterisks have lower division prerequisites.)

I. Art and Music

Art 108A-108B (3-3), 118A-118B (2-2), 119A-119B (2-2), 121A-121B (3-3), 173A-173B (2-2); Music 121* (2), 136A-136B (3-3), 170 (3).

II. Education and Philosophy

Education 100A-100B (2-2), 101 (3), 102 (3), 110A-110B (3-2), 147 (2); Philosophy 114 (3), 125 (3), 126 (2), 146 (3), 147 (3), 170A-170B* (3-3).

III. English and American Literature

English 110 (3), 114A-114B* (3-3), 117J (3), 118 (3), 122A-122B* (3-3), 125C-125D (3-3), 125G-125H (3-3), 130 (2), 131* (3), 132* (3), 133 (3), 190A-190B (2-2), 195 (2).

IV. Foreign Language and Literature

Arabic 142A-142B (2-2); French 109M-109N (3-3); German 121A-121B (2-2); Greek 180A-180B (2-2); Hebrew 182A-182B (2-2); Italian 152* (3); Latin 180 (3); Oriental Languages 112 (2), 132 (2); Slavic Languages 130 (3), 132 (3); Spanish 102A-102B* (3-3); Turkish 143A-143B (2-2); Folklore 101 (3); Linguistics and Philology 170 (3).

V. History, Economics, and Political Science

History 101 (2), 140A-140B* (3-3), 146A-146B* (3-3), 151A-151B* (3-3), 162A-162B* (3-3), 177* (3), 179* (3), 188* (3), 191A-191B* (3-3), 198* (3); Economics 100A* (3), 103* (3), 107* (3), 108* (3), 131* (3); Political Science 103* (2), 110 (3), 127 (3), 143* (3), 146 (2), 148* (2), 155A* (3), 155B* (3), 181* (3), 184* (3), 185* (3).

VI. Psychology, Anthropology, and Sociology

Psychology 110* (3), 120* (3), 126* (2), 143* (2), 145A-145B* (2-2), 147* (3); Anthropology 102* (3), 103* (3), 124 (3), 125 (3); Sociology 143* (3), 144* (3), 145* (3), 161* (3), 170* (3), 189* (3).

CURRICULUM IN PREMEDICAL STUDIES

(Leading to the Degree of Bachelor of Arts)

Committee in Charge of the Curriculum: R. M. Doreus (chairman), M. S. Dunn, D. Heyneman, M. J. Pickett, Mrs. C. S. Roberts.

A premedical student may satisfy the requirements for admission to a medical school by one of two plans: (a) by majoring in any one department in which he fulfills the departmental requirements concurrently with or in addition to the specific course requirements of the medical school which the student expects to attend; (b) by completing the premedical curriculum as set forth below and the specific course requirements of the medical school which the student expects to attend.

A grade-point average of 2.5 is required in the freshman and sophomore years in order that a student may be eligible for admission to the premedical curriculum in the junior year. Transfer students will not be allowed to continue in this curriculum unless their grade-point average for their first year of work at the University of California is 2.5 or higher.

Preparation: English 1A-1B (6), Chemistry 1A-1B, 5A, 8, 9 (19); Zoology 1A-1B, 100A (12); Physics 2A-2B (8), or 2A, 1C, 1D (10), or 1A, 1B, 1C, 1D (12); French 1, 2 (8), or German 1, 2 (8).

Curriculum: Either (a) completion of at least 36 units of coordinated upper division courses in two of the following departments: Bacteriology,

Chemistry, Physics, Zoology; or (b) completion of at least 36 units of coordinated upper division courses divided between those offered in *one* of the above departments, namely, Bacteriology, Chemistry, Physics, Zoology, and upper division courses in *one* of the following: Anthropology-Sociology, Business Administration, Economics, English, History, Mathematics, Political Science, Psychology, Public Health.

In no case may more than 21 units be taken in any one of these departments.

CURRICULUM IN PRESOCIAL WELFARE

Committee in Charge of the Curriculum: D. R. Cressey (chairman), G. H. Hildebrand, D. S. Howard.

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 serves all purposes in which a broad foundation in the various social sciences is 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, 106, 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; Home Economics 112, 143, 144; Public Health 106, 110, 125, 170.

CURRICULUM IN PUBLIC SERVICE

Committee in Charge of the Curriculum: D. Marvick (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 1A-1B or Geography 5A-5B; 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 (2), 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), 168 (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 (3), 121 (3); Economics 131 (3), 133 (3), 135 (3); Sociology 118 (3).

V. Planning

Agricultural Economics 120 (3); Art 118A (2); Business Administration 180 (3), 181 (3), 182 (3), 183 (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 positions with the government, there are openings for part-time or full-time internship training in various governmental agencies in the Los Angeles area.

CURRICULUM IN RELIGION

Committee in Charge of the Curriculum: A. B. Nisbet (chairman), E. L. Griggs, W. Leslau, R. H. Turner.

Preparation.—Greek and Latin, 16 units; English 1A-1B (6), 31 (2), 46A-46B (6); Psychology 1A-1B (6); Philosophy 20A-20B (6). Recommended: History 1A-1B.

Upper Division: 36 units from (A) and (B), with prescribed prerequisites.

- (A) *Required Courses* (22 units): Speech 122 (3); History 121A-121B (3-3), 141A-141B (3-3); Philosophy: 6 units from 104 (3), 105 (3), 112 (3), 121 (3), 146 (3), 147 (3); Psychology 168 (3).
- (B) *Selective Requirements* (14 units chosen from the following list): Anthropology 124 (3); Economics 101 (3); Education 101 (3); English 106F (2), 156 (3); Greek 117 (3); History 114 (2); Music 171 (2); Philosophy: 3 units from the courses listed under (A); Political Science: 3 units from 110 (3), 112 (3), 127 (3).
- (C) *Recommended Courses:* Anthropology 102 (3); Sociology 142 (3), 143 (3), 144 (3), 189 (3); Economics 150 (3), 155 (2), 158 (3); English 117J (3), 167 (3); History 141C (3), 141H (3), 176 (3), 178A-178B (3-3), 191A-191B (3-3); Music 110 (2), 130 (2), 131 (2); Political Science 146 (2), 148 (2); Psychology 134 (2), 138 (2), 143 (2), 145A-145B (2-2).

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 48).

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.

	<i>Units</i>
(A) General University Requirements	
(1) Subject A	0
(2) Military, air, or naval science (minimum)	6
(3) Physical education	2
(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 3)	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

Total Units 57-61

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 1-4), 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 1 20 units

* Completion of course 2 in a foreign language or 8 years of one language in high school is required for the prebusiness curriculum.

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-2B 35 units
Recommended: Botany 1, Geology 1, Mineralogy 6, 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)

Physical education (four semesters)

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 predental 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).

* 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.

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****Physical Education (four semesters)****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 predental program).

- | | |
|--|------------|
| (2) English 1A-1B or Speech 1, 2..... | 6 units |
| ‡(3) Chemistry 1A, 8 | 8 units |
| (4) Zoology 1A-1B | 8 units |
| (5) Psychology | 6 units |
| (6) Social science | 12 units |
| Courses in the fields of anthropology, economics, history, political science, and sociology may be used to satisfy this requirement. | |
| (7) Humanities | 12 units |
| 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. | |
| (9) Electives to complete a total of 60 units..... | 10-0 units |

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

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

† 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.

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.

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. S. Heard

First Year

(1) General University Requirements	<i>Units</i>
Subject A	0
Military, air or naval science (minimum).....	3
Physical education	1
(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, social science, and humanities offered in satisfaction of the lower division requirements of the College of Letters and Science.	

† 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.

Second Year

(1) General University Requirements	
Military, air or naval science (minimum).....	3
Physical education	1
(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.	

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 does not offer an undergraduate major in journalism at Los Angeles; therefore, it is not possible to receive a bachelor's degree in journalism on the Los Angeles campus. Instead, the basic background for the graduate program in journalism is drawn principally from the work offered in the various departments in the College of Letters and Science.

Undergraduate students who are primarily interested in journalism should select a major from the list of Majors and Curricula and indicate this major and the appropriate college on the Application for Admission, undergraduate, with Journalism in parentheses: e.g., *Letters and Science, Anthropology (Journalism)*. 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 Graduate Department of Journalism. Journalism should not be listed as a major. If the student is undecided regarding a choice of major and desires ultimately to enter the Graduate Department of Journalism as a graduate student, he should indicate on the Application, *Letters and Science, Undecided (Journalism)*.

It is advisable to choose a major that will follow one's field of interest and include as many as possible of the following courses recommended by the Graduate Department of Journalism: English 1A-1B, 31, 106A, 130, 131; Economics 1A-1B, 13; Geography 1A-1B or 100, 4; History 7A-7B, and 5A-5B or 8A-8B; Political Science 1 or 101, 2, 110; Psychology 1A-1B; Anthropology 1, 2; Sociology 1A-1B or 101.

Librarianship.—The School of Librarianship in Berkeley offers two separate curricula of two years subsequent to the bachelor's degree, leading at the end of the first year to the degree of Bachelor of Library Science, and at the end of the second year to a master's degree—ordinarily the Master of Library Science, but in certain cases the Master of Arts. The A.B. degree of the University of California (Los Angeles or Berkeley) or its equivalent, a minimum grade-point average of 2.5 in the last two years of academic work, a graduate standing in the University without deficiencies, a satisfactory score on the Graduate Record Examination (Profile and Aptitude Tests), and a college year of each of two modern languages (preferably French and German) are required for admission to the B.L.S. program. For admission to the master's program the same requirements obtain except that a minimum 3.0 grade-point average in an accredited graduate library school is required.

COLLEGE OF AGRICULTURE

THE COLLEGE OF AGRICULTURE of the University of California offers at Los Angeles the following curricula:

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.

Agricultural Production—a new general curriculum recently extended to the Los Angeles campus, available also at Davis.

Agricultural Management—a new curriculum combining work in agriculture, business administration, and economics. Also available at Davis and Berkeley.

These curricula all lead 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 horticultural 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 or 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	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.

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 136 A or 136B; Irrigation and Soil Science 101. Recommended: Agricultural Economics 130; Botany 151; Entomology 144; Horticultural Science 110; Irrigation and Soil Science 102, 110A; Plant Pathology 140.

Subtropical Horticulture.—Chemistry 1A, 1B, 8; Botany 1, 107. Recommended: Agricultural Economics 130; Entomology 134; Horticultural Science 101, 102; Irrigation and Soil Science 101. A student who intends to undertake graduate study is advised to elect additional courses in botany, chemistry, physics, mathematics, and statistics.

† Not including Mathematics C or D

** In addition to the general University requirement.

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 2, 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

<i>Freshman Year</i>	Units First Semester	Units Second Semester
*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

There is no degree of Associate in Arts in the College of Agriculture. Consequently 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—Entomology 134 or 144; Botany 107 (Plant Physiology) 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.

* Or Naval science (8 units per semester).

AGRICULTURAL PRODUCTION CURRICULUM

Students must complete the following:

(a) General	<i>Units</i>
Botany	5
Chemistry	8
Economics	3
English and/or speech	6
Genetics	3
Physics	3
Zoology	3
Additional units from:	
Group I	9
(Animal physiology, bacteriology, botany or plant physiology, chemistry, genetics, geology, mathematics,† physics, or zoology)	
Group II	6
(Anthropology, art, economics, English, foreign languages, geography, history or political science,‡ philosophy, psychology, music, sociology, or speech)	
	46

(b) In addition, students must complete a minimum of 45 units in agriculture, selected with the approval of the student's adviser, including at least 12 units from one department or closely related field, and at least 9 units from another department or closely related field.

Freshman and Sophomore Years

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

Example of Minimum Program—Agricultural Production Curriculum

<i>Freshman Year</i>	Units First Semester	Units Second Semester
Botany 1 and 6 or 3	5	4
Chemistry 1A or 2A, 8.....	5	3
English 1A-1B or Speech 1, 2.....	3	3
History 7A .....	..	3
*Military science	1½	1½
Physical education	½	½
	15	15

Sophomore Year

Bacteriology 1 .....	..	4
Economics 1A-1B	3	3
Irrigation and Soil Science 108.....	3	..
Physics 2A, or 10 and 21.....	..	4
Horticultural Science 2, 110.....	3	2
Zoology 1A or Biology 12.....	4 or 3	..
*Military science	1½	1½
Physical education	½	½
	15 or 14	15

* Or Naval science (8 units per semester).
 † Not including Mathematics O and D.
 ‡ In addition to University requirements.

AGRICULTURAL MANAGEMENT CURRICULUM

Students must complete the following:

	<i>Units</i>
(a) Accounting	3
Agriculture (other than agricultural economics and botany)	12
Anthropology, geography, history, philosophy, political science, psychology, or sociology and social institutions.....	12
Bacteriology, botany, geology, physics, physiology or zoology or additional chemistry or mathematics.....	7
Business law	3
Chemistry	5
English and/or speech.....	6
Mathematics	3
Principles of economics.....	6
Statistics	3
	60

(b) In addition, students must take at least 24 units of upper division work in agricultural economics, economics or business administration.

Certain courses or their equivalents are required for the curriculum and where applicable may be used toward satisfaction of (d) and (b) requirements above: Agricultural Engineering 1, Botany (4 units), Psychology 1A, Agricultural Economics 117-117C, 130, Business Administration 140, 190, Economics 100A and one of the following 100B, 135, 150, 170, 195.

In addition, the student, with the guidance and approval of his adviser, shall select a field of interest consisting of a course program of at least 30 units. This must include 12 units of courses in agriculture as listed under (a) above and 12 units of upper division courses chosen from agricultural economics, business administration and economics in addition to those listed as required above.

Freshman and Sophomore Years

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

Example of Minimum Program—Agricultural Management Curriculum

<i>Freshman Year</i>	Units First Semester	Units Second Semester
Botany 1	5	..
Business Administration 1A (accounting).....	3	..
Chemistry 1A or 2A.....	..	5
English 1A-1B or Speech 1, 2.....	3	3
Psychology 1A .....	..	3
*Military science	1½	1½
Physical education	½	½
†Electives	3 or 4	3 or 4

16 or 17 16 or 17

* Air or Naval science (units differ).

† Selected from science, mathematics, and agriculture to meet curricular requirements and field of interest.

	Units First Semester	Units Second Semester
<i>Sophomore Year</i>		
Agricultural Engineering 1.....	..	2
Chemistry 8 (elective).....	3	..
Economics 1A-1B.....	3	3
Mathematics 32A.....	3	..
†Political science, history, etc.....	3	6
*Military science.....	1½	1½
Physical education.....	½	½
†Electives.....	2 or 3	2 or 3
	16 or 17	16 or 17

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 5).

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.

* Air or Naval science (units differ).

† Selected from science, mathematics, and agriculture to meet curricular requirements and field of interest.

‡ Selected to meet both curricular and American History and Institutions requirements.

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 base curriculum for the later achievement of professional competence in whatever field of engineering the graduate may enter.

The engineering curriculum has been accredited by the Engineers' Council for Professional Development, 25-33 West 39 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 recommendation of the faculty and approval of the Committee on Student Relations.

Students who plan to seek advanced degrees are referred to the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION or NORTHERN SECTION.

The ANNOUNCEMENT OF THE COLLEGES OF ENGINEERING, BERKELEY AND LOS ANGELES, gives information concerning the history of the Colleges, fa-

ilities 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 March 15, 1959, for fall, 1959, admissions; November 17, 1959, for spring, 1960, admissions; and April 12, 1960, for fall, 1960, admissions.

Under the terms of an agreement between the State Board of Education and the Regents of the University of California, the Colleges of Engineering at Berkeley and Los Angeles will provide capacity for a limited number of students in the lower division on each of the campuses. Application of this quota will, in effect, largely confine admission to beginning freshmen and to upper division students.

Satisfaction of the matriculation requirements admits the student to the University but not necessarily to the College of Engineering. Admission to the College of Engineering will be based upon the results of an entrance examination and on consideration of the student's grades.

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 or at Los Angeles. A list of the places and times for the examinations may be obtained from the Dean of the College of Engineering 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.

Admission in Freshman Standing

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 7 C-10 C of this bulletin. Determination of his admission to the College of Engineering is then made on the basis of his score on the *Engineering Examination, Lower Division*, combined with a further detailed consideration of his high school grades and subjects. It is important for such applicants to include the following subjects in the list of high school courses taken to satisfy the University admission requirement, regardless of which of the plans of admission they choose:

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

An applicant who has not completed all of the above subjects may sometimes be admitted to engineering if he is otherwise well qualified for admission to the University and to the College of Engineering. If a student is admitted without all of the above preparation, it is necessary for him to make up equivalent courses while in college, thereby probably delaying his graduation.

Admission in Advanced Standing

An applicant may qualify for admission to the University in advanced standing under any one of the several plans described on pages 10 C-14 C of this bulletin. Determination of his admission to the College of Engineering is then made on the basis of his score on the appropriate *Engineering Examination (Lower Division* for freshmen and sophomore applicants, *Upper Division* for junior and senior applicants), combined with a further detailed consideration of his high school and college grades and subjects. However, in general, new students will be accepted only as beginning freshmen and as upper division students. Due to a temporary space shortage, the College of Engineering on the Los Angeles campus will not be able to accommodate all qualified junior applicants.

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/> 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	1½	1½
Physical education	½	½
Engineering 4A-4B	3	3
Chemistry 1A-1B	5	5
Mathematics 5A-5B	5	3
Physics 1A .....	..	3
Electives .....	..	2‡
	15	18§
<i>Sophomore Year*</i>		
†Military science or air science	1½	1½
Physical education	½	½
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

* See pages 85-86 for freshman and sophomore subject 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

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 in engineering courses, both lower and upper division, is 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 of the nonmajor field electives. 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. The courses should be arranged to include at least one coherent group of 8 to 10 units. In general, each group should contain a minimum number of lower division or introductory courses and a maximum number (normally a minimum of 9 units) 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 21 C of this bulletin).

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

Credit for Military, Air, or Naval Science

Lower division: six units are acceptable toward the baccalaureate.

Upper division: six units of nonmajor field electives and the 3 units of optional electives, a total of 9 units, may be applied.

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.

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.

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, mining engineering, petroleum 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.

COLLEGE OF APPLIED ARTS

THE COLLEGE OF APPLIED ARTS was established on the Los Angeles campus of the University of California in 1939 in order to meet the demand for training of a specialized and professional character, to organize certain scientific and scholarly studies into suitable curricula which may be applied in the fields of the arts, and to provide curricula for the training of teachers in specialized areas.

The College now offers majors in art, music, and theater arts, leading to the degree of Bachelor of Arts; and majors in business education, home economics, and physical education, leading to the degree of Bachelor of Science. Interdepartmental curriculum leading to the degree of Bachelor of Science is offered in apparel design.

Nondegree curricula are offered in prenursing, preoccupational therapy, preoptometry, and prepublic health.

By completing additional requirements set up by the School of Education, students may secure *teaching credentials* in connection with the majors in art, business education, home economics, music, physical education, and theater arts.

REQUIREMENTS FOR GRADUATION

Lower Division

The work of the lower division comprises the studies of the freshman and sophomore years, while the upper division refers to the junior and senior years.

Upper division standing is granted to students who have:

- (1) completed at least 60 units of college work.
- (2) earned at least a C average in all University of California work.
- (3) satisfied requirements (A) to (D) below:

(A) *General University requirements.*†

Subject A.‡

Military, Naval, or Air Science, 6 to 12 units (four semesters), men.
Physical Education, 2 units (four semesters).

(B) EITHER:

(B₁) **Foreign Language.* At least 16 units in one foreign language. 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. The requirement may also be met by passing a proficiency examination in one language. Courses given in English by a foreign language department 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.)

(B₂) **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 1A, 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, 4A, 4B, 5A, 5B, 6A, 6B, 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

(B₃) 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

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

‡ 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 20 C of this bulletin.

§ 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

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 given in English by a foreign language department 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.

(C) *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 will not be counted as a part of the 60 units.

(D) **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 3A-3B.

Chinese, any two consecutive courses from the following: 1A, 1B, 13A, 13B.

French, any two consecutive courses from the following 1, 2, 3, 4, 25A, 25B.

German, any two consecutive courses from the following: 1, 2, 3, 3PS, 4.

Greek 1, 2.

Hebrew 5A-5B.

Italian, any two consecutive courses from the following: 1, 2, 3, 4.

Japanese, any two consecutive courses from the following: 9A, 9B, 29A, 29B.

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.

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, 4A, 4B, 5A, 5B, 37; Statistics 1.

4. Social Sciences:

Anthropology 1, 2.

Economics 1A-1B.

Geography 1A-1B, 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.

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.

* Courses offered in satisfaction of the language or natural science requirement may not be used on the year-course requirement.

6. Philosophy:

Philosophy 6A-6B, 20A-20B, 30-31.

7. Music, Art. (A student majoring in art or music may not present a year course in his major department.):

Art 1A-1B, 2A-2B, 6A-6B.

Integrated Arts 1A-1B.

Music 1A-1B, 3A-3B, 5A-5B, 20A-20B, 30A-30B.

University Extension.—Courses in University of California Extension (either class or correspondence) may be offered in satisfaction of the above requirements provided they bear the same number as acceptable courses in the regular session. (Equivalent courses bear the prefix X, XB, XL, XR, or XSB.) Extension courses may not, however, be offered as a part of the residence requirement.

Upper Division Standing.—Students transferring from other colleges in the University or from other institutions with 60 or more units of credit are given upper division standing, but any subject shortages in requirements (A) to (D) must be completed concurrently with the requirements for the bachelor's degree.

Certain courses taken in the high school are accepted as fulfilling in part or in whole some of the lower division requirements. However, the fulfillment of lower division requirements in the high school does not reduce the number of units required in the University for upper division standing (60) or for the bachelor's degree (120).

Upper Division*

Requirements for the Bachelor's Degree

The bachelor's degree is granted to students who have:

1. Completed at least 120 units of college work.
2. Earned a C average in all University of California work.
3. Satisfied the following requirements:

Lower division requirements of the College of Applied Arts (see page 39).

American History and Institutions.—This requirement may be met by passing an examination or two courses accepted as satisfactory for this purpose. (See page 21 C of this bulletin or the HANDBOOK OF RULES AND REGULATIONS FOR STUDENTS for approved courses.)

Minor.—Not less than 20 units of coordinated courses, of which at least 6 units must be in closely related upper division courses. (See page 43.)

Major.—The candidate must complete, with a C average, a major† or curriculum in the College of Applied Arts, and must be recommended by the appropriate department or curriculum committee.

Each student is required to take at least 6 units in his major (either 3 units each semester or 2 units one semester and 4 units the other) during his last or senior year.

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.

No student is permitted to change his major after the opening of the last semester of the year in which he intends to graduate.

* See page 39 for lower division requirements to be satisfied before taking upper division courses.

† With the approval of the department chairman, not to exceed 6 units of "800" courses may be used on both the major and the teaching credential.

Any upper division course in a student's major department is automatically applied on his major.

Students who fail in the lower division to attain at least a C average in any department may 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 his opinion, and the probable cause of the lack of success. The Dean may permit a change of major or may, with the approval of the President, require the student to withdraw from the College.

Any department offering a major in the College of Applied Arts may require from candidates for the degree a general final examination in the department.

Residence.—All candidates for the degree must be registered in the College of Applied Arts while completing the final 24 units. *Courses completed in University of California Extension are not considered work in residence.*

Students transferring from other institutions or from University of California Extension with senior standing must complete in the College of Applied 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.

HONORS

Honors with the Bachelor's Degree

- A. Honors are granted at graduation only to students who have completed the major with distinction, and who have a general record satisfactory to the Committee on Honors. Departmental recommendations are reported to the Registrar.
- B. Students who in the judgment of their departments display marked superiority in their major subject may be recommended for the special distinction of Highest Honors. Departmental recommendations are reported to the Registrar.
- C. A list of students to whom Honors or Highest Honors in the various departments 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.

THE MINOR

A graduation* minor in the College of Applied 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.

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.

* 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.

Business administration, business education, 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, 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. Lower division courses in the mother tongue of a foreign student.

ORGANIZED MAJORS AND CURRICULA

A major or a curriculum consists of at least 36 units of coordinated upper division courses, together with the required prerequisites designated as "preparation for the major." A major is composed of courses from one or more departments arranged and supervised by a department, whereas a curriculum is a program of study made up of courses from several departments and supervised by a special committee. The degree of Bachelor of Arts is granted with the majors in art, music, and theater arts; all other four-year majors and curricula lead to the degree of Bachelor of Science.

Departmental *majors*, with opportunities for specialization as indicated, are offered in the following fields:

MAJOR IN ART

History and Studio
Pictorial Arts
Design

MAJOR IN BUSINESS EDUCATION

Office Administration
Accounting
General Business
Merchandising

MAJOR IN HOME ECONOMICS

General
Teacher Education
Foods and Nutrition
Food Technology
Clothing, Textiles, and Related Arts

MAJOR IN MUSIC

General
Teaching
Opera (5 years)
Performance (5 years)

MAJOR IN PHYSICAL EDUCATION

Physical Education
School Health Education
Physical Therapy
Recreation
Dance

MAJOR IN THEATER ARTS

Theater
Motion Pictures
Television and Radio
Language Arts (Teaching)

A special curriculum, involving work in several departments, is offered as follows: Curriculum in Apparel Design

Two-year *nondegree curricula* are available as follows:

Prenursing Curriculum
Program for Registered Nurses
Preoccupational Therapy Curriculum
Preoptometry Curriculum
Prepublic Health Curriculum

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.

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.

The student must attain an average grade of C (two grade points for each unit of credit) in all courses offered as part of the major (or curriculum).

CURRICULUM IN APPAREL DESIGN

The curriculum in apparel design is planned to provide students with the knowledge, originality, and technical skills essential to the successful creative designer.

Preparation for the Major. Art 2A, 6A-6B, 16, 44, Economics 1A-1B, Home Economics 16.

The Major.—Thirty-six units of coordinated upper division courses, including Art 160, 163A-163B, 167, 169A-169B, Home Economics 161, 170, 171A, 172, 175, 176A, 177A-177B, and additional courses chosen from: Art 161, 166, 175A-175B, 176A. Home Economics 162, 171B. Recommended: at least one summer of practical experience in a factory or retail store.

CURRICULUM IN APPAREL MERCHANDISING

The curriculum in apparel merchandising is being discontinued, and no new majors will be accepted into the program after July 1, 1959.* The Bachelor of Science degree in apparel merchandising will not be awarded after June, 1962.

Preparation for the Major.—Art 6A-6B, Business Administration 1A-1B, Economics 1A-1B, Home Economics 16.

The Major.—Thirty-six units of coordinated upper division courses, including Art 160, 163A, 167, Business Administration 150, 160, 162, 163, Home Economics 161, 170, 172, 175, and additional courses chosen from: Art 161, 163B, 175A, Business Administration 165, 168, Home Economics 143, 162, 171A, 171B, 176A, Psychology 180. Recommended: at least one summer of practical experience in a factory or retail store.

PREPARING FOR PROFESSIONAL CURRICULA

Certain courses given on the Los Angeles campus of the University of California may be used as preparation for admission to professional colleges and schools of the University.

PROGRAM FOR REGISTERED NURSES

Registered nurses needing further work to meet the requirements for admission to the degree program in the School of Nursing may register in the College of Applied Arts to satisfy the requirements for upper division standing†. See the ANNOUNCEMENT OF THE SCHOOL OF NURSING for requirements for the Bachelor of Science degree.

PRENURSING CURRICULUM

The University of California, Los Angeles, offers a basic program leading to the Bachelor of Science degree in Nursing. Effective with the academic year

* Exceptions will be made for students who transfer with 80 or more units of advanced standing.

† Thirty units of credit will be granted for the hospital nursing course.

1959-1960, only those students who have completed 60 units of college work will be admitted to the Basic Nursing Program. The 60 units of work are to include the lower division requirements of the College of Applied Arts plus the prerequisites for admission to the School of Nursing. For specific requirements of the School refer to page 60 of this bulletin and the ANNOUNCEMENT OF THE SCHOOL OF NURSING, LOS ANGELES.

PREOCCUPATIONAL THERAPY CURRICULUM

The University does not offer a complete course in occupational therapy. The following two-year program meets the requirements for upper division standing and includes those subjects recommended by the American Occupational Therapy Association for the freshman and sophomore years. It does not, however, necessarily meet the lower division requirements of all schools of occupational therapy, and each student should ascertain the requirements of the professional school where he plans to take his advanced work and adjust his program accordingly.

	<i>First Year</i>	Units First Semester	Units Second Semester
Subject A (if required).....		..	..
Physical Education 1.....		½	½
Chemistry 2.....		3	..
Zoology 15.....		..	5
English 1A-1B.....		3	3
Speech 1.....		..	3
American History and Institutions.....		3	3
Elective.....		5	2
		<hr/>	<hr/>
		14½	16½
	<i>Second Year</i>		
Physical Education 1.....		½	½
Zoology 25.....		3	..
Physical Education 44.....		3	..
English 46A-46B.....		3	3
Psychology 1A, 1B or 33.....		3	3
Sociology 1, 12.....		3	3
Physical Education 43.....		..	2
Bacteriology 6.....		..	2
Electives.....		..	3
		<hr/>	<hr/>
		15½	16½

PREOPTOMETRY CURRICULUM

The University offers a five-year program in optometry leading to the degree of Bachelor of Science at the end of the fourth year, and to the Certificate in Optometry and the Master of Optometry degree at the end of the fifth year. The first two years may be taken at Los Angeles; the last three years must be taken in the School of Optometry* at Berkeley.

As prerequisites, students should offer the following high school subjects for matriculation: algebra, plane geometry, trigonometry, chemistry, physics, and two years of a foreign language.

During the first two years, the following curriculum outline should be followed as closely as possible. For further information see the ANNOUNCEMENT OF THE SCHOOL OF OPTOMETRY.

* Enrollment in the School of Optometry is limited. Candidates for admission to the first year (junior) class are accepted primarily on the basis of scholarship, particular emphasis being placed on the required subjects. Applications for admission for any year should be filed with the Director of Admissions by May 1 of that year.

	<i>First Year</i>	Units First Semester	Units Second Semester
Subject A (if required)
Military, air, or naval science.....		1½-3	1½-3
Physical Education 1.....		½	½
Chemistry 1A		5	..
Speech 1, 2 or English 1A-1B		3	3
Foreign language		4	4
Mathematics D or 1, 3A		3	3
†Zooology 15	5
		‡	‡

Second Year

Military, air, or naval science.....		1½-3	1½-3
Physical Education 1.....		½	½
Bacteriology 1 .....		..	4
Chemistry 1B		5	..
Psychology 1A, 1B or 33.....		3	3
†Zooology 25		3	..
Physics 2A-2B		4	4
Chemistry 8 .....		..	3
		‡	‡

PREPUBLIC HEALTH CURRICULUM

The University offers a four-year program in public health leading to the degree of Bachelor of Science.

The high school preparation should include chemistry and trigonometry; physics and second-year algebra are recommended.

On the Los Angeles campus it is recommended that the first two years' work be taken in the College of Applied Arts, following the program outlined below. The last two years' work is given under the School of Public Health. For further information see the ANNOUNCEMENT OF THE SCHOOL OF PUBLIC HEALTH.

Preparation for the Major.

‡Mathematics D or 1 or 32A

Bacteriology 1

Humanities, 12 units

English 1A-1B or Speech 1, 2; 6 units

6 units, including a year sequence, from foreign language, art, music, or philosophy.

Social Science, 12 units chosen from the following:

Except that a year sequence must be completed in the lower division, portions of this requirement may be deferred to the upper division.

Anthropology 2

† While Zoology 25 is preferred, one of the following sequences will be accepted for admission purposes: Zoology 1A-1B, or Zoology 1A and comparative anatomy, or Zoology 1A and human anatomy. Unless a human anatomy course equivalent to Anatomy 102 at the University of California, Berkeley, or Zoology 25 at the University of California, Los Angeles, is included, Anatomy 102 must be taken in the junior-year program in the School of Optometry.

‡ Normal total, 15 or 16 units. Many students find it advisable to attend Summer Session to avoid excess programs.

§ Mathematics D or 1 required if students did not take either two years of high school algebra or one and one-half years of algebra and trigonometry.

Economics 1A, 1B
 Psychology 1A, 1B, 33
 Sociology 1, 12
 Business Administration 1A

Physical and Biological Science, 20 units chosen from the following:

Chemistry 1A, 1B, 2A, 10
 Life Sciences 1A, 1B
 Physics 2A, 2B, 10, 21
 Zoology 1A, 1B, 15, 25
 Mathematics 3A, 3B

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.

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 Applied 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:
- Business Administration 1A-1B, Elementary Accounting.
 - Economics 1A-1B, Principles of Economics.
 - Mathematics 32B, Introductory Mathematical Analysis for Business, or Mathematics 3B, First Course in Calculus.
 - English 1A, English Composition.
 - 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. If possible, 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:

- 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.
- 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 (d) 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.

Economics 135. Money and Banking.

Business Administration 140. Elements of Production Management.

Business Administration 150. Elements of Personnel Management.

Business Administration 160. Elements of Marketing.

Business Administration 190. Organization and Management Theory.

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 four courses aggregating not less than 10 units in one of the 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

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 four 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.

Students who are interested in agricultural management should con-

sult page 32 of this bulletin for particulars concerning a specialization in this area.

Students who are interested in office management should consult the ANNOUNCEMENT OF THE COLLEGE OF APPLIED ARTS for particulars concerning a specialization in this area.

d. 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	Business Administration 101.....	3
Business Administration 115.....	3	Business Administration 140.....	3
Business Administration 108.....	4	Field of Concentration course.....	3
Business Administration 120 or 120M	3	Electives	3
Economics 185	3		
	<hr style="width: 50px; margin: 0 auto;"/> 16		<hr style="width: 50px; margin: 0 auto;"/> 17

SENIOR YEAR

<i>First Semester</i>	<i>Units</i>	<i>Second Semester</i>	<i>Units</i>
Business Administration 150.....	3	Business Administration 190.....	3
Business Administration 160.....	3	Field of Concentration course.....	3
Field of Concentration course.....	3	Field of Concentration course.....	3
Electives	9	Electives	3
	<hr style="width: 50px; margin: 0 auto;"/> 18		<hr style="width: 50px; margin: 0 auto;"/> 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.

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.

Regular Graduate Status.—Graduate students are admitted to regular 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. The minimum requirement for admission in *regular* graduate status is an undergraduate scholarship record equivalent to at least a 2.5 grade-point average (halfway between grades B and C) at the University of California, Los Angeles, in all courses taken in the junior and senior years and in all upper division courses in business administration and economics.

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.

An applicant who fails to qualify for admission to *regular* graduate status may, at the discretion of the Dean of the Graduate Division and the Assistant Dean of the Graduate School of Business Administration, be admitted as an *unclassified* graduate student. This is considered to be a temporary status granted only where the applicant's record gives promise on grounds other

than the academic record that the student may pursue the degree programs with success. Students who have graduated with a bachelor's degree in business administration in the year preceding their application for admission, will not be considered eligible for unclassified status. In judging the qualifications of students for *unclassified* graduate status, special attention will be given to evidence of motivation and intellectual maturity and the student's work experience, from references which he may supply, and from test scores on such standardized examinations as the Graduate Record Examination and the business school tests of the Psychological Testing Service. A student in unclassified graduate status may not enroll in graduate courses. No assurance is given of later admission to regular graduate status, nor is work taken in unclassified status normally accepted in satisfaction of residence or course requirements for the graduate degrees.

An application for readmission is required for students formerly registered in a regular session as a graduate student who may wish to return after an absence. A renewal of application is required for persons who were admitted to a fall or spring semester but did not register. Attendance in a Summer Session does not constitute admission to graduate status, nor to the Graduate School of Business Administration.

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 DIVISION, SOUTHERN SECTION.

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, normally are included in every doctoral program, although a substitution may be made by the guidance committee in one of these fields. 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 operation's analysis. 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.

Normally a student will be expected to complete at least three courses in each of the five fields of concentration in preparation for the Qualifying Examinations.

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 other course (graduate or undergraduate) in accounting.

Business Administration 115, plus one other 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.

Foreign Language.—Reading proficiency in the two foreign languages most useful in the conduct of the candidate's studies will be required: except that the Department, with the consent of the Graduate Council, will permit substitution for one foreign language of a program of study, or a demonstration of proficiency, in a field external to the candidate's major subject where this will be more conducive to sound research results. (For example, economic

history or mathematics through calculus might be substituted in appropriate cases.)

Notice of Ph.D. Candidacy.—As early as possible, preferably at the end of the first semester of graduate study, the student should declare his intention of proceeding to candidacy for the Ph.D. degree. This statement of intention should be made in duplicate, on Form 1, which is available at the Office of the Dean of the Graduate Division.

Guidance Committees.—On approval of the notice of Ph.D. candidacy, the student enters the formal Ph.D. degree program. A guidance committee will be appointed to assist the student in the preparation of his *proposed program for residence study*, to make a report to the department chairman of the progress of the candidate, and to make recommendation of the candidate for his qualifying examinations and to conduct the written qualifying examination.

Qualifying Examinations.—Students must pass written qualifying examinations on the five fields of concentration. Examinations in each field are scheduled once every semester. 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 students' 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.

Effective July 1, 1958, students must complete the written and oral qualifying examinations within a period of eighteen months. The time will be measured from the date on which the first examination is written.

Doctoral Committees.—On recommendation of the guidance committee and upon nomination of the department to the Graduate Council, a doctoral committee for each candidate is appointed. This committee conducts the written and oral Qualifying Examinations, and is responsible for making nominations for advancement to candidacy.

Advancement to Candidacy.—At least two semesters prior to the date the degree is anticipated, the candidate must file with the Graduate Division his *Application for Candidacy for the Degree, Doctor of Philosophy* (Form 4).

The Dissertation.—The candidate files with the Department of Business Administration a *proposal for a doctoral dissertation* and proceeds under the guidance of his doctoral committee. The dissertation must be prepared in accordance with the instructions furnished by the Graduate Division.

Final Examination.—The final examination, conducted by the doctoral committee, is oral and deals primarily with the subject matter of the dissertation.

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 Fields

1. Business Economics (100 and 101, or 102G).
2. Business Law (108).
3. Business Statistics (115 or 115G).

4. Accounting (120, 120G, or 120M).
5. Organization and Management Theory (190, or 190G).

Elective Fields (any five)

1. Money and Banking (Economics 135).
2. Finance (131 or 133).
3. Insurance (135, or 135G).
4. Production Management (140, or 140G).
5. Personnel Management (150, or 150G).
6. Marketing (160, or 160G).
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 in regular status may satisfy parts of this requirement by independent study and examination with special permission of the Assistant Dean of Student Affairs.

Regular 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 work of which 3 units are required in the area of business economics and 3 units in the area of management. At least 9 and no more than 15 units are required in a major field of concentration and from 3 to 9 units are electives.

Required Courses

Business Economics: Business Administration 200, 201 or 202 3 units
Management: Business Administration 290, 291 or 294 3 units

Major Field of Concentration.—A minimum of 9 units and no more than 15 units of graduate courses and seminars must be completed in the major field of concentration.

If a student elects a major field in which only two graduate courses are available, he may be advised by his faculty adviser to elect an undergraduate course in that field or a graduate course in a related field to complete the 9 units required in the major. The 6 units of required courses may not be substituted in the major field of concentration.

Electives.—A minimum of 3 units and no more than 9 units of electives are chosen from graduate and/or undergraduate courses approved by the faculty of the Graduate School of Business Administration. Approved courses are listed in the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION and are indicated by an asterisk (*) in the ANNOUNCEMENT OF THE GRADUATE SCHOOL OF BUSINESS ADMINISTRATION, LOS ANGELES. (See the *explanatory note* on page 33.) At least one of the elective courses must be in a field other than that represented by the major field of concentration.

A written comprehensive examination is given in the major field of concentration.

Effective July 1, 1959, all new and continuing students who have not started the second-year program will be required to follow the above program.

Residence of at least one academic year on the Los Angeles campus is required for the M.B.A. degree candidate.

Fields of concentration available in the M.B.A. program are as follows:

- a. Business Statistics and Operations Analysis
- 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 the degree of Master of Business Administration must pass an integrated comprehensive examination based upon his program 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 unclassified 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 bachelor's degree including unclassified status.

SCHOOL OF EDUCATION

THE SCHOOL OF EDUCATION, established on the Los Angeles campus July 1, 1939, offers professional curricula to students preparing for teaching service in elementary and secondary schools; for experienced teachers desiring preparation for educational administration, research, or other specialized phases of public school education; and for graduate students who seek the degrees of Master of Arts in Education, Master of Education, or Doctor of Education.

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 University, 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 Teacher Selection and Counseling Service, 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, (b) a grade-point average in education courses of 2.0 or higher, and (c) a grade-point average in standard subject matter courses, not including courses in "performance" fields, of 2.0 or higher.

Communication Skills.—Under the auspices of the Teacher Selection and Counseling Service, 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 students must also demonstrate that he is free of gross speech defects, such as stuttering or lisping.

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. If a student's history is such that there is doubt on this matter, he should consult a counselor in the Teacher Selection and Counseling Service.

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. If he does not receive official instructions in class he should contact the Teacher Selection and Counseling Service, before mid-term.

Counseling

The Teacher Selection and Counseling Service helps prospective students to discover the fields and levels of vocational opportunities and to decide the program each should follow in order to achieve his chosen professional objective. Students may request: (a) interpretation of test results; (b) referral to a credentials adviser for an interpretation of credential requirements; (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.

State Credentials

The School of Education offers curricula leading to certificates of completion and State credentials authorizing service in the following fields:

1. Kindergarten-Primary
2. General Elementary
3. Junior High School
4. Special Secondary* in the fields of:
 - a. Art*
 - b. Business Education*
 - c. Homemaking*
 - d. Music*
 - e. Physical Education*
 - f. Trade and Industrial Education*†
5. General Secondary
6. Junior College
7. Special Education Credentials:
 - a. To Teach Exceptional Children, with Specializations in:
Speech Correction and Lipreading
Mentally Retarded

* Recommended programs on the Los Angeles campus leading to special secondary credentials are being discontinued. Certificates of completion for these credentials will not be awarded after September 15, 1961.

† Courses for the vocational type of credentials in trade and industrial education are provided primarily in Summer Sessions.

b. General Pupil Personnel Services, with Specializations in:

- Pupil Counseling
- Child Welfare and Attendance
- School Social Work
- School Psychometry
- School Psychology

8. Supervision

9. Elementary School Administration

10. Secondary School Administration

11. General 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. For information concerning courses leading to the various credentials and special programs, such as those for *Child Care Center Permits*, consult the Credentials Counselor in the School of Education.

Students planning to prepare for kindergarten-primary or general elementary credentials are advised to choose the recommended curricula which are designed to include fields related to teaching in the elementary schools.

Students currently preparing for the special secondary credential, which is limited to one field, should complete the appropriate major in the college in which it is offered. Students desiring to qualify for the general secondary credential are likewise advised to complete the appropriate major in any college in which it is offered. In addition, all course requirements for such credentials, as specified by the School of Education, must be completed.

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.

SCHOOL OF LAW

THE SCHOOL OF LAW on the Los Angeles campus of the University of California opened in September, 1949. The School occupies the Law Building, which provides the most modern facilities for the teaching and study of law and for legal research.

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 should be filed with the School not later than July 15 preceding the fall semester for which application is made. 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 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, 1960, together with all transcripts of record and other necessary documents, must be filed between April 1, 1959, and November 30, 1959, 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 Educational Testing Service; (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 five 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 ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION, 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

* 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.

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.

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 Graduate Nurse Qualifying 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 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, Inc. Graduate Nurse Qualifying 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 Registered Nurse Program in the School of Nursing should be filed not later than July 15 for the fall semester and not later than January 2, for the spring semester; for the Basic Program these dates are August 15 for the fall semester and January 15 for the spring semester. Applications for admission to the Graduate Program should be filed not later than July 15 for the fall semester and not later than December 1 for the spring semester. The number of students who can enroll in the School is limited. 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 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 should be filed with the Graduate Division, Southern Section, University of California, Los Angeles 24, California.

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 134 units of college work, and shall have satisfied the general university requirements.
2. The candidate shall have completed satisfactorily the pre-nursing curriculum.
3. After admission to the School of Nursing, the candidate shall have completed at least 74 units of college work acceptable to the faculty of the School (less for students entering with advanced standing).
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, 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 at least 42 units (30 of which are in the major) of 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 28.)
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

THE SCHOOL OF PUBLIC HEALTH is a University-wide school. Instruction is given on the campuses at Berkeley, San Francisco, and Los Angeles.

The Los Angeles department, established in 1946, offers a major in public health leading to the degree of Bachelor of Science (with options in the respective fields of sanitary science, biostatistics, public health education and health administration).

The Los Angeles department also offers, in cooperation with the Department of Preventive Medicine and Public Health (School of Medicine), a Master of Science degree in Public Health, with specialization in the fields of epidemiology, biostatistics, sanitary science, health administration and public health education. For administrative purposes, postgraduate doctors of medicine will be under the jurisdiction of the School of Medicine's Department of Preventive Medicine and Public Health, and other qualified graduate students will be assigned to the School of Public Health's Department of Public Health.

The undergraduate curriculum emphasizes a broad educational approach and at the same time includes basic consideration of subject matter to prepare the student for public health professions. The student may wish to elect appropriate courses leading to advanced work in a public health specialty such as biostatistics, epidemiology, health administration, occupational health, public health education, or sanitary science.

The Master of Science program is designed for those students who are interested in developing competence in some specific field of public health through intensive study and research. This graduate program is based upon the baccalaureate program in public health; consequently students who have not received academic training in public health will be required to remove deficiencies before admission to regular graduate status. Ordinarily, a student with a basic science background would require an additional semester to qualify for the program.

BACHELOR OF SCIENCE DEGREE

Admission.—Undergraduate students who have satisfactorily completed at least 60 units of work in one of the colleges of the University, or transfer credit evaluated as equivalent, may apply for admission to the School of

Public Health. A formal application must be filed in the office of the School. Students are admitted on a competitive basis of aptitude and scholastic record. Any prerequisites in the student's curriculum must be completed in addition to the upper division major requirements. The College of Applied Arts offers a prepublic health curriculum (page 47). It is suggested that interested students follow this program.

Requirements.—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 shall have been completed in the School of Public Health. 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.

The degree is granted upon satisfactory completion of the following requirements, including a selected option:

GENERAL REQUIREMENTS

- *Subject A
- *Military, Air, or Naval Science
- *Physical Education
- †History 7A
- †Political Science 1

PREPARATION FOR THE MAJOR

- ‡Mathematics D, or 1
- Bacteriology 1

A. Humanities

1. A 6-unit lower division course in English or speech, chosen from the following: English 1A-1B, Speech 1, 2
2. At least 6 units, including a year-sequence course, chosen from courses in foreign language, art, music, or philosophy.

B. Social Sciences.—(Portions of this requirement may be deferred to the upper division.) At least 12 units, including a year-sequence course chosen from the following: Economics 1A-1B (or Economics 101 in upper division); Sociology 1 and 12 (or Sociology 101 in upper division); Psychology 1A-33 or 1B (or Psychology 101 in upper division); Anthropology 2. In addition: Business Administration 1A may be counted as meeting 3 units of the social science requirement.

C. Natural and Biological Sciences.—20 units of natural and biological sciences chosen from the following: Chemistry 1A-1B, or 2A and 10; Physics 2A-2B, or 10 and 21; Zoology 15 and 25, or 1A-1B; Life Science 1A-1B; Mathematics 3A-3B.

THE MAJOR

- A. Required public health courses (24 units including the following): Public Health 100, 110, 134, 145, 147, 160A-160B or 161A-161B, 170.
- B. Sixteen units from the following, including at least one course from three of the areas (1), (2), (3), and (4):
 - (1) *Behavioral Sciences.*—Sociology 101, 117, 145, 161 (or Business Administration 152); Psychology 101, 145A, 145B; Economics 101.
 - (2) *Biological Sciences.*—Bacteriology 103; Entomology 126; Zoology 100A, 100B, 101A, 130A.

* If required.

† For other methods of satisfying the "Requirement in American History and Institutions," see page 21 C of this bulletin.

‡ Required if student had less than two years of high school algebra or one and one-half years of algebra and trigonometry.

- (3) *Physical Sciences*.—Chemistry 5A, 8, 9; Engineering 172; Geography 100; Mathematics 3B, 4A; Physics 1C, 1D.
- (4) *Administration*.—Business Administration 135, 190, 150 (or Political Science 185), 152 (or Sociology 161).

C. Elective courses: 20 or more units in public health or other areas selected with the approval of the student's adviser.

MASTER OF SCIENCE DEGREE

Admission.—Each student seeking admission to graduate status in public health, or in preventive medicine and public health, must file with the Graduate Division, University of California, Los Angeles 24, a formal application and an official transcript of his record in duplicate from each college and university he has attended, not later than August 1 for the fall semester and December 1 for the spring semester. The application must be accompanied by a check, draft or money order for \$5 in payment of the application fee. Make checks payable to The Regents of the University of California. See the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION, for further information.

To qualify for regular graduate status in the Department of Public Health, the student must have completed a major in public health, or he must have satisfactorily completed the following courses: Public Health 100, 110, 145, 162 and 170. Permission may be granted to qualify in these areas by examination.

For admission to regular graduate status in the Department of Preventive Medicine and Public Health, the student must have completed the requirements for the doctorate of medicine in addition to the requirements of the Graduate Division. To qualify for regular graduate status with the Department of Preventive Medicine and Public Health, the student must have completed the following courses or he must have successfully passed examinations in the areas represented by these courses: Preventive Medicine and Public Health 101, 201 and 220.

Courses taken in public health, or in preventive medicine and public health, to meet the requirements of qualifying for regular graduate status in either department cannot be counted toward meeting the minimum units taken for the degree.

Requirements.—For general requirements, see ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION.

The departments of Public Health (School of Public Health) and Preventive Medicine and Public Health (School of Medicine) follow Plan I. Exceptions to Plan I may be made in unusual cases by permission from the Dean of the Graduate Division and the Chairman of the appropriate department.

A student is required to specialize in one of the following areas: biostatistics, epidemiology, health administration, occupational health, public health education, sanitary science.

At least 20 units, plus a thesis, are required for the degree. Of these 20 units, a minimum of 8 graduate units, including 2 to 4 units of Public Health 299, must be selected from graduate courses in public health or in preventive medicine and public health; 12 additional units will be selected by the student with the approval of the department adviser from the list of courses provided below for each specialization; students graduated in medicine or public health will be required to select courses from other departments of the University.

Elective Courses for Specialization.—Twelve units to be selected from the area of specialization (with approval of the adviser, comparable courses may be included):

Biostatistics.—Anthropology 150, 151; Mathematics 119A, 120, 122A-122B, 135, 139, 140; Statistics 131A-131B, 231, 232, 233, 260; Psychology 105B, 106A, 106B, 146; Sociology 117; Zoology 130A, 131A, 131B, 131C, 159, 230 or 231.

Epidemiology.—Anthropology 102; Bacteriology 103; Entomology 126; Geography 100; Infectious Diseases 251A-251B; Psychology 109, 144; Sociology 101, 117, 122, 186; Zoology 125, 140, 159.

Health Administration.—Business Administration 105B or 108, 135, 150, 152, 190; Economics 131A-131B, 152; Political Science 166, 172, 181, 185, 214, 218, 228.

Public Health Education.—Anthropology 102, 110, 125, 276; Business Administration 292; Sociology 117, 124, 145, 161, 216, 217, 218, 229; Art 140A, 148; Education 100A-100B, 147; Home Economics 111, 113; Journalism 152, 251; Nursing 144, 109, 225; Philosophy 181, 184A-184B, 187A-187B, 240, 241; Political Science 146, 148; Psychology 131, 134, 139, 142, 145A-145B, 180, 267; Speech 106; Theater Arts 185, 270.

Sanitary Science.—Bacteriology 103, 107; Botany 119, 126; Chemistry 108A-108B, 109, 112A; Engineering 130A, 131A, 172; Entomology 100, 126, 126C; Geography 165; Geology 101; Home Economics 113; Physics 121, 124A, 124B; Psychology 187; Zoology 101A, 101B, 111, 111C, 115, 125, 139, 159.

DOCTOR OF PUBLIC HEALTH DEGREE

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 the School of Public Health.

General Requirements for the Degree

- A. The candidate must have completed, with a grade B average or better, basic courses equivalent to those required for a master's degree in Public Health at the University of California and such additional courses as may be prescribed by an examining board appointed by the Dean of the School of Public Health to appraise the candidate's academic and professional background.
- B. The candidate must have passed a qualifying examination conducted by a committee appointed by the Graduate Council.
- C. In addition to requirements A and B above, the candidate must have completed, in residence at the University of California, at least one academic year of work involving advanced specialization in the particular field of public health for which he is preparing.
- D. The candidate must have indicated his capacity to make a substantial contribution to the advancement of the science and art of public health by submitting a dissertation on a subject chosen by himself and bearing on his principal subject of study, and of such character as to show power to prosecute independent investigation. (In general, the program of research and dissertation is the same as that for the degree of Doctor of Philosophy as given in the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION.
- E. The candidate must have demonstrated ability either: (1) by leadership in his field as evidenced by successful professional experience in a post evolving the exercise of substantial initiative and responsibility, or (2) by such other means as the faculty of the School of Public Health may prescribe.

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. In addition, the psychiatric specialization is also fully accredited. The degree of Master of Social Welfare is awarded to students who successfully complete the prescribed two-year program (four semesters) of 48 units, including field work, and who comply with additional specified requirements.

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 (other than carefully arranged work-study programs and courses for advanced students) is usually not encouraged.

Certain courses offered by the School are, however, open to a limited number of part-time students who qualify for admission to the School. Part-time students are not admitted to methods courses, to certain related courses, or to field work. Part-time students, with the permission of the School, may enter either in the fall or the spring semester.

Full-time students are admitted to the School in the fall semester and are expected to continue in attendance throughout the academic year. Students who have successfully completed their first year of training within the past seven years in another accredited school of social work may be admitted for a second year of training if they otherwise qualify for admission to the School. Students who have previously attended an accredited school of social work may have certain courses counted toward the degree provided they have been completed within the past seven years. A maximum of 24 such units may be applied toward the Master of Social Welfare degree.

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 of the year in which the applicant wishes to enter the School. 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 establish his eligibility for admission to regular graduate status at the University of California, Los Angeles; (2) have maintained at least a 2.75 average in undergraduate work except that an applicant with a grade-point average between 2.50 and 2.75 (a B minus) may be considered if the School is convinced that the applicant's potential achievement in the social welfare field is higher than was demonstrated in undergraduate work; (3) have completed at least 15 semester hours in the social sciences and/or psychology; (4) 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; (5) 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; (6) 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 equivalent to that offered by the 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. Applications of other first-year students of the School are considered upon an individual basis.

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.

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.

Total enrollment in the School of Social Welfare is limited to the number for whom suitable field work placement can be arranged. As a result, it may not be possible to accept some applicants, even though they may otherwise meet all the qualifications for admission. Preference in the selection of students will be given to those applicants who appear to be best qualified as indicated by their previous experience, scholastic achievements, personal fitness, and aptitude for the social work profession.

GRADUATE COURSES

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.

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 Public Administration, 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, which may be had upon application to the Registrar of the University of California, Los Angeles 24, California.

DEFINITION OF ACADEMIC RESIDENCE

Every regular graduate student must register for, attend, and complete upper division courses (courses in the 100 series) or graduate course (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.

Teaching assistants and others employed for approximately half time are limited to three-fourths of these totals. Graduate students engaged full time in other occupations are limited to 4 units of graduate courses or the equivalent thereof.

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 he may be admitted to regular graduate status.

The Degree.—The degree of Master of Arts is awarded for the completion of requirements in any of the major subjects of graduate study at the University of California, Los Angeles, except anatomy, applied physics, biological chemistry, biophysics, chemistry, engineering, geochemistry, health education, home economics, horticultural science, infectious diseases, marine biology, nursing, oceanography, pharmacology, physical education, preventive medicine and public health, public health, physiological chemistry, physiology, psychiatry, and radiology, in which the degree of Master of Science is given. In the Department of Journalism both the degree of Master of Arts and the degree of Master of Science are given. In addition to work leading to the degree of Master of Arts in political science and in international relations, the Department of Political Science also offers work leading to the degree of Master of Public Administration.

Work is offered in the School of Business Administration leading to the degree of Master of Business Administration, in the School of Education leading to the degree of Master of Education, in the College of Engineering leading to the degree of Master of Engineering, and in the School of Social Welfare leading to the degree of Master of Social Welfare.

Major Fields.—The major fields for the master's degree are:

Anatomy	Health Education	Philosophy
Anthropology	History	Physical Education (including Recreation)
Anthropology-Sociology	Home Economics	Physics
Applied Physics	Horticultural Science	Physiological Chemistry
Art	Infectious Diseases	Physiology
Astronomy	International Relations	Political Science
Biological Chemistry	Italian	Preventive Medicine and Public Health
Biophysics	Journalism	Psychiatry
Botanical Science	Latin	Psychology
Business Administration	Latin-American Studies	Public Administration
Chemistry	Mathematics	Public Health
Classics	*Marine Biology	Radiology
Economics	Meteorology	Slavic Languages
Education	Microbiology	Social Welfare
Engineering	Music	Sociology
English	Near Eastern Studies	Spanish
French	Near Eastern Languages and Literatures	Speech
*Geochemistry	Nursing	Theater Arts
Geography	*Oceanography	Zoology
Geology	Oriental Languages	
German	Pharmacology	
Greek		

Application for Advancement to Candidacy.—Advancement to candidacy must occur not later than one semester prior to the completion of requirements for the degree. Students are warned that such advancement is not automatic, but requires a formal application distinct from registration. A date approximately two weeks after the opening date is set each semester for application for candidacy by those who hope to qualify for degrees at the close of that session.

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. It is expected that the work of the graduate course, or courses, together with the thesis will not be less than half of the work presented for the degree. 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 department may require any examination which seems necessary to test the candidate's knowledge of his field.

Plan II: Comprehensive Examination Plan.—Twenty-four 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.

* At Scripps Institution of Oceanography, La Jolla.

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 unclassified 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 regular graduate status. The requirement may be satisfied in part by residence in the Graduate Division, Northern Section.

For degree purposes, a student is not regarded as in residence unless he is registered in regular 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

Students who desire to become candidates for the doctor's degree should bear in mind that the degree of Doctor of Philosophy is granted by the University of California not for the fulfillment of technical requirements alone, such as residence and the completion of fundamental courses within a chosen field, but more for the student's general grasp of the subject matter of a large field of study and his distinguished attainments within it, for his critical ability, his power to analyze problems and to coordinate and correlate the data from allied fields to serve the progress of ideas. In addition, he must demonstrate, through his dissertation, the ability to make an original contribution to the knowledge of his chosen field, and throughout his career as a graduate student must prove himself capable of working independently.

Fields of Study.—The fields of study open to candidates for the degree of Doctor of Philosophy are:

Anatomy	Biophysics	Economics
Anthropology	Biostatistics	Engineering
Anthropology-Sociology	Botanical Science	English
Art History	Business Administration	French
Biological Chemistry	Chemistry	†Geochemistry

† At Scripps Institute of Oceanography, La Jolla.

Geography	Mathematics	Physiology
Geology	Meteorology	Political Science
Germanic Languages	Microbiology	Psychology
Hispanic Languages and Literature	Music	*Public Health
History	†Oceanography	Romance Languages and Literature
Horticultural Science	Pharmacology	Sociology
Infectious Diseases	Philosophy	Speech
†Marine Biology	Physics	Zoology
	Physiological Chemistry	

Other fields and departments will be added as circumstances warrant.

Preparation.—A prospective candidate for this degree must hold a bachelor's degree from one of the colleges of this University, based on a curriculum that includes the requirements for full graduate status in the department of his major subject, or must have pursued successfully an equivalent course of study elsewhere.

Residence.—The minimum residence requirement for the doctor's degree is two academic years (or four semesters), in regular graduate status, one of which, ordinarily the second, must be spent in continuous residence at the University of California, Los Angeles. (See also *Program of Study*, below.)

Foreign Language.—Before taking the qualifying examinations for advancement to candidacy for the Ph.D. degree the student must normally pass examinations in two foreign languages acceptable to the department of the candidate's major and the Dean of the Graduate Division. The examinations must show that he is able to read and understand the written form in these languages. These examinations will be administered by an examiner under supervision of a committee of the Graduate Council. A student's native language will not count as satisfying one of the language requirements above.

A department may, with the approval of the Graduate Council, permit a Ph.D. candidate to substitute for one of the languages an adequate program of study or demonstration of proficiency in a field external to the major subject. This substitute program shall be in addition to the normal program of study and shall be permitted only if, in the judgement of the Graduate Council, the department has demonstrated that such substitution will be more conducive to sound research results than would a reading knowledge of any second language.

Program of Study.—The student's program of study must be approved by the Graduate Council, must embrace a field of investigation previously approved by his department or interdepartment group, and must extend over the full period of study. However, recommendation for the degree is based on the attainments of the candidate rather than duration of his study, and ordinarily not less than three full years will be needed to finish the work.

Notice of Ph.D. Degree Candidacy.—As early as possible, preferably at the end of the first semester of graduate study, the student should declare his intention of proceeding to candidacy for the Ph.D. degree. Statement of such intention should be made in duplicate on Form 1, which is available at the Office of the Dean of the Graduate Division. One copy of the form should be filed with the department or interdepartment group of the student's field of study and the other with the Dean.

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

* Leading also to the degree of Doctor of Public Health.

† At Scripps Institute of Oceanography, La Jolla.

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 of 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, properly approved by the chairman of his doctoral committee, and the Dean of the Graduate Division will 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 occurs at or before midterm and the student is registered for 4 or more units.

The Dissertation.—A dissertation on a subject chosen by the candidate, 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.

The dissertation must be typewritten or printed. Specific instruction concerning the form may be obtained from the Dean of the Graduate Division. Two copies* of the approved dissertation must be filed with the Dean two

* If the thesis is typewritten, both the original and first carbon must be on bond paper of one hundred per cent rag content. Onion-skin 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 and oceanography are required to submit the original on vellum and three Ozalid copies.

weeks before the proposed date of the final examination, for later deposition in the University Library. In certain instances, however, the Graduate Council may authorize the final examination to be taken before the dissertation is filed.

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.

MULTIPLICATION OF BACHELOR'S DEGREES

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 dean of the appropriate college who shall also set requirements and make recommendation 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.

COURSES OF INSTRUCTION OFFERED AT LOS ANGELES, FALL AND SPRING SEMESTERS, 1959-1960

The course offering listed in this bulletin 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.

Graduate courses (numbered 200-299) are open only to students accepted in regular 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. Students in unclassified graduate status are not admitted to graduate courses.

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.

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 towards 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 assign-

ment 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.

AGRICULTURE

Daniel G. Aldrich, Jr., Ph.D., *Professor of Soils, Berkeley (University Dean of Agriculture)*.

Claude B. Hutchison, M.S., LL.D., D.Agr. (hon.c), *Professor of Agriculture, Emeritus, Berkeley*.

Robert W. Hodgson, M.S., *Professor of Subtropical Horticulture (Dean of the College of Agriculture), Los Angeles*.

Letters and Science List.—Agricultural Economics 120, 130, 177; all undergraduate courses in botany; Entomology 100, 105, 112A, 126, 134, 144; 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 5.

Upper Division Courses.—All upper division courses announced by the College presuppose at least junior standing, through sophomore students may take certain upper division courses. Juniors and seniors in colleges other than Agriculture may elect such courses in the College of Agriculture as they are qualified to pursue.

Curricula Offered.—Three curricula are offered on the Los Angeles campus—Agricultural Production, Agricultural Management, and four majors in the Plant Science curriculum; 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, Subtropical Horticulture, 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 Economics (see below). Agricultural Engineering (see page 77). Botany (see page 111). Entomology (see page 211). Floriculture and Ornamental Horticulture (see page 212). Horticultural Science (see page 258). Irrigation and Soil Science (see page 260). Plant Pathology (see page 355).

AGRICULTURAL ECONOMICS

(Department Office, 346 Physics-Biology Building)

Daniel B. DeLoach, Ph.D., *Professor of Agricultural Economics (Vice-Chairman of the Department)*.

George L. Mehren, Ph.D., *Professor of Agricultural Economics (Chairman of the Department), Berkeley*.

——, *Assistant Professor of Agricultural Economics.*

——, *Assistant Professor of Agricultural Economics.*

Completion of the curriculum in Agricultural Economics requires final two years of residence on the Berkeley or Davis campus. See the BULLETIN OF THE COLLEGE OF AGRICULTURE and consult the appropriate adviser.

Agricultural Management.—With the assistance of an advisory committee, the department administers the new curriculum in Agricultural Management (for details see pages 32–33).

UPPER DIVISION COURSES

*117. Elements of Agricultural Management. (3) I.

Lecture and discussion, three hours. Prerequisite: junior standing.

Organization of production units including relationships with supply, service and marketing agencies. Economics of enterprise selection, size, intensity, and mechanization. Introduction to agricultural credit, labor management, and cost analysis. Agricultural applications of motion and time study. Individual student planning project.

*117C. Elements of Agricultural Management, Laboratory. (1) I.

Laboratory, three hours. Prerequisite: course 117 (may be taken concurrently).

Intensive planning study of one or two enterprises to be selected on the basis of class interest and of availability of necessary information.

120. Agricultural Policy. (3) II.

Mr. DeLoach

Lecture and discussion, three hours. Prerequisite: Economics 1A.

The evolution of agricultural policy in the United States. Historical and analytical treatment of principal farmer movements, legislative provisions for the betterment of agriculture, and current policy problems.

130. Agricultural Marketing. (3) II.

Mr. DeLoach

Lecture and discussion, three hours. Prerequisite: Economics 1A. Three field trips to be arranged.

Survey of determinants of agricultural markets and trade. Organization and operation of agricultural markets. Cooperative marketing. Costs of marketing. Government in marketing. Changes in agricultural marketing and markets.

*177. Water and Land Economics. (3) II.

Lectures and discussions, three hours. One field trip required. Prerequisite: Economics 1A–1B.

Economic principles in utilization of water and resources. Legal and institutional factors governing use. Problems in development, reclamation, conservation, and allocation. Project area studies.

198. Special Courses. (1–3) I, II.

The Staff

Prerequisite: advanced standing and consent of the instructor.

199. Special Studies. (2–4) I, II.

The Staff

Prerequisite: senior standing and consent of the instructor.

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 An-

* Not to be given, 1959–1960.

geles 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.

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)*.

James D. Deatherage, Ed.D., 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*.

Edwin R. Bayer, B.S., Captain, U. S. Air Force, *Assistant Professor of Air Science*.

Walter W. Thompson, 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 5.

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 Air Force R.O.T.C. program constitutes the principal source of junior officers for the Reserve Forces of the United States Air Force, and a major source for the Regular Air Force. The objectives of the Air Force R.O.T.C. program are:

1. To develop by precept, example, and student participation, the attributes of character, personality, and leadership which are indispensable to civilian leaders and Air Force officers.

2. To develop an interest in the Air Force and an understanding of its organization, mission, problems, and techniques.

3. To provide the student with a balanced course of officer development training, and officer career training, both theoretical and practical, which in conjunction with his academic curriculum will prepare him to discharge all duties and responsibilities of a junior officer of the Air Force.

4. To arouse in students the desire to become officers in the Air Force and, where appropriate, to motivate students toward a career as a flying officer.

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 two hours of formal academic instruction and one hour of Leadership and Command laboratory per week for the first two academic years. 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 to any component thereof. 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. Foundations of Air Power—1. (1½) I. The Staff
Elements and potentials of air power; air vehicles and principles of flight. Leadership laboratory.

1B. Foundations of Air Power—1. (1½) II. The Staff
Military instruments of national security; professional opportunities in the U.S.A.F. Leadership laboratory.

21A. Foundations of Air Power—2. (1½) I. The Staff
Prerequisites: courses 1A and 1B.
The evolution of aerial warfare; elements of aerial warfare to include targets, weapons, delivery systems, bases and facilities. Leadership laboratory.

21B. Foundations of Air Power—2. (1½) II. The Staff
Prerequisites: courses 1A and 1B.
Operations to include, general considerations, peacetime operations, combat operations; operations in space problem and possibilities.

Advanced Course—Air Force Officer Development.

UPPER DIVISION COURSES

Students who have successfully completed, or are credited with, the basic course may apply for enrollment in the advanced course of Air Science. Students who have shown potentials for leadership and command and have demonstrated interest and aptitude for becoming an Air Force officer are selected within quota limitations for the advanced courses. Acceptance in the advanced course is given to students who are physically and aptitudinally qualified for flying and who desire to enter pilot or navigator training and to students physically and aptitudinally qualified for general service and who are majoring in subjects in which the Air Force has a primary interest.

The advanced Air Science course comprises four hours of formal academic instruction and one hour of leadership laboratory per week for two academic years. 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, administration, and managing the cadet activities. The advanced course of Air Force R.O.T.C. includes a summer camp of four or six weeks' duration, normally following the Air Science III academic year.

A student, to qualify for formal enrollment in the 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.

Applicants 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 distant 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. An applicant 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 are issued Air Force officer-type uniforms, which they may be permitted to retain upon acceptance of a commission. These 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 Officer Development. (4) I. The Staff

Prerequisite: successful completion of basic course.

Air Force Commander, his staff and the air base; communicating and instructing in the Air Force; creative problem solving. Leadership laboratory.

131B. Air Force Officer Development. (4) II. The Staff

Prerequisite: successful completion of the basic course.

Leadership, military justice system, preparation for summer training. Leadership laboratory.

SUMMER TRAINING

Summer training is required of all Air Force Advanced Course Cadets. 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. Principles of Leadership. (4) I.** The Staff
 Prerequisite: courses 131A and 131B.
 Seminars on principles of leadership and management; the evolution of aerial warfare. Leadership laboratory.
- 141B. Briefing for Commissioned Service. (1) II.** The Staff
 Prerequisite: courses 131A and 131B.
 Briefing for commissioned service. Leadership laboratory.

RELATED COURSE IN ANOTHER DEPARTMENT

Geography 181. Political Geography. (3).

Required of all cadets before commissioning. It is recommended that the course be taken during the senior year.

ANATOMY**A Department of the School of Medicine**

(Department Office, 13-276 Medical Center)

The Department of Anatomy offers certain courses which are open to qualified graduate students who are not pursuing the professional curriculum of the School of Medicine. For information concerning these courses and advanced degrees available, see the ANNOUNCEMENT OF THE SCHOOL OF MEDICINE, LOS ANGELES, and the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION.

ANTHROPOLOGY AND SOCIOLOGY

(Department Office, 360 Haines Hall)

- Ralph L. Beals, Ph.D., *Professor of Anthropology and Sociology.*
 Joseph B. Birdsall, Ph.D., *Professor of Anthropology.*
 Walter E. Goldschmidt, Ph.D., *Professor of Anthropology and Sociology.*
 †Harry Hoijer, *Professor of Anthropology.*
 Svend Riemer, Ph.D., *Professor of Sociology.*
 Eshref Shevky, Ph.D., *Professor of Sociology and Anthropology.*
 Constantine Panunzio, Ph.D., *Professor of Sociology, Emeritus.*
 Wendell Bell, Ph.D., *Associate Professor of Sociology and Anthropology.*
 Donald R. Cressey, Ph.D., *Associate Professor of Sociology (Chairman of the Department).*
 Melville Dalton, 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.*
 †William S. Robinson, Ph.D., *Associate Professor of Sociology and Anthropology.*
 Melvin Seeman, Ph.D., *Associate Professor of Sociology.*
 Ralph H. Turner, Ph.D., *Associate Professor of Sociology and Anthropology.*
 —, *Associate Professor of Anthropology.*
 †Pedro Carrasco, Ph.D., *Assistant Professor of Anthropology.*
 †Oscar Grusky, Ph.D., *Assistant Professor of Sociology.*
 Joel M. Halpern, Ph.D., *Assistant Professor of Anthropology.*

† Absent on leave, 1959-1960.

¹ In residence fall semester only, 1959-1960.

Richard J. Hill, Ph.D., *Assistant Professor of Sociology.*
 John T. Hitchcock, Ph.D., *Assistant Professor of Anthropology.*
 Raymond J. Murphy, Ph.D., *Assistant Professor of Sociology.*
 *Henry B. Nicholson, Ph.D., *Assistant Professor of Anthropology.*
 Council S. Taylor, Ph.D., *Assistant Professor of Anthropology.*
 Charles R. Wright, Ph.D., *Assistant Professor of Sociology.*
 Wendell Oswald, M.A., *Instructor in Anthropology.*
 John E. Horton, B.A., *Acting Instructor in Sociology.*
 Jack H. Prost, M.A., *Acting Instructor in Anthropology.*
 Yuzuru Takeshita, M.A., *Acting Instructor in Sociology.*
 Virgil Williams, Jr., *Acting Instructor in Sociology.*
 Ernest M. Willis, M.A., *Acting Instructor in Sociology.*



Ruth Biemer Eilersieck, Ph.D., *Research Associate in Sociology.*
 Harold Garfinkel, Ph.D., *Assistant Professor of Sociology in the Department of Psychiatry.*
 C. Wayne Gordon, Ph.D., *Associate Professor of Sociology in the School of Education.*
 Marshall B. McKusick, M.A., *Graduate Research Archaeologist II and Lecturer in Anthropology.*
 Leo G. Reeder, Ph.D., *Lecturer in Sociology in the School of Public Health.*
 Eleanor Bernert Sheldon, Ph.D., *Research Associate in Sociology.*
 Roy T. Simmons, M.A., *Research Associate in Anthropology.*
 Claude Warren, M.A., *Graduate Research Archaeologist I.*

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 5.

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 1A-1B or 101, History 1A-1B, 8A-8B, Life Science 1A-1B, Zoology 1A-1B, 15, Geology 2, 3, Oriental Languages 32, 42, Arabic 52, 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 and 171 may be used to satisfy 3 or 6 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, 171; 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.

* In residence spring semester only, 1959-1960.

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.

Graduate Work.—Work leading to the M.A. and Ph.D. degrees is offered in both anthropology and sociology. An interdisciplinary program leading to a combined degree may also be arranged. For details of requirements for the degrees consult the departmental adviser.

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 20). Students planning on graduate training in social welfare at this University should consult the ANNOUNCEMENT OF THE SCHOOL OF SOCIAL WELFARE (see page 21).

ANTHROPOLOGY AND SOCIOLOGY

GRADUATE COURSE

274A-274B. Departmental Seminar. (1-1) Yr.

The Staff

Prerequisite: consent of the instructor.

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. (8) I.

Mr. McKusick, 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) II.

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.

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.

Mr. Shevky

Prerequisite: upper division standing and consent of the instructor.

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.

127. Indians of California. (3) I, II. Mr. Oswalt
Native peoples of California; their origins, languages, and culture.

129. 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) II. 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) II. 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.

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) I.

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.

194A-194B. Methods and Techniques in Anthropology. (2-2) Yr.

_____ in charge

Lecture, one hour; laboratory, three hours. Prerequisite: open only to advanced majors and graduate students in anthropology. Required of Ph.D. candidates.

A course in field and laboratory methods in all branches of anthropology.

195. Methods and Techniques of Field Archaeology. (2) II.

Mr. McKusick, Mr. Meighan

Lecture, one hour; laboratory, three hours. During part of the semester 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.

* Not to be given, 1959-1960.

199. **Special Studies in Anthropology.** (1-4) I, II. Mr. Hitchcock 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. Hitchcock
- 265A-265B. **Cultures of Latin America.** (2-2) Yr. Mr. Carrasco
- 266A-266B. **African Cultures.** (2-2) Yr. Mr. Taylor
- 269A-269B. **Problems in Archaeology.** (2-2) Yr. Mr. Meighan
- 271A-271B. **Structural and Historical Linguistics.** (2-2) Yr. ———
- 273A-273B. **Human Population Genetics.** (2-2) Yr. Mr. Birdsell
276. **Man and His Ecological Relations.** (2) II. Mr. Birdsell in charge
299. **Research in Anthropology.** (1-6) I, II. Mr. Lessa 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 COURSES IN ANOTHER DEPARTMENT (see page 267)

- Linguistics and Philology 170. **Introduction to Linguistics.** (3) I. ———
- Linguistics and Philology 171. **Introduction to Phonetics.** (3) II. ———

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.

- 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.
- 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) I. 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.
- 194A-194B. Methods and Techniques in Anthropology.** (2-2) Yr. _____ in charge
Lecture, one hour; laboratory, three hours. Prerequisite: open only to advanced majors and graduate students in anthropology. Required of Ph.D. candidates.
A course in field and laboratory methods in all branches of anthropology.
- 195. Methods and Techniques of Field Archaeology.** (2) II. Mr. McKusick, Mr. Meighan
Lecture, one hour; laboratory, three hours. During part of the semester 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. Hitchcock 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. Hitchcock
- 265A-265B. **Cultures of Latin America.** (2-2) Yr. Mr. Carrasco
- 266A-266B. **African Cultures.** (2-2) Yr. Mr. Taylor
- 269A-269B. **Problems in Archaeology.** (2-2) Yr. Mr. Meighan
- 271A-271B. **Structural and Historical Linguistics.** (2-2) Yr. ———
- 273A-273B. **Human Population Genetics.** (2-2) Yr. Mr. Birdsell
276. **Man and His Ecological Relations.** (2) II. Mr. Birdsell in charge
299. **Research in Anthropology.** (1-6) I, II. Mr. Lessa 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 COURSES IN ANOTHER DEPARTMENT (see page 267)

- Linguistics and Philology 170. **Introduction to Linguistics.** (3) I. ———
- Linguistics and Philology 171. **Introduction to Phonetics.** (3) II. ———

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. Mr. Hill, Mr. Willis
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
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) I, 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, II. 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) I. 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) I, II. Mr. Murphy
A study of patterns of social change, resistance to change, and change-producing agencies and processes.

- 124. Collective Behavior.** (3) II. 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) II. 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 social and cultural analysis of industry. Attention given to occupational roles, status and social participation of workers.

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, Mr. Turner

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. Mr. Shevky**

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. 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) II. Mr. Turner

No credit will be given for this course if credit has been received for Sociology 142.

* Not to be given, 1959-1960.

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.** Mr. Shevky

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. Hill

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; police, courts, prisons, probation, and parole. Emphasis on California systems.

* Not to be given, 1959-1960.

- 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) I, 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) I, II.** Mr. Willis
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. Murphy in charge
Prerequisite: senior standing and consent of the instructor.

GRADUATE COURSES

- *214. The Measurement of Sociological Variables. (2) II.** Mr. Hill
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.**
Prerequisite: courses 117 and 118. Mr. Robinson
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. Theory and Problems of Social Psychology. (2) I.** 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.
- 229. Selected Problems in Communications. (2) II.** Mr. Wright
- 236. Social Change in the Middle East. (2) I.** Mr. Shevkey
- 237. Social Stratification in the Middle East. (2) II.** Mr. Shevkey
- 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. Hill, Mr. Morris
- *256A-256B. Demography. (2-2) Yr.** _____
- *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. Wright in charge
- 299B. Research in Sociology for Ph.D. Candidates. (1-6) I, II.** Mr. Cressey in charge

ARABIC

For courses in Arabic, see under Department of Near Eastern Languages.

ARCHAEOLOGY

For courses in archaeology, see under Departments of Anthropology and Sociology, Classics, and Oriental Languages.

* Not to be given, 1959-1960.

ART

(Department Office, 1118 Dickson Art Center)

- Laura F. Andreson, M.A., *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).*
 Frederick S. Wight, M.A., *Professor of Art and Director of Art Galleries.*
 Karl E. With, Ph.D., *Professor of Art.*
 Robert S. Hilpert, M.A., *Professor of Art, Emeritus.*
 Louise Pinkney Sooy, *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.*
 Gordon M. Nunes, M.A., *Associate Professor of Art (Vice-Chairman of the Department).*
 Josephine P. Reys, M.A., *Associate Professor of Art.*
 Carl D. Sheppard, Jr., Ph.D., *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.*
 E. Maurice Bloch, Ph.D., *Assistant Professor and Curator of Prints and Drawings.*
 Donald W. Chipperfield, M.A., *Assistant Professor of Art.*
 Naomi G. Dietz, M.A., *Assistant Professor of Art.*
 Elliot Elgart, M.F.A., *Assistant Professor of Art.*
 Alice M. Everett, M.A., *Assistant Professor of Art.*
 John Paul Jones, M.F.A., *Assistant Professor of Art.*
 J. Bernard Kester, M.A., *Assistant Professor of Art.*
 John Maguire, B.S., *Assistant Professor of Art.*
 David B. Manzella, Ed.D., *Assistant Professor of Art.*
 John Rosenfield, M.A., *Assistant Professor of Art.*
 Jack D. Stoops, Ed.D., *Assistant Professor of Art.*
 Madeleine Boyce Sunkees, B.E., *Assistant Professor of Art.*
 Oliver W. Andrews, A.B., *Instructor in Art.*
 Jerrold Ziff, M.A., *Instructor in Art.*
 Ralph C. Altman, *Lecturer in Art.*
 Mary A. Holmes, M.A., *Lecturer in Art.*
 Margaret T. Lecky, *Lecturer in Art.*
 Anne C. B. McPhail, M.S., *Lecturer in Art.*
 Carlo Pedretti, *Lecturer in Art.*
 Phyllis M. Beacom, M.A., *Associate in Art.*
 Jack B. Carter, M.A., *Associate in Art.*
 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.*

† Sabbatical leave in residence, 1959-1960.

‡ In residence spring semester only, 1959-1960.

Elizabeth M. Hayes, M.A., *Associate in Art.*
 Jack M. Hooper, M.A., *Associate in Art.*
 Bramwell Lieber, *Associate in Art.*
 Paul R. Maguire, M.F.A., *Associate in Art.*
 Maurice Nemoy, *Associate in Art.*
 Gerald Samuelson, M.A., *Associate in Art.*
 Simon D. Steiner, M.S., *Associate in Art.*



Paul A. Clement, Ph.D., *Professor of Classics and Classical Archaeology.*
 John Jones, M.A., *Associate Professor of Theater Arts.*
 Charles F. Bridgman, M.S., *Chief of Visual Aids, Medical Center.*
 Ted Bloodhart, *Principal Medical Illustrator, Medical Center Visual Aids.*

The student may select a major from among the three majors offered in the College of Applied Arts or the major in the history of art in the College of Letters and Science; each of these majors leads to the degree of Bachelor of Arts. 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 the classes and to retain for the permanent collection of its galleries such examples as may be selected.

College of Applied Arts

Preparation for the Major.—Eighteen units of lower division courses, including 1A, 1B, 2A, 2B, 6A, 44, and 4 additional units selected from 3, 6B, and 7A.

1. History and Studio.

The Major.—Twenty-two units of history of art selected from courses 100A to 124, including 114A and 114B; 14 units of studio courses selected from courses 125A to 184, including 127A.

2. Pictorial Arts.

The Major.—Eighteen units of pictorial arts, selected from courses 125A to 137B, including 127A; 10 units of art history selected from courses 100A to 124, including 114A and 114B; 8 units of art electives.

3. Design.

The Major.—Eighteen units of design courses selected from courses 140A to 184; 10 units of art history selected from courses 100A to 124, including 114A and 114B; 8 units of art electives with course 127A recommended.

Prospective elementary school teachers should register for courses 10 and 330. Prospective high school teachers should register for course 370A and preferably major in design.

College of Letters and Science

Art History.—The Department of Art offers a major in art history in the College of Letters and Science; students electing this major must be enrolled in the College of Letters and Science, not in the College of Applied Arts.

Preparation for the Major.—Courses 1A, 1B, and 5. Recommended: 4 units from the following: Art 2A, 2B, 6A, 6B; also recommended for Letters and Science requirements E, F, and G: History 1A-1B, Philosophy 6A-6B or 20A-20B, Anthropology 1, 2, and Psychology 1A-1B.

The Major.—Four year sequences chosen from the following: Art 103A, 103B, 104A, 104B, 104C, 104D, 108A, 108B; Classics 102A, 102B, 102C, 102D. Courses chosen from the following list to complete 30 units; 100A, 100B, 114A, 114B, 115, 119A, 119B, 119C, 120, 121A, 121B, 121C, 121D, 123, 124, 199 (not more than 4 units); Anthropology 127; Oriental Languages 170; and Philosophy 136.

Letters and Science List.—Courses 1A, 1B, 5, 10, 45, 100A, 100B, 102A, 102B, 103A, 103B, 104A, 104B, 104C, 104D, 108A, 108B, 114A, 114B, 115, 118A, 118B, 119A, 119B, 119C, 120, 121A, 121B, 121C, 121D, 123, 124, 139A, 139B, 139C, 139D, 190, 199 are included in the Letters and Science List of Courses. For regulations governing this list, see page 5.

Graduate Division

Admission to Regular Graduate Status.—In addition to meeting the requirements of the Graduate Division, the student must have a bachelor's degree or its equivalent, with a major in art and a field of specialization: history and theory of art, pictorial arts, or design. Students whose preparation is deficient in the area of specialization, as determined by the appropriate departmental admissions committee, will be admitted only in unclassified status until such deficiencies are made up. 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 requirements, see page 69. The Department of Art follows either Plan I, 20 units of graduate work and a thesis, or Plan II, 24 units of graduate work (including 4 units of an advanced project in the laboratory field as approved by the department) and a comprehensive examination. The Department of Art offers graduate study in eight fields of specialization: (1) History and Theory of Art, (2) Pictorial Arts, (3) Graphic Design, (4) Industrial Design, (5) Interior Design, (6) Costume Design, (7) Ceramics and Metal Design, (8) Art Education. Detailed requirements may be obtained from the departmental advisers. When applying for admission, it is advisable to designate a major field of specialization. Whenever possible, the field adviser should see examples of previous work in the field.

Master of Arts Degree in Studio or Art Education.—The program follows Plan II (see above). The comprehensive examination is oral. The program for the degree is worked out under the guidance of the field adviser in the area of specialization.

Master of Arts Degree in Art History.—The program for the Master of Arts degree in art history follows Plan I, a minimum of 20 semester units, a comprehensive examination, and a thesis. The program for the degree is worked out under the guidance of the field 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. Before the thesis is submitted a written comprehensive examination must be passed covering four of the following fields, two of them major and two minor fields: (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) Ori-

ental Art, (11) Theory of Art. Following submission of the thesis the student passes an oral examination.

Doctor of Philosophy Degree in Art History.—In addition to the general University regulations (see page 71), 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 requirement 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.

3. Dissertation. See the General University Regulations.

4. Final Examination. This will consist of the candidate's oral defense of his thesis and his demonstration of a satisfactory knowledge of the historical and general cultural context of the period within which his thesis topic is developed.

LOWER DIVISION COURSES

1A. Survey of Art History. (3) I. Mr. Sheppard
Lecture, two hours; quiz, one hour.

A general presentation of architecture, sculpture, and painting from the Prehistoric, Ancient Mediterranean, Classic, and Medieval periods of Western and Eastern civilizations.

1B. Survey of Art History. (3) II. Mr. Sheppard
Lecture, two hours; laboratory, one hour.

A general presentation of architecture, sculpture, and painting from the Renaissance through the Modern periods of Western and Eastern civilizations.

2A. Beginning Drawing and Painting. (2) I, II. Mr. Nunes
Three dimensional drawing based on light, perspective, observation and composition. Media: pencil, charcoal, ink and pastel.

2B. Beginning Drawing and Painting. (2) I, II. Mrs. Brown
Prerequisite: course 2A.

Continuation of 2A and an introduction to the use of painting materials.

3. Intermediate Drawing and Painting. (2) I, II. Miss Delano
Prerequisite: course 2B.

Study based on building of form in reference to contemporary painting; of color and light and their structural and expressive values.

5. Fundamentals of Art. (2) I. Mr. Ziff
Definitions of art, terminology, types of approach, design and meaning, color theory, appreciation of art.

6A-6B. Beginning Design. (2-2) Yr. Beginning either semester Mrs. Sunkees, Mrs. Beacom

Fundamental course in elements of art, and the principles involved in their use in creative design.

7A. Intermediate Design. (2) I, II. Mrs. Sunkees, Mr. Chipperfield
Application of fundamental art principles to three-dimensional form through experimental and creative studies in a variety of materials and varied spatial constructions.

***7B. Intermediate Design.** (2) I, II. Mrs. Sunkees
Experimentation in the relationships of form, line, value, color, and texture as applied to plane surfaces.

10. Introduction to Art. (3) I, II. Miss Holmes, Mr. Manzella, Miss McPhail
Lecture, one hour; studio, six hours. Not open to students whose major is art.

An exploratory course to develop an understanding and appreciation of art as an aspect of all activities of daily life.

16. Perspective Drawing and Rendering. (2) I, II. Mr. Maguire
Introduction to orthographic drawing and perspective; structural sketching; accurate subject representation in selected media.

***21A. Apparel Analysis.** (2) I, II. _____
A discussion of clothing as an art form and as creative expression. Study of line, color, pattern, and texture in relation to the individual pictorial and psychological composition.

***21B. Home Furnishing.** (2) I, II. Mrs. Beacom
Lecture, one hour; studio, two hours.
Appreciative study of the modern shelter.

44. Life Drawing. (2) I, II. Mr. Nunes
Prerequisite: course 2B.
Problems in anatomy, draftsmanship and pictorial organization, using the figure as subject; training in observation and techniques with pencil, charcoal, ink, and pastel.

45. Introduction to Scientific Illustration. (2) I, II. Mr. Bridgman
Recommended to students whose major is science.
Studies in the development of an ability to draw those forms relevant to the science course involved; and an understanding of various media for reproduction.

RELATED COURSE IN ANOTHER DEPARTMENT

Integrated Arts 1A-1B. Man's Creative Experience in the Arts. (3-3) Yr. Mr. With

UPPER DIVISION COURSES

History of Art

Courses 1A and 1B or consent of the instructor are prerequisite to all courses in history of art except 118A, 118B.

100A. The Art of Prehistoric and Primitive Cultures. (2) I. Mr. Altman
Art, architecture, and industrial arts in prehistoric and primitive civilizations.

* Not to be given, 1959-1960.

- 100B. The Art of Early Historical Cultures. (2) II.** Mr. Altman
Evolution of art and architecture in early historical cultures, including the Ancient Near and Far East.
- 103A. Medieval Art. (3) I.** Mr. Sheppard
From the Early Christian to the Romanesque period.
- 103B. Medieval Art. (3) II.** Mr. Sheppard
From the Gothic to the Flamboyant style.
- 104A. Southern Renaissance Art. (2) I.** Mr. Birkmeyer
Art and architecture of the Renaissance in Italy and Spain.
- 104B. Northern Renaissance Art. (2) II.** Mr. Birkmeyer
Art and architecture of the Renaissance in the Netherlands, Austria, Germany, France, and England.
- 104C. Southern Baroque Art. (2) I.** Mr. Bloch
Art and architecture in Italy and Spain during the Baroque period.
- 104D. Northern Baroque Art. (2) I.** Mr. Birkmeyer
Art and architecture in Flanders, Holland, Austria, Germany, France, and England during the Baroque period.
- 108A. Modern Art. (3) I.** Mr. Ziff
Art and architecture from the late eighteenth century to the latter part of the nineteenth century, including the early phases of Industrialization.
- 108B. Modern Art. (3) II.** Mr. Wight
Post-Impressionism and the contemporary movement in art, architecture, and the fields of domestic, industrial, and commercial art.
- 114A. Art Analysis, Theory and Criticism. (2) I.** Mr. Longman, Mr. Rosenfield
Critical study of art theories and methods of approach.
- 114B. Art Analysis, Theory and Criticism. (2) II.** Mr. Longman, Mr. Rosenfield
Criteria of art analysis as a means to an objective evaluation of works of art.
- 115. Utilitarian and Domestic Art. (2) I.** Mr. With
A study of basic forms as determined by human needs, physical functions, esthetic appeal, and symbolic significance.
- 118A. History of Architecture and Sculpture. (2) I.** Mr. Birkmeyer
Not open to students having credit for courses 1A-1B.
Several outstanding monuments chosen to exemplify the architectural and sculptural characteristics of various epochs. Emphasis is laid upon the relationship between art and religion throughout the ages.
- 118B. History of Painting. (2) II.** Mr. Ziff
Not open to students having credit for courses 1A-1B.
The works of leading personalities in Western painting are discussed with regard to subject matter, manner of representation, and pictorial organization, and are evaluated on the basis of their cultural and human significance in our time.
- 119A. Art of the Americas. (2) II.** Mr. Altman
Pre-Columbian and Amerindian art.

- 119B. Art of the Americas. (2) I. Mr. Bloch
Painting, sculpture, and architecture from the Colonial period to 1900.
- 119C. Art of the Americas: Twentieth Century. (2) II. Mr. Bloch
Development of architecture, sculpture, painting, and design from about 1910 to the present.
120. Arts of the Orient, a Survey. (2) I. Mr. Rosenfield
A study of selected works from the history of the arts of India, Iran, China, and Japan.
- 121A. Art of China. (3) I. Mr. Rosenfield
Survey of the architecture, sculpture, and painting of China from prehistoric to modern times.
- 121B. Art of Japan. (3) II. Mr. Rosenfield
Survey of the architecture, sculpture, and painting of Japan.
- 121C. Art of India and Indonesia. (3) I. Mr. Rosenfield
Survey of the architecture, sculpture, and painting of India and the cultures of southeast Asia which developed under Indian influence from the prehistoric culture of the Indus Valley to the present.
- 121D. Islamic Art. (3) II. Mr. Rosenfield
Survey of the architecture, painting, and minor arts of those regions dominated historically by the Mohammedan religion, with emphasis on the Arabic cultures of the Near East, North Africa, and Spain from the seventh century to the present.
123. History of Prints and Drawings. (2) II. Mr. Bloch
A study of the historical development of techniques and formal expression in printmaking and drawing, with emphasis upon masters of the Renaissance, Baroque, and Modern periods.
124. Research Methods in Art History. (3) I. Mr. Sheppard

RELATED COURSE IN ANOTHER DEPARTMENT

- Classics 102. Classical Art. Mr. Clement
- 102A. The Aegean Bronze Age. (2) I.
- 102B. Greek and Roman Architecture. (2) II.
- 102C. Greek and Roman Sculpture. (2) I.
- 102D. Greek and Roman Painting. (2) II.

Pictorial Arts

Courses 2A, 2B, and 3 are prerequisite to all courses in pictorial arts.

- 125A-125B. Printmaking. (2-2) Yr. Beginning either semester. Mr. Jones
Experimental and creative use of the major media of printmaking, engraving, etching, dry point, aquatint, softground, lithography and woodcut.
126. Traditional and Experimental Media: Painting. (2) I, II. Mr. Elgart
Prerequisite: course 130A.
Experimentation with traditional and newer painting materials including intensive experience in the use of one medium.

- 127A-127B. Advanced Drawing.** (2-2) Yr. Beginning either semester.
Prerequisite: course 128A. Mr. Brice
The function of drawing in art; content-form relations emerging from study of still-life, landscape, and the figure.
- 128A-128B. Advanced Life Drawing.** (2-2) Yr. Beginning either semester.
Recommended: course 44. Mr. Amato, Mr. Elgart
Pictorial concepts motivated by the human image; problems of draftsmanship and form.
- 130A-130B. Advanced Drawing and Painting.** (2-2) Yr. Beginning either semester.
Mr. Amato, Mr. Brice, Miss Delano, Mr. Elgart
Prerequisite for 130B: 128A.
Still-life and the human figure as subjects; major concepts of pictorial structure; medium—oil.
- 134A-134B. Landscape Painting.** (2-2) Yr. Beginning either semester.
Mrs. Brown, Mr. Hooper
Selection of subject themes and their transformation in landscape painting.
- 135. Advanced Painting.** (2) I, II. Mr. Amato
Prerequisite: courses 130A, 134A or 134B, 128A.
Individual development in concept, technical competence, control of pictorial order.
- 137A-137B. Sculpture.** (2-2) Yr. Beginning either semester. Mr. Andrews
Prerequisite: course 128A or the consent of the instructor.
The basic sculptural methods explored for their creative possibilities; projects in clay, plaster, concrete, wood, and stone.
- 139A-B-C-D. Biological Illustration.** (1-1-1-1) I, II. Mr. Bridgman
Prerequisite: courses 16 and 45, or consent of the instructor.
Studies in the development of an ability to draw those forms relevant to the biological sciences. Emphasis upon accurate observation, interpretation, and rendition of biological subject matter expressed through the medium of illustration as used in biological teaching and research.

Design

Courses 6A, 6B, and 7A are prerequisite to all courses in design.

- 140A. Advertising Art.** (2) I, II. Mr. Nemoy
Development of concepts of design in visual advertising; lettering and typography for layout.
- 140B. Advertising Art.** (2) I, II. Mr. Chipperfield
Basic media of visual communication: newspaper, magazine, brochure.
- 141A-141B. Lettering, Calligraphy, and Typography.** (2-2) Yr.
Prerequisite: course 140A. Mr. Nemoy
Historical development of the alphabet, calligraphy, and typography; creative design with production lettering.
- 145A. Advanced Advertising Art.** (2) I, II. Mr. Cross
Prerequisite: courses 140A, 140B.
Preparation of creative design material employing graphic and photographic techniques for reproduction processes.

- 145B. Advanced Advertising Art. (2) II.** Mr. Jennings
Prerequisite: courses 140A, 140B, and senior standing.
Development of professional ideas creatively interpreted for complete advertising campaigns through integration of design and technical experience in graphics, typography, photography, and production art.
- 146A-146B. Illustration. (2-2) Yr.** Mr. Chipperfield
Prerequisite: courses 140A, 140B.
Development of techniques and skills applicable to the fields of editorial, decorative, book, magazine, and advertising illustration.
- *147. Fashion Illustration. (2) I.** _____
Prerequisite: courses 140A, 140B.
The development of individual expression for the presentation of fashion in advertising; historical and traditional considerations.
- 148. Graphic Communication. (2) I, II.** Mr. Jennings
Prerequisite: senior standing.
Intensive and specialized projects of graphic design.
- 149. Advanced Graphic Communication. (2) I, II.** Mr. Jennings
Prerequisite: 140A, 140B, senior standing, a B average in the major, and consent of the instructor.
Advanced creative projects in graphic design, with emphasis upon the individual solution of problems relative to the field of advertising art.
- 150. The Development of Furniture. (2) I.** Mrs. Sunkees
No prerequisite.
Furniture: its changing forms as an expression of cultures from ancient to modern times.
- 152A. Interior Design. (2) I, II.** Mrs. Fetty, Mrs. Beacom
Creative solutions to specific problems in interior design; a consideration of the home as a functional unit, including an analysis and application of current trends and materials and their uses.
- 152B. Interior Design. (2) I, II.** Mrs. Beacom
Prerequisite: courses 150, 152A.
Design experiences in creating interiors in variations of character to express the individuality of the occupants.
- 153A-153B. Furniture Design. (2-2) I, II.** Mrs. Grossman
Design of custom furniture and fixtures for commercial and residential interiors.
- 155A-155B. Introduction to Theory and Design of Architecture. (2-2) I, II.**
Prerequisite: senior standing. Mr. Choate
An introduction to architectural design.
155A: Design and Theory.
155B: Materials and Methods in Application.
- 158A. Advanced Interior Design. (2) I.** Mrs. Fetty
Prerequisite: courses 152A, 152B.
The design of domestic and commercial interiors with limitations as to function, budget, and climate.

* Not to be given, 1959-1960.

- 158B. Advanced Interior Design. (2) II.** Mrs. Fetty
Prerequisite: courses 152A, 152B.
Design of interiors, with emphasis on the use of fabrics and materials as developed from architectural specifications for both commercial and domestic interiors.
- 159A-159B. Interior Design Analysis—Theory and Practice. (2-2) Yr.** Mrs. Beacom
Prerequisite: senior standing, a B average in the major, and consent of the instructor.
Advanced creative work in the basic concepts of pictorial structure, experimental work in new forms, emphasis on color and structure and their relationship to space.
- 160. The History of Costume. (2) II.** Miss Everett
No prerequisite.
Developing forms and modes of costume as indicative of the social and economic life of the periods from ancient to modern.
- 161. Design and Structure of Apparel Accessories. (2) I, II.** Mrs. Lecky
The design and structure of apparel accessories. A study of the historical development of the accessories of each period, with emphasis upon the characteristic forms of modern design and the construction problems of various materials used in this field.
- 163A. Modern Costume Design. (2) I, II.** Miss Everett
Problems in designing basic types of apparel.
- 163B. Modern Costume Design. (2) I, II.** Miss Everett
Prerequisite: course 163A.
Emphasis upon creative ideas dealing with specific fabrics and construction procedures.
- 166. Costume of the Theater. (2) I, II.** Mr. Jones
Design for stage costume, historical motifs, psychological implications, the visual composition.
- 167. Principles of Fashion Presentation. (2) I, II.** Mrs. Reps
Prerequisite: course 163A.
Relation of the designer to industry: problems of production, processes of manufacture, buying, and publicity.
- 169A-169B. Advanced Costume Design. (2-2) Yr.** Mrs. Reps
Prerequisite: course 163A-163B.
Advanced creative work in apparel design.
- 170A-170B. Ceramics. (2-2) Yr. Beginning either semester.** Miss Andreson, Mr. Kester
An analysis of form, function, and decoration in ceramics, with emphasis on materials and their use. Empirical method of glaze calculation and methods of vitrification.
- 171. Advanced Ceramics. (2) II.** Miss Andreson
Prerequisite: course 170A-170B.
Individual creative and experimental design: experiments in reduction processes; calculation of glazes to fit original clay bodies.
- 173A-173B. Bookbinding. (2-2) Yr. Beginning either semester.** Mrs. Lecky
Fundamentals of the art of the book, including the history of writing, printing, and paper. Experience in binding of several types, using various materials and emphasizing design in relation to content.

175A-175B. Studies in Surface Design. (2-2) Yr. Mrs. Sunkees
Prerequisite: course 152A-152B or 163A-163B, and senior standing.
Creative design applied to the enrichment of plane surfaces; emphasis on research and experiments in designing for textiles and wallpapers; laboratory work using various printing processes and techniques.

176A-176B. Weaving. (2-2) Yr. Beginning either semester. Mr. Kester
Lectures, demonstrations, studio work, quiz, field trips.
Relations of woven fabrics to world cultures: theory of creative design as applied to the woven fabric; research and experiments in weaving methods; study of fibers; fabric analysis.

177A-177B. Design for Metal. (2-2) I, II. Mr. Carter
Principles and methods for creative design in metal work, with emphasis upon the application of three-dimensional design theory and the esthetic correlation of visual, practical and technical objectives.

180. Advanced Design in Three Dimensions. (2) I, II.
Mr. W. Carter, Mr. Stoops
Experimental work in three dimensions; theories of design; exploration of abstract principles of space and form.

181A-181B. Design for Industry. (4-4) Mr. Steiner
Open to industrial design majors only.
The integration of abstract design fundamentals with simplified products, approaches to design solutions in form and structure; the use of two- and three-dimensional methods for design study.

181C-181D. Design for Industry. (4-4) Mr. Maguire
Prerequisite: course 181A-181B.
The design of more complex products emphasizing suitability for production, creative resourcefulness, market research; design experience in transportation and mass-produced structures.

181E. Design for Industry. (4) II. The Staff
Prerequisite: courses 181A-181B, 181C-181D.
Individual and team projects involving comprehensive planning and relating of all aspects of a product that have a bearing on the market; anticipation of future needs. Emphasis on individual incentive and judgment and professional level.

182A-182B. Advanced Rendering. (2-2) Mr. Demaree
Prerequisite: course 16.
Delineation in various media for professional presentation; advanced methods of perspective; quick sketching for visual communication and drawing techniques that aid the design process.

184. Display and Exhibit Design. (2) I, II. Mr. Lieber
Design, planning and installation of three-dimensional displays and exhibits.

For All Majors

190. Theory and Philosophy of Art Education. (2) II. Mr. Stoops
Prerequisite: courses 370A and 370B, and senior standing.

199. Special Studies in Art. (1-4) I, II. The Staff
Prerequisite: senior standing and consent of the instructor.

GRADUATE COURSES

- *201. Bibliography and Research Methods.** (2) I, II. The Staff
- 241. Advanced Art Criticism.** (2) I, II. Mr. Longman
Prerequisite: consent of the instructor.
- 250. Seminar in Art Education.** (2) I, II. Mr. Manzella
Prerequisite: consent of the instructor.
- *251. Seminar in Art Analysis.** (2) I, II. The Staff
Prerequisite: consent of the instructor.
- 252. Seminar in Advanced Design.** (2) I, II. Mrs. Fetty
Prerequisite: consent of the instructor.
- *260. Seminar in Contemporary Art.** (2) I, II. The Staff
Prerequisite: consent of the instructor.
- 270. Seminar in Museology.** (2) II. Mr. With
Prerequisite: consent of the instructor.
- *271. Seminar in Comparative Art History.** (2) I. The Staff
Prerequisite: consent of the instructor.
- 272. Problems in Art History.** (2) I, II. The Staff
Prerequisite: consent of the instructor.
Section 1. Primitive and Prehistoric Art.
Section 2. Classical Art.
Section 3. Medieval Art.
Section 4. Renaissance and Baroque Art.
Section 5. Modern Art.
Section 6. American Art.
Section 7. Latin-American Art.
Section 8. Oriental Art.
- 275. Advanced Ceramic Design.** (2) I, II. Miss Andreson
Prerequisites: courses 170A-170B, 171 and Engineering 108D.
Research in ceramic technology; practice in the development of ceramic design in relation to architectural and industrial needs and applications.
- *276. Visual Arts in Architecture.** (2) I, II. The Staff
Exploration and execution of projects in painting, sculpture, and other graphic media as they relate to an architectural setting.
- 277. Advanced Printmaking.** (2) I, II. Mr. Jones
Prerequisite: courses 125A-125B, 128A-128B, and consent of the instructor.
Advanced use of traditional and experimental media. Intensive and specialized problems of drypoint, engraving, etching, woodcut and color prints; with emphasis on experimentation and research into pictorial form and content in fine printmaking.
- 278. Analytical and Creative Research in Painting and Sculpture.** (2) I, II. Mr. Brice
Prerequisite: courses 127A-127B, 130A-130B or the consent of the instructor.

* Not to be given, 1959-1960.

Creative research into the historical and symbolic evolution of the human image as it may be developed in painting, sculpture, and graphics.

290A-290B. Research Projects in the Arts. (2-2) Yr.

Beginning either semester.

The Staff

Prerequisite: permission of the department. Specific requirements may be obtained from the departmental adviser.

Advanced creative work, a course designed for candidates for the degree of Master of Arts.

Section 1. Art History.

Section 2. Painting, Sculpture, and Graphic Arts.

Section 3. Advertising Art.

Section 4. Interior Design.

Section 5. Costume Design.

Section 6. Applied Design.

Section 7. Teaching of Art.

299A-299B. Special Studies for Graduate Students. (1-4; 1-4) Yr.

Beginning either semester.

The Staff

PROFESSIONAL COURSES IN METHOD

330. Art in Elementary Education. (3) I, II.

Lecture, one hour; studio, six hours. Miss Dietz, Miss Hayes, Mr. Manzella

A study of objectives and methods related to early childhood education and to the general elementary art program, with correlated studio activities and creative experiences exploring media, and techniques appropriate to the elementary school.

370A. Principles of Art Education. (2) I, II.

Miss Dietz, Mr. Stoops

Prerequisite: junior standing. Open only to majors in teaching or art.

A study of objectives and general educational principles as related to art education.

***370B. Principles of Art Education. (2) I, II.**

Mr. Stoops

Prerequisite: course 370A. This course should be completed before student teaching.

A study of method and the curriculum in art education.

UNIVERSITY ART GALLERIES

Located in the east wing of the Dickson Art Center (Art Building) 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.*

Frederick C. Leonard, Ph.D., *Professor of Astronomy.*

Daniel M. Popper, Ph.D., *Professor of Astronomy (Chairman of the Department).*

* Not to be given, 1959-1960.

George O. Abell, Ph.D., *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 5.

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 pages 10 and 11 of this bulletin.

The Master's Degree.—The requirements for the master's degree in astronomy may be met by either Plan I (Thesis Plan) or Plan II (Comprehensive-Examination Plan). See page 69. The following undergraduate courses, or their equivalents, are required of all candidates for the master's degree in astronomy: Astronomy 4, 101, 102 or 117A-117B, and 112.

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

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.

3. Spherical Trigonometry with Applications. (2) II. Mr. Leonard

Prerequisite: plane trigonometry (Mathematics C or its equivalent). Students who have taken or are taking Astronomy 4 will receive only 1 unit of credit for course 3.

Spherical trigonometry, with applications to astronomy, meteoritics, navigation, crystallography, and other subjects.

4. Spherical Astronomy. (3) I. Mr. Leonard

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 taken 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. Mr. Baker
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. Leonard, 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. (2) II. Mr. Popper
Lecture, one hour; 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. Herrick
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. Popper, Mr. Abell
Prerequisite: Mathematics through 4A and Physics 1A, 1B, 1C, 1D or their equivalents.

Fundamental properties of stars, atmospheres of the sun and stars, stellar abundances of the chemical elements, and solar phenomena.

* Not to be given, 1959-1960

117B. Astrophysics and Stellar Astronomy. (3) II. Mr. Popper, Mr. Abell
Prerequisite: Mathematics through 4A and Physics 1A, 1B, 1C, 1D or their equivalents.

Interstellar material, stellar structure and evolution, the Galaxy, stellar systems, and cosmology.

118. Meteoritics. (3) II. Mr. Leonard

Open to students whose major subject is a physical science or mathematics, and to others with similar preparation.

The science of meteorites and meteors.

199. Special Studies. (1 to 5) I, II. The Staff

Prerequisite: senior standing and consent of the instructor.

GRADUATE COURSES

***215. Advanced Orbit Theory. (3) I.** Mr. Herrick

Prerequisite: course 115.

217A-217B. Advanced Astrophysics and Stellar Astronomy. (3-3) Yr.

Prerequisite: consent of the instructor.

Mr. Popper, Mr. Abell

A treatment of areas of modern astronomy in accordance with the needs of the students enrolled: stellar atmospheres, stellar interiors, binary stars, the structure of our Galaxy, other galaxies, and cosmology

218. Advanced Meteoritics. (3) I. Mr. Leonard

Prerequisite: course 118.

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)

¹M. J. Pickett, Ph.D., *Professor of Bacteriology (Acting Chairman of the Department)*.

²Anthony 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.*

Eric L. Nelson, Ph.D., *Assistant Professor of Bacteriology.*

William R. 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.*

* Not to be given, 1959-1960.

¹ In residence fall semester only, 1959-1960.

² In residence spring semester only, 1959-1960.

COLLEGE OF LETTERS AND SCIENCE

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 5.

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; Botany 119, 126; Chemistry 106, 107, 109, 136; Entomology 126; Public Health 145, 162; Zoology 101A, 101B, 111, 111C, 111H, 119. Courses are to be chosen with the approval of the department.

Curriculum for Medical Technologists.—Students who plan a career in public health laboratory work must have a bachelor's degree in bacteriology. The following courses are required for the major: Bacteriology 103, 105, 106, 107, 108, 109; Botany 126; Chemistry 106 instead of 9; Zoology 111, 111C, 111H.

For practicing in the clinical laboratory field in California it is desirable to have a bachelor's degree with a major in bacteriology. The same courses required of those entering the public health laboratory field must be taken.

Subsequent to graduation an apprenticeship in an approved laboratory is required for eligibility to take the State examination for a license.

LOWER DIVISION COURSES

1. **Introductory Bacteriology and Microbiology.** (4) I, II.

Mr. Jann, 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. Nelson, 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, 9.
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.** _____
Lecture, two hours. 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 106 and 107
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.
- 120. Bacterial Genetics. (2) II.** Mr. Romig
Lecture, two hours. 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.** Mr. Nelson
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. Mr. Nelson, Mr. Jann
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.
198. Special Studies in Bacteriology. (2-5) I, II. The Staff
Prerequisite: senior standing and consent of the instructor.

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.
- 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. Mr. Nelson
- *254. Seminar in Microbial Physiology. (1) I. Mr. Jann
255. Seminar in General Virology. (1) II. _____
299. Research on Thesis or Dissertation. (2-6) I, II. The Staff

RELATED COURSE (see page 408)

- Life Sciences 370. Methods and Materials for Teaching Life Science.
(3) II. Mr. Cowles, Mr. Herbst

BIOPHYSICS

A Department of the School of Medicine
(Department Office, B1-153 Medical Center)

The Department of Biophysics offers certain courses which are open to qualified graduate students who are not pursuing the professional curriculum of the School of Medicine. For information concerning these courses and advanced degrees available, see the ANNOUNCEMENT OF THE SCHOOL OF MEDICINE, LOS ANGELES, and the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION. For the undergraduate Curriculum in Biophysics, see page 12 of this bulletin.

BOTANY

(Department Office, 302 Physics-Biology Building)

- Frederick T. Addicott, Ph.D., *Professor of Botany.*
Carl C. Epling, Ph.D., *Professor of Botany and Curator of the Herbarium.*
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.*
Samuel G. Wildman, Ph.D., *Professor of Botany.*
Flora Murray Scott, Ph.D., *Professor of Botany, Emeritus.*

* Not to be given, 1959-1960.

Anton Lang, Ph.D., *Associate Professor of Botany.*

Mildred E. Mathias (Mildred Mathias Hassler), Ph.D., *Associate Professor of Botany and Director of the Botanical Garden (Vice-Chairman of the Department).*

Bernard O. Phinney, Ph.D., *Associate Professor of Botany.*

Henry J. Thompson, Ph.D., *Assistant Professor of Botany (Life Sciences).*



David Appleman, Ph.D., *Professor of Plant Nutrition.*

Jacob B. Biale, Ph.D., *Professor of Subtropical Horticulture.*

College of Agriculture

Preparation for the Major.—The lower division course requirements of the plant science curriculum (see page 29).

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 2, 110; Irrigation and Soil Science 108; Physics 2B; Zoology 1A and 1B.

College of Letters and Science

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 8 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.

Requirements for Advanced Degrees.—For students who expect to become candidates for advanced degrees in botany, the following courses or their equivalents are required: Botany 2, 3, 6, 107, 140. Depending upon the special field of interest of the candidate, one or more of the following courses may be required: Bacteriology 1; Chemistry 5A, 9, 108A–108B, 109; Floriculture 146A–146B, 148; Geography 118; Geology 2 and 3, or 5; Mathematics C, D, 1–3A, 5A; Horticultural Science 111; Zoology 1A–1B, 101A, 101C.

LOWER DIVISION COURSES

1. **General Botany. (5) I.** 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.** Mr. Haupt
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.

Miss Scott

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. Addicott

Designed for students of economics, geography, agriculture, and botany. Life Sciences 1A-1B is recommended.

The general morphology, classification, ecology, and geographic distribution, origin, and uses of economic plants.

105A. Algae and Bryophytes. (4) I.

Mr. Haupt

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. Haupt

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. Lang, 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.

Miss Scott

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 classifications 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 or 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 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. (4) I.**

Mr. Lewis

Lecture, three hours; laboratory, three hours. Prerequisite: course 140 or Zoology 130A.

The fundamentals of cytogenetics. Heredity as related to cytogenetical phenomena, with special reference to plants.

***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. Epling

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.**

Mr. Epling

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. Lang, 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. Lang, 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 the topics considered in Botany 160.

* Not to be given, 1959-1960.

- *190. Research Methods in Morphology.** (4) I. Mr. Haupt
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. Phinney
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. Mr. Addicott
Lecture, two hours. Prerequisite: major in botanical science. Required of graduate students in botany.
A point of orientation for advanced graduate research.
- 211A*-B*-C-D-E*-F*.** Advanced Plant Physiology. (2) I, II.
Mr. Addicott, Mr. Appleman, Mr. Biale,
Mr. Hamner, Mr. Lang, 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.
- 253A-253B. Seminar in Plant Anatomy.** (1-1) Yr. Miss Scott
- 254A-254B. Seminar in Plant Physiology.** (1-1) Yr.
Mr. Addicott, Mr. Appleman, Mr. Biale,
Mr. Hamner, Mr. Lang, Mr. Wildman
- 255A-255B. Seminar in Systematics.** (1-1) Yr.
Miss Mathias, Mr. Lewis, Mr. Thompson
- 256A-256B. Seminar in Plant Morphology.** (1-1) Yr. Mr. Haupt
- 257A-257B. Seminar in Mycology.** (1-1) Yr. Mr. Plunkett
- 258A-258B. Seminar in Genetics.** (1-1) Yr. Mr. Lewis, 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. Epling
- 278A-278B. Research in Botany.** (2-6; 2-6) Yr. The Staff

RELATED COURSES IN OTHER DEPARTMENTS OR DIVISIONS

- Bacteriology 1. Introductory Bacteriology and Microbiology.**
Geography 118. Plant Geography.

* Not to be given, 1959-1960.

Geology 120. Paleobotany.

Floriculture and Ornamental Horticulture 131A-131B. Taxonomy and Ecology or Ornamental Plants.

Floriculture and Ornamental Horticulture 136A-136B. General Floriculture.

Floriculture and Ornamental Horticulture 139. Advanced Floriculture.

Floriculture and Ornamental Horticulture 146A, 146B. Plant Breeding.

Horticultural Science 101. Citriculture.

Horticultural Science 102. Subtropical Fruits Other Than Citrus.

Horticultural Science 110. Plant Propagation.

Horticultural Science 111. Plant Metabolism.

Horticultural Science 113. Fruit Physiology and Storage Problems.

Irrigation and Soil Science 110A. The Soil as a Medium for Plant Growth.

Life Sciences 1A-1B. Fundamentals of the Life Sciences.

Life Sciences S70. Methods and Materials for Teaching Life Science.

Plant Pathology 120. Plant Diseases.

Zoology 101A, B, C. General Physiology.

Zoology 130A, C; 131A, B, C. Genetics.

Zoology 140. Development of Biological Ideas.

Zoology 159. Physical Ecology.

BUSINESS ADMINISTRATION

(Department Office, 250A Business Administration-Economics Building)

Ralph M. Barnes, Ph.D., *Professor of Production Management and Professor of Engineering.*

George W. Brown, Ph.D., *Professor of Business Administration, Professor of Engineering, and Director, Western Data Processing Center.*

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.*

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.*

Harold Koontz, Ph.D., *Professor of Business Policy and Transportation.*

Wayne L. McNaughton, Ph.D., *Professor of Business Administration.*

Frederic Meyers, Ph.D., *Professor of Personnel Management and Industrial Relations.*

Howard Scott Noble, M.B.A., C.P.A., LL.D., *Professor of Accounting.*

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 Management Theory and Director, Division of Research.*

Robert Tannenbaum, Ph.D., *Professor of Personnel Management and Industrial Relations.*

J. Frederick Weston, Ph.D., *Professor of Business Economics and Finance.*

Ira N. Frisbee, M.B.A., C.P.A., *Professor of Accounting, Emeritus.*

- Theodore A. Andersen, Ph.D., *Associate Professor of Business Economics and Finance.*
- †Elwood S. Buffa, M.B.A., Ph.D., *Associate Professor of Production Management.*
- Joseph D. Carrabino, M.B.A., Ph.D., *Associate Professor of Production Management.*
- Fred E. Case, M.B.A., D.C.S., *Associate Professor of Real Estate and Urban Land Economics.*
- James M. 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.*
- Paul Kircher, Ph.D., C.P.A., *Associate Professor of Accounting.*
- Phillip 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.*
- Harry Simons, M.A., C.P.A., *Associate Professor of Accounting.*
- †R. Clay Sprowls, Ph.D., *Associate Professor of Business Statistics.*
- Jacob Stockfish, Ph.D., *Associate Professor of Business Administration.*
- †John R. Van de Water, A.B., J.D., *Associate Professor of Industrial Relations and Business Law.*
- †Irving R. Weschler, Ph.D., *Associate Professor of Personnel Management and Industrial Relations.*
- Robert M. Williams, Ph.D., *Associate Professor of Business Economics and Statistics.*
- James B. Boulden, Ph.D., *Assistant Professor of Business Administration.*
- David Houston, Ph.D., *Assistant Professor of Insurance.*
- †Thomas Petit, Ph.D., *Assistant Professor of Marketing.*
- Harold C. Petrowitz, LL.M., *Acting Assistant Professor of Business Law.*
- John C. Scheib, Ph.D., *Assistant Professor of Production Management.*
- William M. Borton, Ph.D., *Acting Assistant Professor of Marketing.*
- George R. Hawkes, M.B.A., C.P.A., *Acting Assistant Professor of Business Administration.*
- Leland R. Howell, B.A., *Acting Assistant Professor of Business Administration.*
- John M. Lishan, M.A., *Acting Assistant Professor of Business Administration.*
- Charles F. Louie, M.B.A., *Acting Assistant Professor of Accounting.*
- Arthur K. Marshall, LL.M., *Acting Assistant Professor of Business Law.*
- Frederick Massarik, M.A., Ph.D., *Acting Assistant Professor of Personnel Management.*
- Jerome Reisel, M.A., *Acting Assistant Professor of Business Administration.*
- Willard M. Reisz, LL.B., C.P.A., *Acting Assistant Professor of Accounting.*
- Roger B. Ulvestad, M.B.A., *Acting Assistant Professor of Business Administration.*
- Eugene Voorhees, LL.B., *Acting Assistant Professor of Business Law.*
- Norman Zellner, M.A., *Acting Assistant Professor of Marketing.*
- Robert Wendell Buttrey, A.B., C.P.A., LL.B., *Lecturer in Accounting.*
- John G. Carlson, M.B.A., *Lecturer in Production Management.*
- Francis M. Fillerup, M.B.A., *Lecturer in Business Administration.*
- Malcolm F. Heslip, Ph.D., *Lecturer in Business Administration.*
- Raymond J. Jessen, Ph.D., *Lecturer in Business Administration.*
- Paul Prasow, Ph.D., *Lecturer in Personnel Management.*

Joseph C. Schabacker, Ph.D., *Lecturer in Business Administration.*
 Warren Schmidt, Ph.D., *Lecturer in Personnel Management.*
 Leon C. Steres, B.S., C.P.A., *Lecturer in Accounting.*
 Karl Venter, M.A., *Lecturer in Business Administration.*
 Robert B. Andrews, M.B.A., *Associate in Business Administration.*
 John J. Barry, B.S., *Associate in Production Management.*
 Earl S. Beecher, M.B.A., *Associate in Business Administration.*
 Otto B. Christian, Jr., M.B.A., *Associate in Business Administration.*
 Harold B. Dilbeck, M.B.A., *Associate in Business Administration.*
 Erwin C. Drucke, M.B.A., *Associate in Business Administration.*
 Chester F. Healy, M.B.A., *Associate in Business Administration.*
 Richard H. Hill, M.A., *Associate in Business Administration.*
 Robert P. Hungate, B.A., *Associate in Business Administration.*
 Michal Ingraham, M.B.A., *Associate in Business Administration.*
 Mildred G. Massey, Ph.D., *Associate in Business Administration.*
 Charles R. Miller, M.B.A., *Associate in Business Administration.*
 Anelise N. Mosich, M.B.A., *Associate 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 48-56.

College of Letters and Science

Letters and Science List.—Courses 131, 133, 135, 160. For regulations governing this list, see page 5.

LOWER DIVISION COURSES

1A-1B. Elementary Accounting. (3-3) Beginning either semester.

Mr. Noble 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, Mr. Petrowitz, Mr. Voorhees

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.

106. General Laws Relating to Property. (3) I, II.

Mr. Marshall

Prerequisite: course 108 or equivalent.

Real and personal property; nature and kinds, types of ownership, methods of acquisition and disposal, rights of husband and wife, community and separate, intangibles, automobiles, security devices, rights and remedies of creditors, copyrights and patents, associated nonproperty relationships.

107. The Law of Wills, Estates, and Trusts. (3) II.

Mr. Marshall

Prerequisite: course 108 or equivalent.

Testate and intestate succession; types, requirements, and revocation of wills; schemes of testamentary disposition; protection against disinheritance; probate and administration; nature, kinds, and formation of trusts; subject matter of trusts; trustee and beneficiary; trust administration.

108. Legal Analysis for Business Managers. (4) I, II.

Mr. Hoerber, Mr. Petrowitz, Mr. Voorhees

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. Business Statistics

115. Business Statistics. (3) I, II.

Mr. Sprowls, Mr. Williams

Lecture, three hours; laboratory, two hours. 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 fundamental ideas and applications to problems of a business and economic nature. Among the topics studied are probability theory; sampling distributions; estimating and testing hypotheses about means, proportions, and standard deviations; contingency tables; analysis of variance; simple and multiple regression and correlation; design of sampling surveys; sequential sampling; nonparametric tests.

117. Index Numbers and Time Series. (3) II. Mr. Williams

Prerequisite: course 115 or the equivalent.

The theory of index number construction. Analysis of the important business indexes in current use. Methods of time series decomposition; secular trend, cyclical fluctuations, seasonal, and irregular variation.

118. Introduction to Operations Analysis. (3) I, II. Mr. Jackson

Prerequisite: course 115.

Organization, administration and evaluation of operations analysis as a management tool.

119. Electronic Computers in Business. (3) I, II. Mr. Hill, 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. (3) I, II.**

Mr. Hawkes, Mr. Karrenbrock, Mr. Mosich, Mr. Simons

Prerequisite: courses 1A-1B. Not open for credit to students who have credit for course 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 course 120M.

The balance sheet, income and surplus statement, the accounting process illustrated, cash and temporary investments, receivables, inventories, investments-stocks and bonds, plant and equipment, intangibles, deferred charges, current liabilities, long-term debt, capital stock, surplus, statement analysis and application of funds.

120M. Managerial Accounting. (3) II.

Mr. Carson, Mr. Hawkes, Mr. Kircher, Mr. Louie

Prerequisite: courses 1A, 1B. Required of all students, other than in the accounting field, in their first semester in residence. Alternate course is 120. Not open for credit to students who have credit for course 120.

Basic concepts of accounting; procedures for financial reporting; systems and internal control; cost estimates budgets; interpretation of administrative reports.

121. Advanced Accounting. (3) I, II.

Prerequisite: course 120.

Mr. Hertzberg, Mr. Karrenbrock, Mr. Simons

Partnerships, joint ventures, agencies and branches, consolidated balance sheets, consolidated profit and loss statements, statements of affairs, receiverships, realization and liquidation statements, estates and trusts, and actuarial accounting problems.

122. Cost Accounting. (3) I, II.

Mr. Carson, Mr. Hawkes

Prerequisite: course 120.

The nature, objectives, and procedures of cost accounting and cost control; job costing and process costing; theory and practice of accounting for manufacturing overhead; cost budgeting and control; cost reports; joint-product and by-product costing; distribution cost; standard costs; differential cost analysis; profit-volume relationships and break-even analysis.

123. Auditing. (3) I, II.

Mr. Steres

Prerequisite: course 121.

Problems of verification, valuation, and presentation of financial information in reports covered by the opinion of an independent public accountant. Responsibilities of the public accountant and rules of professional conduct.

125. Fund Accounting and Accounting Systems. (3) I, II.

Prerequisite: course 120.

Mr. Kircher, Mr. Reisz

Fund accounting; fund theory; governmental and other institutional operations; budgets and records for the general fund and special funds. An introduction to accounting systems and methods of data processing, including the use of electronic equipment.

127. Federal Tax Accounting. (3) I, II.

Mr. Buttrey

Prerequisite: course 121 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, II.

Mr. Simons

Prerequisite: courses 121, 122, 123, 127; 125 (may be taken concurrently).

Three hours of lecture and two practice sessions of two hours each weekly.

Review of contemporary accounting theory, with emphasis upon pronouncements of the American Institute of Accountants, American Accounting Association, and Securities and Exchange Commission. Applications of such theory to advanced problems of the kind obtained 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. 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 developing judgment in formulating decisions on financial problems. Financial policies are also considered in their social, legal, and economic effects.

132. Credit Management. (3) I, II.

Mr. Christian, 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. Miller, Mr. Weston

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
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. Houston, 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, II. Mr. Pfeffer
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. Property Insurance.** (3) I. Mr. Houston, Mr. Pfeffer
Prerequisite: course 135.

A study of fire, ocean marine, inland marine, and closely allied property insurance lines. A thorough analysis is made of insurable interest, policies, forms, endorsements, ratemaking, underwriting, loss prevention, and loss settlement.

- 138. Casualty Insurance.** (3) II. Mr. Houston, Mr. Pfeffer
Prerequisite: course 135.

Studies of the principles and personal and business uses of casualty insurance. Workmen's compensation, liability, automobile, aviation, accident and health, theft, boiler and machinery, plate glass, credit and title insurance, and fidelity and surety bonding are analyzed.

VII. Production Management

- 140. Elements of Production Management.** (3) I, II.
Mr. Andrews, Mr. Boulden, Mr. Carlson, Mr. Carrabino, Mr. Scheib
Lecture, two hours; laboratory, two hours. Required of all business administration students.

Principles, methods, and procedures related to the efficient utilization of resources in production. Specialization of process and labor; product and process analysis; production planning and control; materials procurement and control; methods improvement; time study; wage determination; selection of plant location; layout planning; production organization.

- 141. Plant Layout and Materials Handling.** (3) I, II. Mr. Barnes, Mr. Buffa
Lecture, two hours; laboratory, three hours. Prerequisite: course 140 or consent of the instructor.

A study of the management techniques for developing effective plant layout and material-handling methods; process analysis, operation sequence analysis, economic analysis; location and layout of production departments, maintenance facilities, employee service facilities, offices. Laboratory work involves the development of a complete factory layout plan.

142. Production Planning and Control. (3) II. Mr. Carlson, Mr. Scheib

Prerequisite: course 140 or consent of the instructor.

Problems and methods of planning effective utilization of capital, labor, equipment, and materials.

143. Motion and Time Study. (4) I, II. Mr. Barnes, Mr. Barry

Lecture, two hours; laboratory, four hours. Prerequisite: course 140 or consent of the instructor.

An analysis of 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. For both management and nonmanagement students.

144. Line-Production Methods. (3) II. Mr. Andrews, Mr. Buffa

Prerequisite: course 141 and consent of the instructor.

A study of the special problems and methods in line production. Equipment selection; material movement; balancing operations with the line; establishing the line; special considerations in production and material control; obtaining flexibility in the line; possible uses and variations in line production.

145. Industrial Purchasing. (3) II. Mr. Scheib

Prerequisite: course 140 or consent of the instructor.

A study of purchasing and procurement in industry and government. Purchasing policies and organization; coordination with production schedules and materials planning; optimum quantity and price; vendor relations; follow-up and expediting; receiving and inspection; purchasing research.

147. Job Evaluation and Wage Incentives. (3) I, II.

Mr. Buffa, Mr. Scheib

Lecture, two hours; laboratory, two hours. Prerequisite: course 140 or consent of the instructor.

Theory, techniques, and procedures of job evaluation and wage incentives as a basis for managerial procedures. Development and evaluation of alternate means of determining the relative value of jobs, and conversion to actual base rates. Design, evaluation, and administration of wage incentive plans.

VIII. Personnel Management and Industrial Relations**150. Elements of Personnel Management. (3) I, II.**Mr. Massarik, Mr. Meyers, Mr. Prasow, 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. Tannenbaum, Mr. Weschler

Prerequisite: senior standing.
Knowledge and skills leading to effectiveness in interpersonal relations. Understanding one's self as a leader, and others as individuals and as members of working groups. Understanding of group process, including group leadership. Practice in methods and procedures available to managers in effectively dealing with subordinates, peers, and superiors. Lectures and "sensitivity training" laboratory.**153. Managerial Adjustments to Labor Law. (3) I, II.** Mr. Van de Water

Prerequisite: course 150.

History and consequences for business policy of (a) law governing collective relationships between employers, employees, and their representatives and (b) law concerned with employee welfare, including wages, hours, working conditions, and industrial accident compensation. Criteria for evaluating labor law, with special attention to the role of management in the improvement of legislation.

154. Labor Markets and Wage Structure. (3) I, II. Mr. Meyers
Prerequisite: courses 100 and 150.

The theory characteristics of labor markets and wage structures considered as a basis for managerial policies and procedures in wage and salary administration.

IX. Marketing

160. Elements of Marketing. (3) I, II. Mr. Borton, Mr. Brown, Mr. Heslip, Mr. Howell, Mr. Ulvestad
Required of all business administration students.

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. Brown, Mr. Cassidy, 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. (3) I, II. Mr. Brown
Lecture, two hours; laboratory, two hours. Prerequisite: course 160.

A survey of the field of advertising—its use, production, administration, and economic implications. Includes the study of advertising psychology, practice in the preparation of advertisements, consideration of methods of market research and copy testing, and analysis of advertising campaign planning and sales coordination.

165. Sales Management. (3) I, II. Mr. Borton, Mr. O'Donnell, Mr. Robbins
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.

168. Advertising Policy. (3) II. Mr. Brown
Lecture, two hours; laboratory, two hours. Prerequisite: course 163 and consent of the instructor, to be granted on the basis of the applicant's training or experience in such fields as art, composition, psychology, and political science.

Intended for students planning a career in advertising, this course emphasizes such management problems as the definition of advertising objectives, selection of campaign themes, determination of the budget, and use of research in planning the program and measuring its effectiveness.

169. Marketing Policies. (4) I, II. Mr. Brown, Mr. Cassidy
Lecture, two hours; laboratory, two hours. Prerequisite: course 160 and senior standing.

A course designed to analyze policies which are important in marketing management. Special attention is given to the use of research in solving marketing problems, the theory of pricing and price policies as related to marketing, and certain types of restrictive legislation as they affect the distribution of goods and services. Readings are assigned for background purposes. The case method is utilized as a basis for class discussion. Laboratory periods provide practice in the application of principles to the distribution of a selected commodity.

X. Transportation and Traffic Management

170. Transportation and Traffic Management. (3) I, II. Mr. Ulvestad

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. Mr. Ulvestad

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. Mr. Koontz

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. Mr. Koontz

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. Mr. Ulvestad

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

Basic elements which influence managerial policy in the urban real estate field; an analysis of major influences affecting city location and growth; major elements of policy in appraising, managing, financing, marketing, developing, and subdividing urban property; the role of private and governmental institutions in influencing the use of urban land.

181. Valuation of Real Property. (3) I. Mr. Case

Prerequisite: course 180 or consent of the instructor.

The character of land value; principles of land valuation and their relation to income, residential, and special-purpose properties. A discussion of the

relationships of social, economic, and political influences to trends in property values; current appraisal theory.

182. The Building Industry and Urban Land Use. (3) II. Mr. Gillies
Prerequisite: course 180 or consent of the instructor.

The structure and nature of the construction industry; the housing problem; the housing market; economic aspects of urbanization; industrial location and regional development; impact of the housing industry in an unstable economy.

183. The Management of Urban Real Estate Operations. (3) II. Mr. Case
Prerequisite: course 180 or consent of the instructor.

The initiation and development of managerial policy relating to the development of raw or improved land; the financing, building, developing, management, and marketing of urban real estate; the effects of private and governmental institutions on managerial operations in urban real estate.

XII. Management Theory and Policy

190. Organization and Management Theory. (3) I, II.

Mr. Anderson, Mr. Boulden, Mr. Heslip, Mr. Koontz,
Mr. O'Donnell, Mr. Schabacker, Mr. Steiner, Mr. Van de Water

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

102G. Business Economics. (3) I, II.

Mr. G. Brown, Mr. Neff, Mr. Nicols, Mr. Norton, 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 courses 100 or 101.

An analysis of motivation and decision-making in the business firm, competitive policies and market structure, revenue and cost behavior, and expansion through investment. Quantitative methods of sales, cost and profit forecasting. General business forecasting and the cyclical mechanisms. The role of business enterprise in a political democracy and implications for public policy.

120G. Survey of Accounting Principles. (3) I, II.

Mr. Carson, Mr. Karrenbrock, Mr. Kircher, Mr. Simons

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.

135G. Principles of Insurance. (3) I, II.

Mr. Pfeffer

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. Andrews, Mr. Scheib

Open only to graduate students who do not have credit for a basic course in production management.

Principles, methods, and procedures related to the efficient utilization of resources in production. Specialization of process and labor; product and process analysis; production planning and control; materials procurement and control; methods improvement; time study; wage determination; selection of plan location; layout planning; production organization.

150G. Elements of Personnel Management. (3) I, II.

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. Organization and Management Theory. (3) I, II.

Mr. Heslip, Mr. Koontz

Open only to graduate students who do not have credit for an advanced course in management theory and policy at the undergraduate level.

Principles of business organization and management. Application of these principles to general, rather than functional, management problems by reading case studies and research reports.

GRADUATE COURSES†**200. Managerial Economics. (3) I, II.**

Mr. Norton

Prerequisites: courses 100, 101, or 102G and 115.

Analysis of decision-making in the enterprise. Measurement of the influence of policy and nonpolicy variables on sales volume 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

Prerequisite: courses 100, 101, and 115.

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.

† Graduate students who have had little or no previous preparation in business administration should consult the School of Business Administration for a condensed program of prerequisite courses restricted to graduate students.

- 202. Stabilization Policy and Business Planning.** (3) I, II. Mr. Jacoby
(Formerly numbered, 298.)
Prerequisite: consent of the instructor.
Intensive study of the administration of the Employment Act and its practical implications for business management. Analysis of U.S. economic goals. Effects on business plans and decisions of governmental monetary, fiscal, and other actions. Stabilizing business policies.
- 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.
- 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.
- 216. Sampling Survey Methods in Business.** (3) I. Mr. Sprowls
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
Advanced study of time series. An intensive analysis of statistical and econometric methods of business forecasting.
- 218. Selected Topics in Business Statistics.** (3) II. Mr. Sprowls
Special topics in statistical methods. Current developments in statistical theory and practice. Analysis of recent literature.
- 221A. Seminar in Accounting Problems I.** (3) I. Mr. Simons
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. Noble

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

Prerequisite: Economics 135 and course 133 or 131, 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. Weston

Prerequisite: course 120 or 120M or 120G or 133, or consent of the instructor.

A study of the social and economic consequences of business financial policies. Topics include 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. Weston

Prerequisite: course 131 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

Prerequisite: course 120 or 120M or 120G, and 133, 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) II.

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) II.

Mr. Pfeffer

Prerequisite: courses 135, 136, 107; 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) I.

Mr. Pfeffer

Prerequisite: courses 135, 137, 138, 106; or consent of the 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

A study of the problems and policy decisions encountered at the coordinative, or plant management level. Basic production policies and organization; determination of production methods; coordinating production activities; industrial risk and forecasting; business indicators; social aspects of production.

241A-241B. Seminar in the Dynamics of Industrial Technology. (3-3) Yr.

Mr. Carrabino

The managerial problems and policy decisions concerning technological research; budgeting for research; contributions of fundamental, engineering, and market research; management of research and development; research and industrial progress; social aspects of technological change; product diversification and standardization; annual models.

242. Advanced Methods in Production Control. (3) II.

Mr. Scheib

Prerequisite: course 142.

The application of newly developed 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.

249A-249B. Seminar in the Scientific Approach to Management. (3-3) Yr.

Mr. Barnes

A study of 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 in application to all fields of management.

251A-251B. Seminar in Personnel Administration. (3-3) Yr.

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 investigations and presentations by students.

252. Seminar in the Management of Industrial Relations. (3) I.

Mr. McNaughton, Mr. Prasow, 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.

254. Analysis of Labor Markets. (3) I, II.

Mr. Meyers

(Formerly numbered, 298, section 3.)

Prerequisites: course 150 or 150G and consent of instructor. Recommended: Economics 150.

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.

(Formerly numbered 298, section 5.)

Mr. 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, Mr. De Loach

Lays a groundwork for sound investigative procedures in solving marketing problems. Intensively studies the legal environment in which marketing institutions operate (Sherman, Clayton, and Federal Trade Commission Acts, Fair Trade Laws, Unfair Practices Acts, etc.) and critically examines various types of competitive factors (such as commercial propaganda, dealer relations, product quality, self-service operations, store location, use of premiums, etc.) in relation to effective rivalry.

262. Seminar in Price Policies. (3) II. Mr. Cassady

Relates economic theory and price policy. Rigorous consideration is given to such concepts as demand, theory of competition, market classification, price leadership, geographical pricing schemes, and price discrimination, followed by analysis of the price policies of individual firms in which these concepts are utilized. A firm grasp of economic theory is advisable.

263. Theory and Management of Market Stimulation. (3) I, II. Mr. Petit
(Formerly numbered, 298, section 4.)

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) II. Mr. Ulvestad

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

Prerequisite: course 180, 181 and 182 or 183.

Advanced consideration of principles and policies applicable to the management of real estate enterprises, including the marketing, financing, evaluation, and operation of urban space. Research reports required.

282. Seminar in Urban Land Utilization. (3) II. Mr. Case, Mr. Gillies, Mr. Grebler

Prerequisite: course 180, 181 and 182 or 183.

Intensive study of forces affecting land use, with emphasis upon processes of city growth, nature of metropolitan structure; and problems of urban land use, including location of commercial enterprises. Original research on a selected problem required.

290. Seminar in Organization Theory. (3) I. Mr. Boulden, Mr. Koontz, Mr. O'Donnell

Concepts of human organizations and their structures. Principles of design of business organizational structures. Effecting changes in organizations. Growth and degeneration of organizations. Analysis of selected literature. Current research and experimentation. Students present book analyses and research reports for class discussion.

291. Seminar in Planning and Control. (3) II. Mr. Boulden, Mr. Koontz, Mr. Steiner

Seminar in the principles and techniques of the management functions of planning and control. Emphasis is placed on the general management aspects of these functions. The implementation of objectives through policy formulation and control to assure the reality of plans are dealt with through examination of literature, special research reports, and case analyses.

292. Seminar in Direction and Leadership. (3) 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) I.

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. O'Donnell
Analysis of complex business cases and the identification of salient problems encountered in high level management.

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.

299B. 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, 321 Business Administration-Economics Building)

Samuel J. Wanous, Ph.D., *Professor of Office Management and Business Education.*

Lawrence W. Erickson, Ed.D., *Associate Professor of Office Management and Business Education.*

Erwin M. Keithley, Ed.D., *Associate Professor of Office Management and Business Education (Chairman of the Department).*

Richard S. Perry, Ed.D., *Assistant Professor of Office Management and Business Education.*

George Watto, M.A., *Visiting Assistant Professor of Office Management and Business Education.*

Edward C. Kelly, M.A., *Acting Instructor in Office Management and Business Education.*

The business education major is offered in the College of Applied Arts. Areas of specialization are designed to prepare students to teach in secondary schools and colleges.

NOTE: Students majoring in business education may not elect business administration as a minor.

Preparation for the Major.—Courses 3A-3B, 5, Business Administration 1A-1B, Economics 1A-1B, Psychology 1A, 1B or 33, English 1A, Speech 1, Geography 5A-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, 165.

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 165; 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 165; 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 165; 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 *special secondary credential in business education or 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, Mr. Kelly

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 thorough understanding of office management and business teaching problems. Principles 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. Kelly

Designed especially for and limited to students preparing for the teaching credential in business education.

* Recommended programs on the Los Angeles campus leading to special secondary credentials are being discontinued. Certificates of completion for these credentials will not be awarded after September 15, 1961.

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 dictation is included.

5. Introduction to Business Education. (3) I, II. Mr. Perry

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.

10. Personal Investments. (1) II. Mr. Erickson, Mr. Watto

Not open for credit to business administration majors or students having credit for Home Economics 144.

A study of personal investment policy, the nature and value of corporate stocks and bonds, the securities markets, investment companies, public bonds, and saving institutions.

UPPER DIVISION COURSES

110. Business Communications. (3) I, II. Mr. Keithley, Mr. Kelly, Mr. Perry

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, Mr. Kelly

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. Mr. Watto

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, Mr. Watto

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. Perry, Mr. Keithley, Mr. Watto

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, and interpreting data, with emphasis upon writing the elements of a final report.

115. Management of Office Personnel. (3) I, II. Mr. Erickson, Mr. Watto

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, Mr. Watto

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. Perry

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.*

¹Max S. Dunn, Ph.D., *Professor of Chemistry.*

¹Clifford 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.*

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).*

¹ In residence fall semester only, 1959-1960.

Hosmer W. Stone, 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.*
 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. Pecosok, Ph.D., *Associate Professor of Chemistry.*
 Robert L. Scott, Ph.D., *Associate Professor of Chemistry.*
 Kenneth N. Trueblood, Ph.D., *Associate Professor of Chemistry.*
 Mark Cher, Ph.D., *Assistant Professor of Chemistry.*
 Kenneth Conrow, Ph.D., *Assistant Professor of Chemistry.*
 William C. Drinkard, Ph.D., *Assistant Professor of Chemistry.*
 Eugene B. Hardwick, Ph.D., *Assistant Professor of Chemistry.*
 James B. Hendrickson, Ph.D., *Assistant Professor of Chemistry.*
 Roberts A. Smith, Ph.D., *Assistant Professor of Chemistry.*
 Charles A. West, Ph.D., *Assistant Professor of Chemistry.*
 ———, *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 5.

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: 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 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.

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 found in the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION, or 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. Drinkard, Mr. McCullough, Mr. Stone, Mr. Trueblood

Lecture, three hours; laboratory and quiz, six hours. Prerequisite: high school chemistry. (Chemistry 2A will be accepted in place of high school chemistry, and for outstanding students high school physics and three years of high school mathematics is another acceptable alternative.) All students who intend to take this course must take a preliminary examination approximately ten days before instruction begins. Results of this examination will be used for advising purposes only. This course is required of majors in chemistry and in various other fields of science and/or technology.

A basic course in principles of chemistry, with special emphasis on chemical calculations.

1B. General Chemistry. (5) I, II.

Mr. Blacet, Mr. Drinkard, Mr. Garner, Mr. Trueblood

Lecture, three hours; laboratory and quiz, six hours. Prerequisite: course 1A. Required in the same curricula as course 1A.

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. Drinkard, Mr. Trueblood, Mr. West

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. Drinkard, Mr. Trueblood, Mr. West

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 in the College of Applied Arts. 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. Trueblood, Mr. Libby

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. Cher, Mr. Farrington, Mr. Pecsok

Lecture, discussion, and quiz, two hours; laboratory, six hours. Prerequisite: course 1A-1B. Required of chemistry majors, economic geologists, petroleum engineers, public health, sanitary, and municipal engineers, medical technicians, and of premedical, College of Chemistry, metallurgy, and certain agriculture students.

Principles and technique involved in fundamental gravimetric and volumetric analyses.

5B. Quantitative Analysis. (3) I, II.

Mr. Farrington, Mr. Pecsok

Lecture, discussion, and quiz, two hours; laboratory, six hours. Prerequisite: course 5A or 3B. Required of chemistry majors, economic geologists, and College of Chemistry students.

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. Conrow, Mr. Cram, Mr. Geissman, 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. Hendrickson

Lecture and quiz on principles of laboratory manipulation, two hours; laboratory, six hours. Prerequisite or concurrent: course 8. Required of premedical and pre dental students, and majors in petroleum engineering.

Laboratory work devoted principally to synthesis, partly to analysis.

10. Organic and Food Chemistry. (4) I.

Mr. Conrow, Mr. Cram, Mr. Geissman, Mr. Jacobs

Lecture, three hours; laboratory, three hours. Prerequisite: courses 1A and 1B, or 2A. Arranged primarily for majors in home economics.

An introductory study of the compounds of carbon, including both aliphatic and aromatic derivatives.

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. Conrow

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. (2) I.

Mr. Smith, Mr. West

Lecture, discussion and quiz, one hour; laboratory, five hours. Prerequisite: Chemistry 108A 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. West, Mr. Smith

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 microorganism with emphasis on metabolism.

109. General Physical Chemistry. (4) I.

Mr. Garner, Mr. McCullough

Lecture and demonstration. 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. McCullough, Mr. McMillan, Mr. Scott

Prerequisite: course 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 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. McMillan, Mr. Scott

Prerequisite: course 110A and Physics 1C; Mathematics 4B or 6B (may be taken concurrently).

* Not to be given, 1959-1960.

Colligative properties of solutions of nonelectrolytes; fugacity, activity 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. McCullough, Mr. Scott

Prerequisite: same as for course 110A. Open only by permission of the chairman of the department to graduate students who have not taken course 110A in this institution.

110H. Physical Chemistry. (3) I, II

Mr. Garner, Mr. Kivelson, Mr. McMillan, Mr. Scott

Prerequisite: course 110A or 110G. Open only by permission of the chairman of the department to graduate students who have not taken course 110B in this institution.

111. Methods of Physical Chemistry. (4) I, II

Mr. Cher, Mr. Kivelson, 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. 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

Mr. Stone

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. 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. 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 course, but this is not encouraged.

A comprehensive course based upon modern concepts. Substitution, elimi-

nation, and addition reactions, condensations, rearrangements, stereochemistry and free-radical chemistry.

130A. Advanced Physical Chemistry. (3) I.

Mr. Garner, Mr. Kivelson, Mr. McMillan, Mr. Scott

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

Lecture, three hours. Prerequisite: Chemistry 110B; Mathematics 4B; 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, reaction kinetics, the imperfect gas and condensation, liquids and solutions, phase transitions, surface phenomena and high polymers.

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

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. Drinkard

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

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. 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.

* Not to be given, 1959-1960.

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 chairman of the department.

GRADUATE COURSES

*202. **Chemical Kinetics.** (3) II.

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 fugacity, activity, activity coefficient and osmotic coefficient, and their uses.

221. **Physical Aspects of 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 due to his research interests.

*231. **Nuclear Chemistry.** (3) I. Mr. Garner

Normally offered only in alternate years.

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 due 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.

* Not to be given, 1959-1960.

234. Quantum Chemistry. (3) II. Mr. Kivelson, Mr. McMillan
Prerequisite: course 130A; Physics 121; Mathematics 119B or 110B; or 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 the metabolic transformation of animals and plants 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.

260. Seminar in Chemistry. (1) I, II. Mr. Farrington, Mr. Hendrickson
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. Mr. Dunn

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)

Frederick Mason Carey, Ph.D., *Professor of Classics.*

Paul Friedlander, Ph.D., *Professor of Latin and Greek, Emeritus.*

Paul Augustus Clement, Ph.D., *Professor of Classics and Classical Archaeology.*

Albert Hartman Travis, Ph.D., *Professor of Classics (Chairman of the Department).*

Herbert Benno Hoffleit, Ph.D., *Associate Professor of Classics.*

Jan 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.*

Letters and Science List.—All undergraduate courses in the department except Latin 370 are included in the Letters and Science List of Courses. For regulations governing this list, see page 5.

* Not to be given, 1959-1960.

‡ Absent on leave, 1959-1960.

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 any two units of courses 100A-100B, 100C-100D (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 102A-B-C-D; Greek 100 through 106, and 180A-180B; History 111A-111B and 113A-113B; Linguistics 150).

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 102A-B-C-D, Latin 101 through 180, History 111A-111B and 112A-112B, Linguistics 150).

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 102A-B-C-D, History 111A-111B, English, French, German, Sanskrit, Linguistics 150.

Requirements for Admission to Regular Graduate Status

A candidate for admission to regular graduate status in the department must meet, in addition to general university requirements, the minimum requirements for an undergraduate major in Latin, in Greek, or in Latin and Greek (the Classics). If the student is deficient in this prerequisite, he must fulfill it by undergraduate work which is not counted toward his regular graduate residence.

Undergraduate students contemplating graduate work should consult the adviser early in their upper division residence. Students who are admitted to the department with regular graduate status directly from another school must discuss their projected work with the adviser before their program for the first semester of study will be approved by the department.

Special Requirement for the Teaching Credential in Latin

Latin 165A-165B and 165C-165D are required for students preparing for this credential.

The Master's Degree

The degree is offered in Latin, in Greek, and in Latin and Greek (the Classics). 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. Only those who do so *with distinction* will be recommended to other universities for work toward the Ph.D.

General University Requirements for the Master's Degree

See page 69. The Department follows the comprehensive examination plan. For inclusion in electives outside the twelve units "in strictly graduate courses in the major subject," the department especially recommends Classics 102A-B-C-D, 251A-B-C-D; History 111A-111B, 112A-112B, 113A-113B, 251A-251B; Linguistics 150, 190, 191, 210.

General and Special Departmental Requirements for the Master's Degree

In addition to fulfilling the general university requirements, the candidate must meet (1) general departmental requirements for the master's degree, and (2) special departmental requirements for the master's degree in Latin, Greek, or Latin and Greek (the Classics). For these departmental requirements, students may consult the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION, or obtain copies from the departmental adviser.

COURSES WHICH DO NOT REQUIRE A KNOWLEDGE OF GREEK OR LATIN

Classics 113, 102A-B-C-D, 178, 251A-B-C-D, 260.

Latin 40, 180.

Greek 40, 180A-180B.

CLASSICS

UPPER DIVISION COURSES

102A, B, C, D. Classical Art.

Mr. Clement

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.

113. Ancient Drama. (3) 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.

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 or Art 102, or consent of 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.

* Not to be given, 1959-1960.

260. Seminar in Indo-European Mythology. (3) II.

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.

2. Readings in Latin Prose. (4) I, II.

Mrs. Mohr

Sections meet five hours weekly.

Prerequisite: course 1, or two years of high school Latin. Students who have not had Latin for a year or more should review elementary grammar before attempting this course.

3. Readings in Latin Poetry: Ovid and Vergil's Aeneid (4) I, II.

Prerequisite: course 2, or three years of high school Latin. Mrs. Mohr

4. Catullus: Selections; Horace: Odes and Epodes. (4) I, II.

Prerequisite: course 3, or four years of high school Latin.

9A-9B. Latin Prose Composition. (2-2) Yr.

_____, Mr. Hoffleit

Prerequisite: course 3, 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.

40. The Latin Element in English. (2) II.

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, 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.

(Former number, 102.)

Prerequisite: course 4.

102. Lucretius; Vergil: Eclogues and Georgics. (3) II.

Mr. Carey

(Former number, 146.)

Prerequisite: course 4.

103. Satire: Horace, Juvenal, and Martial. (3) I.

Mr. Carey

(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.** Mr. Carey
(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.

165A-165B. Latin Composition. (1-1) Yr. Mr. Hoffleit, _____

Prerequisite: course 9A-9B. 165A is not 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, Miss Caldwell

Prerequisite: course 9A-9B. 165C is not prerequisite to 165D. This course is normally given every other year in alternation with course 165A-165B. Ciceronian prose.

***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.

210. Vergil's Aeneid. (3) I. Mr. Carey

***211. Cicero's Rhetorical Works. (3) II.** Mr. Travis

***220. Vulgar Latin: Introduction to Romance Linguistics. (3) I.** Mr. Puhvel

***254. Seminar in Latin Studies. (3) II.** Mr. Carey
Latin Comedy.

256. Seminar: Ovid. (3) II. Mr. Carey

290. Research in Latin. (1-4) I, II. The Staff

PROFESSIONAL COURSE IN METHOD

***370. The Teaching of Latin. (3) II.** _____
Prerequisite: a foreign language minor.

* Not to be given, 1959-1960.

GREEK

LOWER DIVISION COURSES

- 1-2. **Greek for Beginners.** (4-4) Yr. 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) I. 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, 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. Mr. Travis
 Prerequisite: course 1-2; 100A is not prerequisite to 100B. This course is normally given every other year in alternation with course 100C-100D.
- *100C-100D. **Prose Composition.** (1-1) Yr. Mr. Carey, Mr. Clement
 Prerequisite: course 1-2; 100C is not 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. Mr. Puhvel
 (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. Travis
 (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. Mr. Carey
 (Former number, 105.)
 Prerequisite: courses 101, 102. This course is normally given every other year in alternation with course 104.
117. **Greek New Testament.** (3) II. Mr. Clement
 Prerequisite: course 101. This course does not count toward the major in Greek.

* Not to be given, 1959-1960.

180A-180B. A Survey of Greek Literature in English. (2-2) Yr.

Mr. Carey

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) II.

Mr. Clement

*202. Sophocles. (3) II.

Mr. Hoffleit

*203. Thucydides. (3) II.

Mr. Hoffleit

204. Aristophanes. (3) II.

Mr. Travis

*205. Euripides. (3) I.

Mr. Travis

290. Research in Greek. (1-4) I, II.

The Staff

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 150. Introduction to Indo-European Linguistics. (3) I.

Mr. Puhvel

*Linguistics 190. The Elements of Sanskrit. (3) I.

Mr. Puhvel

Linguistics 191. Advanced Sanskrit. (3) I.

Mr. Puhvel

Linguistics 210. Comparative Grammar of the Indo-European Languages.

(3) II.

Mr. Puhvel

ECONOMICS

(Department Office, 270 Business Administration-Economics Building)

Armen A. Alchian, Ph.D., *Professor of Economics.*Paul A. Dodd, Ph.D., LL.D., *Professor of Economics.*Wytze Gorter, Ph.D., *Professor of Economics (Chairman of the Department).*†George H. Hildebrand, Ph.D., *Professor of Economics.*Earl J. Miller, Ph.D., LL.D., *Professor of Economics.*Dudley F. Pegrum, Ph.D., *Professor of Economics.*†Warren C. Seoville, Ph.D., *Professor of Economics.*Marvel M. Stockwell, Ph.D., *Professor of Economics.*William R. Allen, Ph.D., *Associate Professor of Economics.*

* Not to be given, 1959-1960.

† Absent on leave, 1959-1960.

Robert Baldwin, Ph.D., *Associate Professor of Economics.*
 Karl Brunner, Dr. Rer. Pol., *Associate Professor of Economics.*
 John F. Barron, Ph.D., *Assistant Professor of Economics.*
 Norman V. Breckner, Ph.D., *Assistant Professor of Economics.*
 Donald D. Cullen, Ph.D., *Visiting Associate Professor of Economics.*
 W. Lee Hansen, Ph.D., *Assistant Professor of Economics.*
 H. Lawrence Miller, Jr., Ph.D., *Assistant Professor of Economics.*
 R. Thayne Robson, Ph.D., *Acting Assistant Professor of Economics.*
 Melvin Rothbaum, Ph.D., *Assistant Professor of Economics.*
 Donald E. Stout, Ph.D., *Assistant Professor of Economics.*
 Charles M. Tiebout, 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 5.

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 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 3 units selected from 100B, 103, 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, certain upper division courses in business administration (not to exceed six units) 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, 105, 143).

Economics Institutions (courses 106, 107, 108).

* Not more than 42 units of upper division courses in economics and business administration may be counted toward the bachelor's degree.

- Economic Development (courses 109, 110, 111).
 Regional Economics (courses 120, 121).
 Public Finance (courses 131, 132, 133).
 Money and Banking (courses 135, 136, 137).
 Econometrics (courses 140, 141A, 141B, 142).
 Labor Economics (courses 150, 152, 155, 156, 158).
 Government and Industry (courses 170, 171, 173, 174).
 International Economics (courses 195, 196, 197).

1A-1B. Principles of Economics. (3-3) Yr. Beginning either semester.

Mr. Allen, Mr. Breckner, Mr. Cullen, Mr. Hansen, Mr. H. L. Miller, Mr. E. J. Miller, Mr. Stockwell, Mr. Tiebout

Lecture, two hours; discussion, one hour

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. Mr. Stout

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. 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. E. J. Miller, 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.

An historical survey of the major systems of economic thought.

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.

106. Individualism and Collectivism. (3) II.

An examination of the economic assumptions and implications of the literature of liberalism, socialism, communism, and anarchism, from classical

antiquity to the present, with special attention to conceptions of economic reform and organization, and to the place of the state in the economic scheme.

107. Comparative Economic Systems. (3) I, II. ———, Mr. Stout

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 their economic goals, theories of economic organization, institutions, and developmental processes. Problems of economic planning are emphasized.

***108. Development of Economic Institutions. (3) I.** 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) II. Mr. Baldwin
(Formerly numbered 198.)

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 analysis of the dynamics of population change and trends in population growth, its composition and distribution. Interaction of population change with levels of business activity and rates of economic development.

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. Stockwell

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. Stockwell

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. Breckner
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.

* Not to be given, 1959-1960.

135. Money and Banking. (3) I, II.

Mr. Barron, Mr. Brunner, Mr. Breckner, Mr. E. J. Miller, Mr. H. L. Miller, Mr. Tiebout

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. H. J. Miller

Principles and methods of utilizing statistical data; presentation and statistics of a given set of data; probability; methods of statistical inference with economic applications; bivariate correlation, time series, and index numbers. Not open for credit to students who have completed Business Administration 115.

142. Quantitative Economic Analysis. (3) II.

Mr. Hansen

Prerequisite: course 140 or the equivalent.

Quantitative aspects of the main economic magnitudes and their relationships. Implications of extent of quantitative knowledge on 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.

150. Labor Economics. (3) I, II.

Mr. Cullen, Mr. Robson

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) I.

Mr. Robson

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.

Mr. Robson

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.

* Not to be given, 1959-1960.

170. Economics of Industrial Control. (3) I, II. Mr. Pegrum

The institutional patterns of regulation; the economics of industrial production and pricing; the control of competitive enterprise, combinations and monopolies and their control; governmental regulation and economic planning.

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 transportation agencies; rate structures; problems of state and federal regulation; coordination of facilities. The current transportation 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

An introduction to the principles and mechanisms of international trade; foreign exchange, the balance of payments, comparative costs, the exchange of goods and services and the gain from trade. Effects of trade restrictions. Analysis of selected current international economic problems and policies in the light of the principles presented.

196. International Trade Policies. (3) II. Mr. Gorter

Prerequisite: course 195 or consent of the instructor.

Governmental regulations of international transactions. Bilateral and multilateral trade agreements. Import quotas. Dumping and international cartels. International commodity agreements. The international trade of planned economies. The development of United States foreign trade policy and its impact upon the world economy. The General Agreement on Tariffs and Trade.

197. International Finance. (3) I. 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 stand-

* Not to be given, 1959-1960.

ards, capital movements, exchange controls, and international monetary organizations.

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.
(Formerly 251A-251B.) Mr. Alchian, Mr. Baldwin, Mr. Brunner

202. **Macroeconomics: Theory of Employment, Income and Money.** (3)
(Formerly 255.) Mr. Brunner

*203. **Analytical Methods and Concepts. Seminar.** (3) Mr. Brunner
(Formerly 257.)

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. Mr. Homan

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) _____

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. Stockwell

262. **Evolution of Economic Institutions in the United States. Seminar.** (3)
Mr. Scoville, Mr. Stout

263. **Evolution of Economic Institutions in Western Europe. Seminar.** (3)
Mr. Scoville

266A-266B. **International Economics. Seminar.** (3-3) Yr.
Mr. Allen, Mr. Gorter

268A-268B. **Economic Growth of Underdeveloped Areas. Seminar.**
(3-3) Yr. Mr. Stout, Mr. Baldwin

271A-271B. **Labor Economics. Seminar.** (3-3) Yr. Mr. Rothbaum

290. **Special Problems.** (1-6 units each semester) I, II. The Staff

EDUCATION

(Department Office, 325 Moore Hall)

Jesse A. Bond, Ed.D., *Professor of Education and Director of Training.*

William S. Briscoe, Ed.D., *Professor of Education.*

John A. Hoekett, Ph.D., *Professor of Education and Associate Director of Elementary Training.*

David F. Jackey, Ph.D., *Professor of Education.*

B. Lamar Johnson, Ph.D., *Professor of Education and Assistant Director of Training.*

* Not to be given, 1959-1960.

- Malcolm S. MacLean, Ph.D., *Professor of Education.*
 Lloyd N. Morrisett, Ph.D., *Professor of Education.*
 May V. Seago, Ph.D., *Professor of Education.*
 Paul H. Sheats, Ph.D., *Professor of Education.*
¹Lawrence E. Vredevoe, Ph.D., *Professor of Education.*
 Samuel J. Wanous, Ph.D., *Professor of Business Education and Office Management.*
 Howard E. Wilson, Ed.D., *Professor of Education (Chairman of the Department).*
 ———, *Professor of Education.*
 ———, *Professor of Education.*
 ———, *Professor of Education.*
 ———, *Professor of Education.*
 ———, *Professor of Education.*
 Sidney L. Pressy, Ph.D., *Visiting Professor of Education.*
 Edwin A. Lee, Ph.D., *Professor of Education, Emeritus.*
 F. Dean McClusky, Ph.D., *Professor of Education, Emeritus.*
 Junius L. Meriam, Ph.D., *Professor of Education, Emeritus.*
 Corinne A. Seeds, M.A., *Professor of Elementary Education, Emeritus.*
 Charles Wilkin Waddell, 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 Training.*
 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.*
 John Helmick, Ph.D., *Visiting Associate Professor of Education.*
 Abbott Kaplan, Ph.D., *Associate Professor of Education.*
 †Evan R. Keislar, Ph.D., *Associate Professor of Education.*
 George F. Kneller, Ph.D., *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 Elementary Education, Emeritus.*
 Donald A. Leton, Ph.D., *Assistant Professor of Education.*
 John D. McNeil, Ed.D., *Assistant Professor of Education and Associate Director of Training.*
 Carlton Shay, M.A., *Acting Assistant Professor of Education.*
- ◇
- Aubrey L. Barry, Ed.D., *Lecturer in Education.*
 Howard A. Champion, Ed.D., *Lecturer in Education.*
 Gladys C. Graham, Ed.D., *Lecturer in Education.*
 Lyle Herbat, M.A., *Lecturer in Education, Life Sciences.*
 Wendell P. Jones, Ph.D., *Lecturer in Education.*
 Harry Smalenburg, Ph.D., *Lecturer in Education.*
 Faith Smitter, Ed.D., *Lecturer in Education.*
 Ernest R. Toon, M.Ed., *Lecturer in Education, Physical Sciences.*
 Howard B. Webster, Ed.D., *Lecturer in Education.*

¹ In residence fall semester only, 1959-1960.

† Absent on leave, 1959-1960.

‡ Sabbatical leave in residence, fall semester, 1959-1960.

Supervisors of Training

Vivienne M. Brady, A.B., *Elementary.*
 Evelyn W. Lindstrom, A.B., *Elementary.*
 Elizabeth M. Schneider, A.B., *Elementary.*
 Genie M. Swinney, M.A., *Elementary.*
 Winifred P. von Boenigk, M.A., *Elementary.*



Freeman Ambrose, M.A., *Secondary, English.*
 Nora B. Cole, A.B., *Secondary, Physical Education for Women.*
 Helen Chute Dill, M.A., *Secondary, Music.*
 Kenneth Kilday, M.A., *Secondary, Physical Education for Men.*
 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.*
 Ethel M. Martin, Ed.B., *Secondary, Home Economics.*
 Ralph A. Masteller, M.A., *Secondary, Business Education.*
 ———, *Secondary, Communication Skills.*
 ———, *Secondary, Social Studies.*
 ———, *Secondary, Mathematics and Science.*

UNIVERSITY ELEMENTARY SCHOOL

Margaret D. Mathews, B.Ed., *Acting Principal.*
 Kathryn Argabrite, M.A., *Supervisor, Health Instruction.*
 Mary Maxine Bentzen, A.B., *Supervisor, Nursery School.*
 Lola C. Binney, B.S., *Supervisor, Third Grade.*
 Ann Blake, A.B., *Supervisor, Second Grade.*
 Cynthiana Brown, M.A., *Supervisor, First Grade.*
 Elenore Cornberg, M.A., *Supervisor, Kindergarten.*
 Richard J. L. Covington, M.Ed., *Supervisor, Sixth Grade.*
 John D. Cunningham, M.A., *Supervisor, Science.*
 Janet R. Ecki, A.B., *Supervisor, Second Grade.*
 Emma S. Griffith, M.A., *Supervisor, Fourth Grade.*
 Jean S. Kershner, *Supervisor, Nursery School.*
 Mee Lee Ling, A.B., *Supervisor, Fifth Grade.*
 Donnarae McCann, *Librarian.*
 Penrod Moss, A.B., *Supervisor, Sixth Grade.*
 June Patterson, M.S., *Supervisor, Kindergarten.*
 Olga Richard, M.A., *Supervisor, Art.*
 Marjorie Rimer, M.A., *Supervisor, Music.*
 Florence Speers, A.B., *Supervisor, Third Grade.*
 Sterling Stott, M.A., *Counselor, UES.*
 Dorothy Tait, A.B., *Supervisor, Fourth Grade.*
 Margaret F. Tougaw, B.Ed., *Supervisor, Fourth Grade.*
 Ruth White, M.A., *Supervisor, Rhythms.*

City Training Schools

ELEMENTARY SCHOOLS

Nellie M. Dederick, M.A., *Principal, Brockton Avenue Elementary School.*
 George F. Grimes, M.S., *Principal, Nora Sterry Elementary School.*
 Esther McGinnis, B.Ed., *Principal, Clover Avenue Elementary School.*
 Genevieve L. McMahan, A.B., *Principal, Fairburn Avenue Elementary School.*
 Gertrude G. Woodmansee, M.A., *Principal, Warner Avenue Elementary School.*

Training teachers and demonstration teachers in these and other schools are carefully chosen for their ability as teachers and as supervisors by the University supervisory staff and approved by the public school authorities. The personnel varies from year to year.

JUNIOR AND SENIOR HIGH SCHOOLS

- Eugene Olson, Ed.D., *Principal, University High School.*
 Donald R. Pelton, M.S., *Vice-Principal, University High School.*
 Doris H. Miller, M.S., *Vice-Principal, University High School.*
 Alice K. Brees, A.B., *Counselor, University High School.*
 Thomas A. Campbell, M.A., *Principal, Emerson Junior High School.*
 Lewis McAninch, Ed.D., *Vice-Principal, Emerson Junior High School.*
 Mabel-Ella Campbell, M.A., *Vice-Principal, Emerson Junior High School.*
 Margaret A. Ruenitz, M.A., *Counselor, Emerson Junior High School.*
 John C. Holt, M.Ed., *Principal, Los Angeles High School.*
 Robert J. Purdy, A.B., *Principal, Webster Junior High School.*
 William J. Ferguson, M.A., *Principal, Paul Revere Junior High School.*

The secondary 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. Each ordinarily assumes responsibility for the training of not more than three student teachers at any one time.

Letters and Science List.—Courses 100A–100B, 101, 102, 108, 110A–110B and 170 are included in the Letters and Science List of Courses. For regulations governing this list, see page 5.

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 and 100B which are open to high sophomores. Additional prerequisites for enrollment in 100 and 300 series courses will be found on page 56 of this bulletin.

100A–100B. Fundamentals of Education. (2–2) Yr. Mr. Kneller and Staff
 (100A–100B replaces the former 106, 130, and 160. It also replaces 170 in the required credential sequence.)

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.

101. History of Education. (3) I.

The development of educational thought and practice viewed as a phase of the history of Western civilization.

102. History of Education in the United States. (3) II.

The development of significant educational movements in America as a basis for analysis of present-day problems.

108. Sociology of Education. (3) I, II.

Mr. Gordon

(Replaces course formerly numbered 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.

110A-110B. Psychological Foundations of Education. (3-2) I, II.

(Replace courses formerly numbered 110, 111, 112, and 117A.)

Course 110A.

Mr. Keislar, Mr. Leton, Mr. Pressy

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. Sorenson, Mr. Leton

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.

Mr. Keislar, Mr. Helmick

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.

Mr. Smalenburg

Prerequisite: course 110A-110B.

The characteristics of and educational provisions for exceptional children, including the mentally and physically handicapped, the gifted, and the delinquent.

117B. Principles of Guidance, Vocational. (2) I, II.

Mr. Barlow

Prerequisite: Psychology 1A and either 1B or 33.

The philosophy, techniques, and present practices of guidance as applied to the problems of pupil personnel and counseling in the public schools. The emphasis will be upon vocational guidance.

118. Counseling and Guidance for the Handicapped. (2) II.

Prerequisite: course 116.

Mr. Leton, ———

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. Shay, Mr. Leton

Lecture and laboratory. Prerequisite: course 114 or the equivalent.

Introduction to achievement test construction, elementary theory of measurement, survey of measurement techniques, critical study of typical tests and inventories used for estimating aptitude, achievement, attitudes, temperaments, and interests.

***123. Social Backgrounds in the Development of Younger Children. (3) II.**

Prerequisite: 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.

***124. The Arts in Early Childhood Education. (3) II.**

Prerequisite: 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.

128A. Early Childhood Education. (4) I, II.

Mrs. Sherer, _____

Prerequisite: course 100A-100B, 110A-110B, and approval of Selection and Counseling Service. Mathematics 38 recommended. Course 147EC and Art 330 (Kindergarten-Primary) must be taken concurrently. Three morning hours of participation in teaching are required each week in addition to class hours. Students who have taken Education 128 (Kindergarten-Primary) will not receive credit for this course.

Theory and practice in nursery schools, kindergartens, and primary grades, with particular emphasis on social studies, science and mathematics for younger children.

128B. Early Childhood Education. (4) I, II.

Mrs. Sherer

Prerequisite: course 128A, English 118. Music 330 (Kindergarten-Primary) must be taken concurrently.

Language development of children from nursery school age through the primary grades: includes oral and written language, pre-reading, reading, and literature.

135. Curriculum for Mentally Retarded Children. (3) II.

Prerequisite: courses 110A-110B, 116.

Organization, curricula, and procedures in classes for the mentally retarded.

139A. The Elementary School Curriculum. (4) I, II.

Mr. Dutton

Prerequisites: courses 100A and 110A-110B. 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 place of the basic skills in the school program.

139B. The Elementary School Curriculum. (4) I, II.

(139B replaces the former 330.)

Prerequisites: courses 100A and 110A-110B. 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.

***140. The Teacher and Administration. (2) I, II.**

Mr. Berry

The teacher considered as a part of the educational system, and his responsibilities to the organization.

141. Administration of City School Systems. (2) I, II.

Mr. Fawcett

Prerequisite: one year of teaching experience.

The principles of efficient school administration as exemplified in the practices of progressive cities.

142. State and County School Administration. (2) I, II.

Mr. Vredevoe

Prerequisite: consent of the instructor

The organization and administration of state school systems, with special reference to the interrelation of federal, state, and county support and organization.

* Not to be given, 1959-1960.

145. Problems in Public School Finance and Business Administration.

(2) I, II.

Mr. Briscoe

Prerequisite: consent of the instructor.

Methods and problems of financing public education, including a study of the principles of public school business administration, preferred practice, and procedure.

147. Audio-Visual Education. (2) I, II.

Mr. Webster

A course designed to acquaint teachers with the theories and methods of visual instruction and to furnish experience in the utilization of audio-visual aids.

147EC. Audio-Visual Education During Early Childhood. (2) I, II.

Must be taken concurrently with course 128A.

Mr. Webster

Theory and practice in the use of audio-visual materials in early childhood education. The activities emphasize utilization and evaluation of field trips, environmental materials, films and still pictures in instruction.

148. Legal Bases of Public Education in California. (2) I, II.

Mr. Briscoe

Prerequisite: consent of the instructor.

Organization and administration of the California school system, as given in the school law of the State and as interpreted by the rulings of the State Superintendent of Public Instruction and the Attorney General.

148C. Laws Relating to Children. (2) I, II.

Mr. Berry

The educational code, labor code, and welfare code of the State of California, together with federal legislation applicable to school children.

149. Field Work. (2-4) I, II.

Prerequisite: Section 1: course 243A-243B or 246. Section 2: course 194 and 117B, or 217A-217B, and approval by the Selection and Counseling Service of the School of Education.

Section 1. Public School Supervision and Administration.

Mr. Morrisett, Mr. Lucio

Supervised field work in public schools. Limited to candidates for appropriate credentials in Supervision or Administration.

Section 2. General Pupil Personnel Services.

Mr. Leton, Mr. Sorenson

Supervised field work in public schools and other community agencies. Limited to candidates for appropriate credentials in General Pupil Personnel Services.

Section 3. Adult Education.

Mr. Dickerman

Supervised field work in Adult Education.

165. Business Education. (3) II.

Mr. Wanous

The organization, administration, and teaching of business education in secondary schools.

170. Secondary Education. (3) I, II.

Mr. Vredevoe

Prerequisite: Psychology 1A and either 1B or 33 or the equivalent. Course 170 is an elective on credential sequences.

A study of secondary education in the United States, with reference to the needs of junior and senior high school teachers. Special consideration is given to the different areas of the secondary school program and the imperative needs of youth.

194. Principles of Guidance in the Elementary School. (2) I.

Mr. Leton

Prerequisite: courses 110A-110B, 119.

This course includes the study of the functions of guidance personnel, the organization and administration of effective guidance programs, application of evaluation techniques, school records, techniques of child study, the in-service training of teachers, and parent education.

199. Special Studies. (1-5) I, II.

The Staff

Prerequisites: senior standing and consent of the instructor.

GRADUATE COURSES†**200A-200B. Fundamentals of Educational Research. (2-2) Yr.**

Mr. Keislar, Mr. Helmick

Lectures; nonscheduled laboratory. Prerequisite: course 114, or equivalent. 200A is prerequisite for 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.

201. History of Education. (2) I.

Not open to students with credit for Education 101.

A survey of educational ideas and practices in the history of Western civilization.

202. History of Education in the United States. (2) II.

Not open to students with credit for Education 102.

A survey of educational ideas and practices in the history of America.

204A-204B. Comparative Education. (2-2) Yr.

Mr. Jones, Mr. Wilson

(Formerly numbered 197A-197B.)

Prerequisite: course 100A-100B or its equivalent.

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. Advanced. (2-2) Yr.

Mr. Kneller

Prerequisite: course 206A is prerequisite to course 206B.

A critical analysis of philosophic and related forces determining American educational policy and practice.

207A-207B. Adult Education. (2-2) Yr.

Mr. Dickerman

(Formerly numbered 181.)

A survey of the field of adult education: functions, development, clientele, institutions, and practices. Planned for schools administrators and teachers, extension and group workers, health educators, librarians, and others who are responsible for developing programs of adult education.

208A-208B. Advanced Sociology of Education. (2-2) Yr. Beginning either semester.

Mr. Gordon

Prerequisite: course 108, Sociology 180.

Advanced studies in the sociology of educational organizations; the application of sociological concepts and theories to the analysis of educational systems; the interrelationship of their various groups, formal classrooms, voluntary associations, students and small informal school and campus groups.

209A-209B. The Junior College. (2-2) Yr.

Mr. Campion, Mr. Johnson

A study of the history, function, organization, and curriculum of the junior or community college, and of the technical institute. For students interested in or contemplating teaching in the junior college.

210C-210D. Advanced Educational Psychology. (2-2) Yr.

Mr. Keislar

Prerequisite: courses 110A-110B, 114 and 119, or the equivalent. Education 210C is prerequisite to 210D.

† Consent of the instructor is required for all graduate courses.

Exploration and critical study of current literature and research in educational psychology.

216A-216B. Counseling and Guidance of Exceptional Children. (2-2) Yr.

Mr. Smallenburg

Prerequisite: courses 116 and 119. Course 117B recommended.

An advanced course dealing with the principles and techniques of counseling exceptional children; designed for experienced teachers who are preparing for leadership careers in this area.

217A-217B. Principles of Guidance. Advanced. (2-2) Yr. Mr. Sorenson

Prerequisite: courses 110A-110B, 119.

The philosophy, organization, and operation of student personnel work. Designed as a part of special preparation for students intending to make counseling and guidance in school and college their profession.

224A-224B. Vocational Education. Advanced. (2-2) Yr. Mr. Barlow

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.

226A-226B. Business Education. (2-2) Yr. Mr. Wanous

For teachers and students of graduate standing interested in problems related to the organization and supervision of business training on high school and junior college levels.

228A-228B. Early Childhood Education. Advanced. (2-2) Yr. Mrs. Sherer

Prerequisite: course 128A-128B or equivalent, and a minimum of one year's teaching experience.

Critical survey of current literature and research in early childhood education.

230A-230B. Social Studies in Elementary Education. (2-2) Yr. Mr. Lucio

Prerequisite: teaching experience and consent of the instructor.

Advanced study and research in social studies teaching and learning with implications for curriculum development.

233A-233B. Mathematics and Science in Elementary Education. (2-2) Yr.

Mr. Dutton

Prerequisite: teaching experience and consent of the instructor.

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.

***234A-234B. Reading and Language in Elementary Education. (2-2) Yr.**

Mr. Hockett

Prerequisite: teaching experience and consent of the instructor.

Advanced study and research in reading, spelling, and oral and written language. Application of findings to improvement of school curricula.

236A-236B. Evaluation in Elementary Education. (2-2) Yr. _____

Prerequisite: teaching or administrative experience and consent of the instructor.

Critical analysis of theories and principles of evaluation applied to elementary education; review of pertinent research studies in evaluation dealing with all aspects of elementary education.

* Not to be given, 1959-1960.

238A-238B. Curriculum Construction in Elementary Education. (2-2) Yr.
 Prerequisite: teaching experience and consent of the instructor. Mr. Lucio
 Intensive study of research relating to design, evaluative criteria, and staff organization in curriculum improvement.

240A-240B. Organization and Administration of Education. (2-2) Yr.
 Mr. Briscoe, Mr. Vredevoe
 Prerequisite: courses 141 and 145, or the equivalent. 240A is prerequisite to 240B. Open to teachers of experience who wish to qualify for the administration credentials.

An advanced course in the organization and administration of public education in the United States.

***241A-241B. School Surveys. (2-2) Yr.** Mr. Morrisett
 Admission on consultation with the instructor. Not open for credit to students who have credit for Education 241C-241D.

A critical study of the techniques and findings of school surveys combined with practice in making studies of school systems.

243A-243B. Administration of Secondary Education. (2-2) Yr.
 Mr. Vredevoe

Units covered: (A) Legal basis, organization, philosophy, qualifications, and duties of administrators, school plant, records and schedule. (B) Supervision of certificated, noncertificated and student personnel, administration of guidance program, the instructional program, library and evaluation.

For teachers of experience who desire to qualify for the secondary school supervision or secondary school administration credential.

246. Administration of Elementary Education. (2) I. Mr. Lucio

For teachers of experience who desire to qualify for the elementary school supervision or elementary school administration credential. Problems in organization and administration of the modern elementary school.

247A-247B. Audio-Visual Education. Advanced. (2-2) Yr. _____

For supervisors and administrators dealing with the problems involved in developing programs of visual education on the various levels in public school education.

250A-250B. History of Education. Seminar. (2-2) Yr. _____

Prerequisite: courses 101 and 102, or 201 and 202, or the equivalent. Limited to candidates for advanced degrees.

Specialized studies in the history of education.

251A-251B. Supervision of Instruction and Curriculum. Seminar. (2-2) Yr. _____

Open to superintendents, principals, supervisors, training teachers, and other students of graduate standing interested in the intensive study of the organization, administration, practices, and current problems of supervision of instruction.

†253A-253B. Early Childhood Education. Seminar. (2-2) Yr. Mrs. Sherer

For graduate students whose major interest is in the nursery school, kindergarten, or primary education.

***254A-254B. Experimental Education. Seminar. (2-2) Yr.** _____

Prerequisite: courses 110A-110B, 114, 119, 200A-200B. Course 210C-210D is desirable.

Considers the planning of experimental and differential research.

* Not to be given, 1959-1960.

† Offered in alternate years.

254C-254D. Experimental Education. Seminar. (2-2) Yr.

Prerequisite: courses 110A-110B, 114, 119, 200A-200B. Course 210C-210D is desirable.

Considers the construction of aptitude tests, achievement tests, questionnaires, rating devices, and attitude scales.

255A-255B. School Administration. Seminar. (2-2) Yr. Mr. Morrisett

Prerequisite: a teaching credential and course 141 or the equivalent. Limited to candidates for the master's or doctor's degree whose major interest is school administration.

256A-256B. Philosophy of Education. Seminar. (2-2) Yr. Mr. Kneller

Prerequisite: course 100A-100B, 206A-206B. Admission by consent of instructor.

Limited to candidates for advanced degrees whose major interest is philosophy of education.

257A-257B. Audio-Visual Education. Seminar. (2-2) Yr.

Prerequisite: course 147 or the equivalent.

Limited to candidates for advanced degrees whose major interest is audio-visual education and to students desiring to carry on research in this area.

260A-260B. Educational Psychology. Seminar. (2-2) Yr. Mrs. Seagoe

Prerequisite: course 210C-210D, or the equivalent.

Limited to candidates for the master's or doctor's degree whose major interest is educational psychology and to students desiring to carry on research in this area.

262A-262B. The Elementary School Curriculum. Seminar. (2-2) Yr.

Prerequisite: course 139A or the equivalent.

For teachers, curriculum workers, administrators, and other graduate students interested in the intensive study of curriculum problems in the elementary school.

***266A-266B. Vocational Education and Guidance. Seminar. (2-2) Yr.**

Mr. Campion

For graduate students whose major interest is in vocational education, vocational guidance, or closely related problems.

***267. Research Problems in Education. Seminar. (2) II.**

Prerequisite: courses 254A-254B or 254C-254D. Limited to graduate students whose major interest is in educational research.

The course content is different in alternate years. In even-numbered years the problems studied and the procedures employed in collegiate bureaus of educational research will be considered. In odd-numbered years the seminar will deal with the problems investigated and methodologies employed in public school research.

270A-270B. Secondary Education. Seminar. (2-2) Yr. Mr. Vredevoe

Prerequisite: course 100A-100B. Limited to candidates for the master's or doctor's degree whose major interest is in secondary education, and to students desiring to pursue research in this area.

(A) Problems and issues in secondary education. (B) Evaluation of the secondary schools.

275A-275B. The Secondary School Curriculum. Seminar. (2-2) Yr.

Prerequisite: course 100A-100B.

Mr. McNeil

For teachers, curriculum workers, administrators, and other graduate students interested in the intensive study of curriculum development on the secondary school level, with emphasis on current problems and trends.

* Not to be given, 1959-1960.

276A-276B. Research in Supervision and Curriculum. (1-4; 1-4) Yr.

Prerequisite: course 275A or 275B.

For graduate students who desire to pursue independent research in the curriculum.

277A-277B. Counseling Theory and Practice. Seminar. (2-2) Yr.

Mr. MacLean

Prerequisite course 217A-217B. Limited to candidates for advanced degrees whose major interest is counseling, and to selected high school and college counselors.

278A-278B. Technical Education in the Junior College. (2-2) I, II.

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.

279A-279B. The Junior College. Seminar. (2-2) Yr.

Prerequisite: course 209A-209B. Mr. Johnson, Mr. MacLean, Mr. Campion

For graduate students whose major interest is higher education. In 1959-1960 the emphasis will be upon the junior college, the technical institute, or closely related areas of study.

281A-281B. Adult Education. Seminar. (2-2) Yr.

Mr. Kaplan

Prerequisite: course 207A-207B.

Discussion of trends, problems, and recent research. For professional adult educators.

292A-292B. Research in Educational Administration. (1-4; 1-4) Yr.

Mr. Briscoe, Mr. Morrisett, Mr. Vredevoe, Mr. Fawcett

Prerequisite: teaching experience in elementary or secondary schools.

298A-298B. Research in Education. (2-6; 2-6) Yr.

The Staff

Limited to candidates for the Doctor of Education degree who have been advanced to candidacy.

COURSES PREPARATORY TO SUPERVISED TEACHING

370. Teaching in Secondary Schools. (3) I, II.

Mr. Bond

Prerequisite: for secondary candidates, 100A-100B. For junior college candidates, 209A or 209B may be taken concurrently.

Teaching and learning in the secondary school. Preparation of curriculum materials; study of procedures and methods, including the evaluation of outcomes. Prerequisite to all supervised teaching for the general secondary or junior college credentials. The course prepares for and leads to placement in supervised teaching.



Other courses in teaching methods in special subjects will be found listed in the 300 series, Professional Courses in Method, in the offerings of the various departments, and in the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES.

SUPERVISED TEACHING

All candidates for supervised teaching must secure approval of Selection and Counseling Service at least one semester prior to application for assignment.

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, Webster 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.

All candidates for supervised teaching must obtain the recommendation of a University physician prior to assignment. Formal application for assignment must be made at the Office of the Director of Training about the middle of the semester preceding that in which such teaching is to be done.

Undergraduate candidates for kindergarten-primary, elementary, and special secondary teaching must have maintained at least a C average in all courses in education, in all courses comprising the major, and in all work completed at the University of California.

For Permit to Teach in Child Care Centers

N334. Supervised Teaching in the Nursery School. (2-4) I, II.

Open to candidates seeking permit to teach in child-care centers, and to others preparing to teach in nursery schools, parent-child observation classes, and parent cooperatives. Does not meet the requirement in supervised teaching for kindergarten-primary or general elementary credentials.

For Kindergarten-Primary and General Elementary Credentials

EC335A-EC335B. Supervised Teaching: Early Childhood Education. (4-4) I, II.

Prerequisite: senior standing, Education 128A, 128B, 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.

EC336. Supervised Teaching: Early Childhood Education. (1-4) I, II.

Supplementary teaching which may be elected by the student or, in certain cases, required by the department.

E335A-E335B. Supervised Teaching: General Elementary. (4-4) I, II.

Prerequisite: senior standing, Education 139A-139B, 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.

E336. Supervised Teaching: General Elementary. (1-4) I, II.

Supplementary teaching which may be elected by the student or, in certain cases, required by the department.

**For Special Secondary Credentials*

Art—A year sequence of 3 units per semester (total of 6 units) is required as follows:

A375. Supervised Teaching in Art. (3) I, II.

Prerequisite: senior standing Education 100A-100B, Art 370A, approval of the Department of Art and the Director of Training.

and

A376. Supervised Teaching in Art. (3) I, II.

Prerequisite: senior standing, Education 100A-100B, A375, Art 370A-370B, approval of the Department of Art and the Director of Training.

* Recommended programs on the Los Angeles campus leading to special secondary credentials are being discontinued. Certificates of completion for these credentials will not be awarded after September 15, 1961.

Business Education—A year sequence of 3 units per semester (total of 6 units) as required as follows:

B375 and B376. Supervised Teaching in Business Education. (3-3) I, II.

Prerequisite: senior standing, Education 100A-100B, 4 units from Business Education 370A, 370B, 370C, 2 of which may be taken concurrently with Education B375, approval of the Department of Business Education and the Director of Training.

Home Economics—A year sequence of 3 units per semester (total of 6 units) is required as follows:

H375. Supervised Teaching in Home Economics. (3) I, II.

Prerequisite: senior standing, Education 100A-100B, Home Economics 370, approval of the Department of Home Economics and the Director of Training.

and

H376. Supervised Teaching in Home Economics. (1-3) I, II.

Prerequisite: senior standing, Education 100A-100B, Home Economics 370, approval of the Department of Home Economics and the Director of Training.

Music—A year sequence of 3 units per semester (total of 6 units) is required as follows:

M 375. Supervised Teaching in Music. (3) I, II.

Prerequisite: high junior standing, Music 369, approval of the Department of Music and the Director of Training.

and

M376. Supervised Teaching in Music. (3) I, II.

Prerequisite: senior standing, Education 100A-100B, M375, Music 369, 370, approval of the Department of Music and the Director of Training.

Mentally Retarded—

MR376. Supervised Teaching: Mentally Retarded. (4) I, II.

Prerequisite: Education 135; and at least 8 units of supervised teaching for the general elementary credential or 6 units for the general secondary credential. MR376 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.

Physical Education—A year sequence of 3 units per semester (total of 6 units) is required as follows:

P375 and P376. Supervised Teaching in Physical Education. (3-3) I, II.

Prerequisite: senior standing, Education 100A-100B, Physical Education 370 (Men), or 326A-326B and 327A-327B (Women); approval of the Department of Physical Education and the Director of Training.

Speech Correction—

SC376. Supervised Teaching: Speech Correction and Lip Reading. (4) I, II.

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. SC376 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.

For the Junior High School Credential

J374. Supervised Teaching: General Junior High School. (2-6) I, II.

Prerequisite: course E335A-E335B or a minimum of 6 units of teaching in a special field.

For General Secondary Credentials

A year sequence of 3 units per semester (total of 6 units) is required as follows:

Required for the University-Recommended General Secondary Credential

G377—Supervised Teaching, Major: and G378—Supervised Teaching, Minor: General Secondary. (3-3) I, II.

General prerequisites: regular graduate status, Education 100A-100B, 370.

Special methods courses in majors and in minors as follows: Art: courses 370A, 370B; Business Education: 2 units from Business Education 370A, 370B, 370C; English (and Speech): English 370; French: course 370; German: course 370; Health Education: Life Science 370; Physical Education 145B; Physical Science 370; Home Economics: course 370; Mathematics: course 370; Music: course 370; Physical Education (Men): courses 370, 145B; Physical Education (Women): courses 326A-326B; 327A-327B; Spanish: course 370 (may be taken concurrently with supervised teaching); Speech and Speech-English: Speech 370.

Approval of the department of the undergraduate major subject and consent of the Director of Training.

Required for the General Secondary Credential, Students in Unclassified Graduate Status

384A—Supervised Teaching, Major; and 384B—Supervised Teaching, Minor: General Secondary. (3-3) I, II.

General prerequisites: unclassified graduate status, Education 100A-100B, 370.

Special methods courses in majors and in minors as follows: Art: courses 370A, 370B; Business Education: 2 units from Business Education 370A, 370B, 370C; English (and speech): English 370; French: course 370; German: course 370; Health Education: Life Science 370; Physical Education 145B; Physical Science 370; Home Economics: course 370; Mathematics: course 370; Music: course 370; Physical Education (Men): courses 370, 145B; Physical Education (Women): courses 326A-326B, 327A-327B; Spanish: course 370 (may be taken concurrently with supervised teaching); Speech and Speech-English: Speech 370.

Scholarship averages:

- 1) 2.5 or better in all courses comprising the undergraduate college major and minor subjects.
- 2) 2.5 or better in all upper division courses.
- 3) 2.5 or better in all courses subsequent to the bachelor's degree.
- 4) 2.5 or better in all education courses.

Approval of the department of the undergraduate major subject and consent of the Director of Training.

For the Junior College Credential

G379. Supervised Teaching: Junior College. (4) I, II.

Prerequisite: regular graduate status, Education 209A or 209B and 370; approval of the department concerned and consent of the Director of Train-

ing. Restricted to candidates for the junior college credential alone, who intend to teach classes in a junior college.

Supplementary Teaching

383. Supervised Teaching. Supplementary teaching in any secondary field. (1-6) I, II.

Prerequisite: previous student teaching or regular public school teaching experience; Education 100A-100B; and consent of the Director of Training.

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, M.Sc., *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 (Chairman of the Department).*

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.*

Reno Cole, M.S., *Professor of Engineering.*

†Edward P. Coleman, Ph.D., *Professor of Engineering.*

C. Martin Duke, M.S., *Professor of Engineering (Vice-Chairman in Charge of Academic Activities).*

John M. 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.*

Martin R. Huberty, Engr., *Professor of Engineering and Professor of Irrigation.*

Walter C. Hurty, M.S., *Professor of Engineering (Vice-Chairman in Charge of the Institute of Industrial Cooperation).*

W. Julian King, M.E., *Professor of Engineering.*

William J. Knapp, D.Sc., *Professor of Engineering.*

Tung Hua Lin, D.Sc., *Professor of Engineering.*

Joseph F. Manildi, Ph.D., *Professor of Engineering.*

Wendell E. Mason, M.S., M.E., *Professor of Engineering (Vice-Chairman in Charge of Laboratory Facilities).*

†John H. Mathewson, M.S., *Professor of Engineering.*

John W. Miles, 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.*

† Absent on leave, 1959-1960.

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.*

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.*

Myron Tribus, Ph.D., *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.*

Thomas J. Connolly, Ph.D., *Associate Professor of Engineering.*

Robert S. Elliot, Ph.D., *Associate Professor of Engineering.*

Jacob Frankel, Ph.D., *Associate Professor of Engineering.*

Daniel Gerlough, Ph.D., *Associate Professor of Engineering.*

Warren A. Hall, Ph.D., *Associate Professor of Engineering.*

Darell B. Harmon, Jr., Ph.D., *Associate Professor of Engineering.*

John C. Harper, D.Sc., *Associate Professor of Engineering and Associate Professor of Agricultural Engineering, Resident at Davis.*

Thomas E. Hicks, Ph.D., *Associate Professor of Engineering.*

†Richard D. Johnston, M.S., *Associate Professor of Engineering.*

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.*

Bruce R. Mead, 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.*

Alan Powell, D.L.C., Ph.D., *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.*

James R. Alder, Ph.D., *Assistant Professor of Engineering.*

Harold Davis, Ph.D., *Assistant Professor of Engineering.*

John Isherwood, Ph.D., *Assistant Professor of Engineering.*

Richard C. Mackey, M.S., *Assistant Professor of Engineering.*

Ken Nobe, Ph.D., *Assistant Professor of Engineering.*

Lowell Dean Amdahl, M.S., *Lecturer in 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.*

†Richard H. Haase, B.S., M.B.A., *Lecturer in Engineering.*

Gerald L. Hassler, Ph.D., *Lecturer in Engineering.*

† Absent on leave, 1959-1960.

Sam Houston, Ph.D., *Lecturer in Engineering.*
 Kiyoshi Kanai, E.E., D.Sc., *Visiting Lecturer in Engineering.*
 John B. Powers, B.S.E.E., *Lecturer in Engineering.*
 John Rex, A.B., *Lecturer in Engineering.*
 John M. Salzer, D.Sc., *Lecturer in Engineering.*
 John M. Server, Jr., B.S., *Lecturer in Engineering.*
 George J. Tauxe, M.S., *Lecturer in Engineering.*
 Willis H. Ware, Ph.D., *Lecturer in Engineering.*
 Abe M. Zarem, Ph.D., *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.*
 Adin E. Mathews, M.S., *Associate in Engineering.*
 William R. Micks, M.S., *Associate in Engineering.*
 Gerhard F. Paskusz, M.S., *Associate in Engineering.*
 Harry C. Showman, B.S., *Associate in Engineering.*
 Edward W. Wedbush, M.E., M.B.A., *Associate in Engineering.*
 Arthur J. Winter, M.S., *Associate in Engineering.*

Letters and Science List.—Courses 1A, 1B, 2, 4A, 15A–15B, 102B, 155A.

Enrollment in engineering courses is permitted to students from other colleges who are undertaking curricula in which engineering courses are prescribed. A non-engineering student may be admitted to engineering courses by petition approved by the Dean of his College and by the Dean of the College of Engineering. Except for service courses, enrollment in Engineering courses normally is open only to students in the College of Engineering.

SERVICE 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. 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 170A. Occasional field trips will be scheduled. For students in Applied 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. 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. Grandi in charge

Demonstration and lecture, two hours; laboratory, six hours. Concurrent or prerequisite: 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. Grandi in charge

Demonstration and lecture, two hours; laboratory, six 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. Grandi in charge

Lecture, two hours; laboratory, three hours. Prerequisites: course 4B; Chemistry 1B, Physics 1A, Mathematics 5B. Not open for full credit to students who have had course 8.

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. Grandi in charge

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. McCutchan 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. 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.

* To be given every other year; not to be given 1959-1960.

* To be given when there is sufficient demand.

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.

96. Engineering and Society. (2) I, 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.

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. Junior status in the College of Engineering is prerequisite to all upper division courses.

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. Mathews 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 fields 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. 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 in charge

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. E. F. King 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.

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. Heat Transfer and Thermodynamics. (3) I, II. Mr. Tribus in charge

Prerequisite: Mathematics 110AB or 110C (may be taken concurrently).

Concepts of temperature, heat, and work. First and second laws of thermodynamics. Properties of perfect and real gases. Thermodynamic properties of fluids. Relationships among thermodynamic functions and applications to properties of matter.

105B. Heat Transfer and Thermodynamics. (3) I, II. Mr. Tribus in charge

Prerequisite: course 105A. Recommended to be taken concurrently: course 103A.

Applications of thermodynamic principles to flow of fluids, compression and expansion processes, vapor and gas power cycles, refrigeration. Heat transfer by conduction, convection, and radiation. Mixtures of gases and vapors, psychrometric principles, thermochemistry and chemical equilibrium, the third law.

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.

108A. Strength of Materials. (3) I, II.

Mr. 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). Not open for credit to students who have had courses 15A or 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, deflections; 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, 181A.

Synthesis of electrical networks for communications, feedback and control systems, and computers; underlying concepts and methods of linear analysis and system realizability; methods of specification; modern techniques of transfer function synthesis.

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, 115D, 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.

***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.

* A maximum of 12 units credit is allowable for combinations of Engineering 115ABCDE.

- *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.
- *115E. Applications of Electronic Circuits to Engineering Data.** (3) I, II.
(Numbered 198 prior to 1959-1960.) Mr. E. F. King
Prerequisite: senior standing and course 115A or equivalent.
Analog and digital circuits applied to the processing of engineering data; analog to digital conversion, data storage devices; consideration of error limitations.
- 117A. Applied Electromagnetic Theory I.** (3) I, II. Mr. Hershberger
Prerequisite: course 115A. 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. Hershberger
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) II. Mr. 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) I, 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.
- 130A. Environmental Biotechnology.** (3) I, II. Mr. Lyman in charge
Prerequisite: course 105A (may be taken concurrently), Physics 1D, Mathematics 6B.

* A maximum of 12 units credit is allowable for combinations of Engineering 115ABODE.

Physical, physiological, and psychological phases of the interaction between man and thermal, atmospheric, radiant, and mechanical agents and energies in the environment. Emphasis is laid upon the biomechanical and environmental aspect of human factors in engineering.

130B. Machine and Systems Biotechnology. (3) I, II. Mr. Lyman in charge
Prerequisite: junior standing in engineering. Occasional field trips may be scheduled.

Introduction to the methods and results pertinent to engineering design which involve the man-machine relationship. Discussion of modes of analysis and representative applications to visual, auditory, and other sensory displays. Limits of human capacity for correlating and applying information as functional links in engineering systems.

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. Harmon
(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-environmental 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. servo components and detailed study of servomechanisms drawn from practice.

136B. Control Systems Theory. (3) I. 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.

† Given alternate years; not to be given, 1959-1960.

- 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 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.

- 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. Oil Field Development. (3) I.** Mr. Karplus
Prerequisite: course 103A; course 105B (may be taken concurrently).
Field trips will be made.

Origin, accumulation, and properties of petroleum; petroleum reservoirs, exploration methods, drilling methods, mud technology, well completion, logging methods, and core analysis.

- 143B. Oil and Gas Production. (3) II.** Mr. Karplus
Prerequisite: course 143A or consent of the instructor. Occasional field trips will be scheduled.

Oil and gas production mechanisms; internal gas drive, water drive, gravity drainage, recycling; thermodynamic relations, reservoir forces, fundamental equations, secondary recovery.

- 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, dif-

fraction 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. Mr. Tribus
(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; integral 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. Harmon
(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. Tribus
(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 thermo-

dynamic 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.

152A. Mass Transfer. (3) I, II.

Mr. Connolly

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. Connolly

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 and senior standing in engineering.

Studies of the major elements 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.

(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) I, II.

(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) II.

(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.

161A. Advanced Kinematics of Mechanisms. (3) I, II

(Numbered 180 prior to 1959-1960.)

Mr. Beggs in charge

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) I, 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) 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, photo elasticity.) Criteria of flow and fracture. Homogeneous 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 5 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 106O 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 ad-

vanced 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 ma-

trices; 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 prob-

lems; emphasis placed upon practical validity and use of common-sense and empirical methods.

185B. Dynamic Programming. (3) II.

Mr. O'Neill

(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) 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 analogues 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, 1959, and are indicative of the material which may be offered for the spring semester, 1960:

Fall Semester, 1959

Aeroelasticity. (3)

Fundamentals of Corrosion. (3)

Mechanics of Missile Guidance. (3)

Physical Measurements. (3)

Boundary Layer Theory with Applications to Aerodynamics, Part II. (3)

Fatigue of Metals. (2)

Problems in Engineering Education. (1)

‡Engineering Design. (3)

‡Properties of Materials. (3)

‡ Applicable only toward B.S. degree.

199. Special Studies. (1-5) I, II.

Mr. Boelter in charge

Prerequisite: senior standing and consent of the instructor.

Occasional field trips may be arranged.

GRADUATE COURSES

Courses in the 200 series are open only to regular 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; ad-joint 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 217A or consent of instructor.

Energy levels in gases and solids, dielectric materials, paramagnetism and ferromagnetism, ferrites, spin resonance effects, absorption and reradiation effects, masers.

***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.

Hallen-Aharoni theory of linear antennas; Schelkunoff array theory. Dolph-Tchebyscheff aperture distribution; two-dimensional scanning arrays; effect of mutual coupling; dipole, slot and helix as single radiators and as array elements; frequency-independent antennas.

* Not to be given, 1959-1960.

- *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) I.** Mr. Miles
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.
- 221B. Hypersonic Aerodynamics. (3) II.** Mr. Miles
(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.

* Not to be given, 1959-1960.

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. Aerodynamic Noise. (3) II. Mr. Powell
(Numbered 298 prior to 1959-1960.)

Prerequisite: fluid mechanics, vibration theory or acoustics; or consent of instructor.

Theoretical developments are compared to experimental results to give a fundamental outlook on noise production by turbulent jets, pulse jets, boundary layers, unsteady shockwaves, and selected phenomena such as jet-and-edge-tones, "transduced" boundary layer noise, structural fatigue.

225A. Aerothermochemistry. (3) II. 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.

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 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 186B, 186A.

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.

* Not to be given, 1959-1960.

236B. 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. Special Problems in Petroleum Production. (3) I. Mr. Karplus
(Numbered 298 prior to 1959-1960.)

Prerequisite: a course in petroleum reservoir engineering or equivalent experience.

A study of such problems as unsteady state flow, special production techniques, production energy, models, and others.

245A. Properties of Engineering Materials. (3) I. Mr. Rosenthal in charge
(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. Mr. Knapp
(Numbered 298 prior to 1959-1960.)

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. Mr. Harmon, Mr. Van Vorst
(Numbered 251A 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. Mr. Tribus
(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. Mr. Tribus
(Numbered 298 prior to 1959-1960.)

Prerequisite: courses 105A, 105B 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) II. Mr. Hicks

Prerequisite: course 155A or equivalent.

Derivation of the reactor equations, age theory, reactor kinetics, temperature 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) I. Mr. Hicks
(Numbered 298 prior to 1959-1960.)

Prerequisite: course 156A. 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: elementary vibrations.
Advanced topics relating to current dynamical problems.
- 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.
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 108B, Mathematics 110C or equivalent; course 163A, 263C recommended.
Deformation theory, flow theory, slip theories of plasticity and their limitations, simple inelastic structures as inelastic beams, shafts, columns, spherical shells, thick cylinders, rotating discs and cylinders, plastic hinges in rigid frames and visco-elastic structures.
- *263E. Theory of Discs, 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 discs; 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 deflection of shells; irreversible deflection of shells; stable and unstable deformations to be considered; typical applications.

* Offered in alternate years. Not to be given, 1959-1960.

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.

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.

† Open only to Engineering Executive Program students. Consult the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION.

†272A-272B-272C. **The Engineer in the Business Environment.** (1-4; 1-4; 1-4) 3 semesters, beginning in the spring. Mr. Manildi in charge

Prerequisite: acceptance to the Engineering Executive Program.

Accounting theory. Analysis of financial statements with special reference to their use in and effect on 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. Zizicas in charge

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.

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. Occasional field trips may be arranged.

† Open only to Engineering Executive Program students. Consult the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION.

299. Research in Engineering. (1-5) I, II.

Mr. Boelter in charge

Occasional field trips may be arranged.

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.*John Jenkins Espey, B.Litt., M.A. (Oxon.), *Professor of English.*Majl Ewing, Ph.D., *Professor of English.*Earl Leslie Griggs, Ph.D., D.Lit. (London), *Professor of English.*Leon Howard, Ph.D., *Professor of English.*Paul Alfred Jorgensen, Ph.D., *Professor of English.*Wesley Lewis, Ph.D., *Professor of Speech.*Alfred Edwin Longueil, Ph.D., *Professor of English.*William Matthews, Ph.D., *Professor of English.*James Emerson Phillips, Jr., Ph.D., *Professor of English (Chairman of the Department).*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., *Professor of English, Emeritus.*Ralph Cohen, Ph.D., *Associate Professor of English.*† Vinton Adams Dearing, Ph.D., *Associate Professor of English.*Robert Paul Falk, Ph.D., *Associate Professor of English.*Elise Stearns Hahn, Ph.D., *Associate Professor of Speech.*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.*Blake Reynolds Nevius, Ph.D., *Associate Professor of English (Vice-Chairman of the Department).*Ada Blanche Nisbet, Ph.D., *Associate Professor of English.*Waldo Woodson Phelps, Ph.D., *Associate Professor of Speech.*Clifford Holmes Prator, Ph.D., *Associate Professor of English.*‡ Ralph Richardson, Ph.D., *Associate Professor of Speech.*‡ John Frederic Ross, Ph.D., *Associate Professor of English.*

* Not to be given, 1959-1960.

† Sabbatical leave, 1959-1960.

‡ Absent on leave, 1959-1960.

‡ In residence fall semester only, 1959-1960.

- †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*.
 Harriet Margaret MacKenzie, Ph.D., *Associate Professor of English, Emeritus*.
 Michael J. D'Asaro, Ph.D., *Assistant Professor of Speech*.
 Robert Adamson Bone, Ph.D., *Assistant Professor of English*.
 Robert William Dent, Ph.D., *Assistant Professor of English*.
 Philip Calvin Durham, Ph.D., *Assistant Professor of English*.
 Charles Vincent Hartung, Ph.D., *Assistant Professor of English*.
 Alfred Lewis Larr, Ph.D., *Assistant Professor of Speech*.
 Robert Thomas Lenaghan, Ph.D., *Assistant Professor of English*.
 Earl Roy Miner, Ph.D., *Assistant Professor of English*.
 *Lowry Nelson, Jr., Ph.D., *Assistant Professor of English*.
 Florence H. Ridley, Ph.D., *Assistant Professor of English*.
 Walter Heinrich Evert, M.A., *Acting Instructor in English*.
 Budolph Everett Habenicht, M.A., *Acting Instructor in English*.
 James Murray, Ed.D., *Lecturer in Speech*.
 Frances Clarke Sayers, *Lecturer in English*.
 William H. Buell, M.A., *Associate in English*.
 Harriett Ramras, M.A., *Associate in English*.
 Jane J. Robinson, Ph.D., *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*.

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 20 C of this bulletin.

Letters and Science List.—All undergraduate courses in English except 370 and all undergraduate courses in speech except 370 are included in the Letters and Science List of Courses. For regulations governing this list, see page 5.

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 or German 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 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

* Absent on leave, 1959-1960.

† Sabbatical leave in residence, fall semester 1959-1960.

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; 190A-190B or 3 units from 131, 132, 133; (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 370; 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.

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, and during the Summer Session for the M.A. degree alone.

2. Departmental requirements: (1) Students are required to take the reading test in French or German at the beginning of the first semester of residence. (2) They must complete at least 24 units in English, including the following: course 201; either 110 or 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 courses. The Comprehensive Examination for the M.A. consists of an oral examination of not less than one hour covering the candidate's general knowledge of English and American literature. For the M.A. leading to the Ph.D., see "Requirements for the Doctor's Degree," following.

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 must 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 take courses in preparation for Part I of the Qualifying Examinations for the doctor's degree (200, 211; four courses chosen from 221, 222, 223A, 223B, 224, 225, 226; one graduate seminar and three units of elective). Passing this examination will entitle him to the master's degree. Part I of the Qualifying Examinations will consist of four written examinations, each one and one-half hours long, and a two-hour oral examination. Part I of the Qualifying Examinations must be taken before the candidate has completed more than 30 units of graduate work. If the candidate does well in these examinations, he will be encouraged to proceed further with graduate study. (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 290.

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. _____
 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. _____ The Staff
 Prerequisite: English 1A.
 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. _____
- *4D. Great Books: the Continental Novel.** (1) II. _____
- *4E. Great Books: Lyric Poetry.** (1) I. _____

* Not to be given, 1959-1960

*4F. Great Books: Narrative Poetry. (1) II.

4G. Great Books: Famous Utopias. (1) I.

Mr. Kinsman in charge

4H. Great Books: Great Satirists. (1) II.

Mr. Kinsman in charge

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

Prerequisite: course 1A-1B.

Mr. Jorgensen in charge

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, 116, 117J, 118, 125C-125D, 130, 133, 135, 136, 151M, 153, 190A, 190B, for which 1A is prerequisite, and 195, for which 1A and 1B are prerequisite. Theater Arts students may substitute Humanities 1A-1B for course 46A-46B as a prerequisite for 114C, 114D, 114E. 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

Prerequisite: consent of the instructor.

106C. Critical Writing. (2) I, II.

Mr. Jorgensen, Mr. Ross

106D-106E. Fundamentals of Dramatic Writing. (3-3) Yr.

Mr. Savage

For admission to this course, candidates should submit to the instructor an original one-act play or one act of a full-length play by September 15, 1959.

106F. Exposition. (2) I, II.

Mr. Espey

* Not to be given, 1959-1960.

106L. Advanced Composition for Teachers. (2) I, II.

Mr. Hartung, Mr. Jorgensen, Mr. Lenaghan
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. Bishop, Mr. Durham

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) II. Mr. Matthews, Mr. Stockwell**114A-114B. English Drama from the Beginning to 1900. (3-3) Yr.**

Mr. Dent, Mr. Smith

114C. Contemporary Drama. (2) I, II.

Mr. Smith, Mr. Wadsworth

114D-114E. English Plays and Playwrights. (3-3) Yr.

Mr. Smith, Mr. Wadsworth

Prerequisite: English 46A-46B or Humanities 1A-1B. Designed primarily for students in the Theater Arts. The course will not satisfy the Type requirements for the English major. Students will not receive credit for both 114A-114B and 114D-114E.

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.

116. The English Bible as Literature. (3) 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) II.

Prerequisite: course 117J.

Mr. Dent, Mr. Jorgensen, Mr. Wadsworth

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. 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. Bishop, 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. Durham, Mr. Nevius
Not open to students who have not had 46A-46B.
133. **American Life in American Letters.** (3) II. 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) I. 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. Lenaghan, Mr. Matthews
153. **Introduction to the Study of Poetry.** (3) I, II. Mr. Jones, Miss Nisbet
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. **Literature in English from 1900.** (2) I. Mr. Ewing, Mr. Nevius
Criticism; the novel.
- 190B. **Literature in English from 1900.** (2) 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.
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. 1959-1960: first semester—T. S. Eliot; second semester—Samuel 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 1, 2; second semester, May 3, 4.

Mr. Longueil in charge

GRADUATE COURSES

200. **Bibliography.** (3) I, II. Mr. Dearing, Mr. Dick
201. **The Functions of Literary Criticism.** (3) I, II. Mr. Longueil
211. **Old English.** (3) I. Mr. Matthews, Mr. Stockwell
212. **Middle English.** (3) II. Mr. Matthews, Mr. Stockwell
Prerequisite: course 211.
213. **The Development of Modern English.** (3) I.
Prerequisite: course 212. Mr. Matthews, Mr. Stockwell
221. **Medievalism.** (3) II. 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. 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
- *252A-252B. **History of Literary Criticism. Seminar.** (3-3) Yr. Mr. Griggs
- 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

* Not to be given, 1959-1960.

† Offered in alternate years.

- 261L. *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. Smith
- *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) II. Mr. Smith
- *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) II. Mr. Griggs
- *265C. *Studies in Victorian Poetry.* (3) I. 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
- 266B. (3) I. Mr. Ewing
- 270A, B, C, D, E, F. *Studies in American Literature. Seminar.*
- *270A. *American and European Literary Relations.* (3) I. Mr. Howard
- *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
 290. Special Problems. (1-6) I, II. The Staff

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 20 C 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 regular graduate students. With the approval of the Dean of the Graduate Division and the Chairman of the Department of English, regular 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 the following 24-unit program of post-graduate work: First semester—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 requirement for foreign students, nonnative speakers may be required to take English 33B in lieu of this elective); second semester—English 106K, English 111, English 370L, 3 units from English 118, 132, 133, 135, or 201. (3) Certificate candidates in regular 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.

Mr. Prator

Prerequisite: consent of the instructor.

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. Prator

Exercises 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.

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.

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 20 C 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 (108, 109, 112, 116A, 123), 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 198.

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 preparation (12 units): Education 116 or Psychology 161; Education 118 or 216A; Speech 140, Education SC376.

(b) Area of specialization—Speech correction and lipreading (15 units): Psychology 162; Speech 103, 142A-142B, 145, 146, 147.

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.

Requirements 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 requirement. 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 290.

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

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| <p>1. Introduction to Speech. (3) I, II. The Staff
 (Formerly numbered 1A.)
 The basic principles and practices of effective oral communication in platform speaking, group discussion, and oral reading.</p> |
| <p>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.</p> |
| <p>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.</p> |
| <p>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.</p> |

UPPER DIVISION COURSES

- 103. Phonetics. (3) II.** 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, of ambiguity of terms, or prejudices.
- 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.
Preparation and delivery of special forms of public address.
- 111. Theories and Techniques of Interpretation. (3) I, II.**
(Formerly numbered 111A.) Mr. Hargis, Mr. Vandraegen
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.**
(Formerly numbered 111B.) Mr. Hargis, Mr. Vandraegen
Prerequisite: course 4 or the equivalent. Either 112A or 112B may be taken for credit by students who have credit for 111B.
- 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
Required course for special secondary credential in speech correction.
Problems and methods of correcting speech defects.
- 142A. Methods of Speech Correction.** (2) I, II. Mrs. Hahn
Prerequisite: Speech 140, Psychology 162; the latter course may be taken concurrently.
Observation of methods in the Speech Clinic of the Psychological Clinic.
- 142B. Methods of Speech Correction.** (2) I, II.
Prerequisite: Speech 142A. Mr. D'Asaro, Mrs. Hahn, Mr. Sheehan
Practice in methods in the Speech Clinic of the Psychological Clinic.
- 145. Introduction to Audiology.** (2) I. Mr. Larr
- 146. Principles and Methods of Pure Tone and Speech Audiometry.** (2) II.
Mr. Larr
- 147. Principles and Techniques of Lipreading.** (2) II. Mr. Larr
- 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) I. Mrs. Hahn
- 240B. Cerebral Palsy and Aphasia.** (3) II. 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. Mrs. Hahn
 270B. Speech Therapy. (3) II. Mrs. Hahn
 275. Seminar in Audiology. (3) II. Mr. Larr
 290. Individual Directed Research. (3) I, II. The Staff

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).*
 Roland N. Jefferson, Ph.D., *Professor of Entomology.*
 Leland R. Brown, Ph.D., *Associate Professor of Entomology.*
 I. Barry Tarshis, Ph.D., *Assistant Professor of Entomology.*

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 COURSES

- *100. General Entomology. (4) II. Mr. Belkin
 Lecture, two hours; laboratory, six hours. Offered in alternate years.
 The classification, life history, structure, and physiology of insects.
- *100C. Entomotaxy. (1) II. Mr. Belkin
 Laboratory, three hours; four or five Saturday field trips. Prerequisite or concurrent: course 100. Offered in alternate years.
 Collection, preservation and preparation of insects for study; rearing methods; identification of local forms.
105. Introduction to Structure and Function in Insects. (5) II. Mr. Belkin
 Lecture, two hours; laboratory, nine hours. Prerequisite: course 100 or equivalent. Offered in alternate years.
 Comparative anatomy and physiology of selected insect types; anatomical and histological techniques; general principles of insect physiology.
- *112A. Systematic Entomology. (3) I. Mr. Belkin
 Lecture, three hours. Offered in alternate years.
 History and principles of classification; taxonomic categories and procedure; nomenclature, bibliographical methods; museum practices.
126. Medical Entomology. (4) I. Mr. Belkin
 Lecture, two hours; laboratory, six hours.
 The role of insects and other arthropods in the transmission and causation

of diseases of humans and other warm-blooded vertebrates; their structure, classification, and life history. Principles of vector control.

126C. Laboratory and Field Methods in Medical Entomology. (1) I.

Laboratory, three hours; four or five Saturday field trips. Mr. Belkin
Prerequisite or concurrent: course 126.

Collection, preservation and preparation of arthropods for study; laboratory and field survey methods; rearing techniques; identification of local forms.

134. Insects Affecting Subtropical Fruit Plants. (4) II. Mr. Ebeling

Lecture, two hours; laboratory, six hours; several field trips.

Biology, economic importance, and control of insects affecting citrus and other subtropical fruit plants. Insecticides; spraying, dusting, and fumigating methods and equipment.

144. Insects Affecting Ornamental Plants and Flower Crops. (4) II.

Mr. Jefferson, Mr. Brown

Lecture, three hours; laboratory, three hours; several field trips. Offered in alternate years.

Biology, economic importance, and control of insects affecting field flower crops, greenhouse and nursery plants, and ornamental trees and shrubs. Insecticides; spraying, dusting, and fumigating methods and equipment.

199. Special Studies. (2-4) I, II.

The Staff

Prerequisite: senior standing and consent of the instructor.

GRADUATE COURSES

***226. Advanced Medical Entomology. (2) II.** Mr. Belkin, Mr. Tarshis

Lecture, two hours. Prerequisite: course 126; Zoology 111. Recommended: Course 100, 105; Zoology 110, 115. Offered in alternate years.

Genesis and entomological aspects of arthropod-borne diseases.

***226C. Laboratory in Advanced Medical Entomology. (1) II.**

Mr. Belkin, Mr. Tarshis

Laboratory, three hours. Prerequisite: course 226 (may be taken concurrently.) Offered in alternate years.

Laboratory work to accompany course 226.

251A-251B. Seminar in Entomology. (1-1) Yr.

Mr. Belkin

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. Sache, 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; Entomology 144; Irrigation and Soil 101A.

* Not to be given, 1959-1960.

Recommended courses, or the equivalent: Botany 3 or 151; Plant Pathology 140; Agricultural Economics 130; Horticultural Science 2, 110.

The Major.—Twelve units of upper division courses in the major, including courses 131A or 131B, and 136A or 136B.

UPPER DIVISION COURSES

***121. Taxonomy. Ecology and Physiology Turfgrasses. (3) II.**

Mr. Youngner

Lecture, two hours; laboratory, three hours. Prerequisite: Botany 1 or the equivalent.

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.

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.

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.

* Offered in spring, 1960, and alternate years.

** Offered in 1960-1961 and alternate years.

***148. Design and Analysis of Horticultural Experiments. (3) II.**

Mr. Johnson

Lecture, two hours; laboratory, three hours. Prerequisite: Statistics 1 or the equivalent.

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.*

Pedro Carrasco, Ph.D., *Assistant Professor of Anthropology.*

John A. Crow, Ph.D., *Professor of Spanish.*

Alma Hawkins, Ed.D., *Associate Professor of Physical Education.*

John T. Hitchcock, Ph.D., *Assistant Professor of Anthropology.*

Mantle Hood, Ph.D., *Associate Professor of Music.*

Claude Jones, Ph.D., *Associate Professor of English.*

William A. Lessa, Ph.D., *Associate Professor of Anthropology.*

William Matthews, Ph.D., *Professor of English.*

Laurence A. Petran, Ph.D., *Professor of Music.*

William F. Pillich, M.S., *Assistant Supervisor of Physical Education.*

Jaam Puhvel, Ph.D., *Assistant Professor of Classics and Indo-European Linguistics.*

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). Stu-

* Offered in spring, 1960, and alternate years.

dents 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.

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.
- 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
- Art 119A-119B. Art of the Americas. (2-2)** Mr. Bloch, Mr. Sheppard
- Classics 178. Greek and Roman Mythology. (3) II.** 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 136A-136B. Musical Cultures of the World. (3-3) Yr. Mr. Hood, Mr. Petran
- Oriental Languages 32. History of Japanese Civilization. (2) II. Mr. Rudolph
- Oriental Languages 42. History of Chinese Civilization. (2) I. Mr. Ch'en
- 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

GRADUATE COURSES

- Anthropology 251A-251B. Myth and Ritual. (2-2) Yr. Mr. Lessa
- Classics 260. Seminar in Indo-European Mythology. (3) II. 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 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) I. 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

Classics 113. Ancient Drama. (3)

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)

* Not to be given, 1959-1960.

- *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)
- *150. Medieval Great Books. (3)
- French* 109M-109N. A Survey of French Literature. (3-3)
- 110A-110B. The Novel of the Nineteenth and Twentieth Centuries. (2-2)
- *110C. The Drama of the Twentieth Century. (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 142A-142B. Arabic Literature. (2-2)
- Hebrew 182A-182B. A Survey of Hebrew Literature in English. (2-2)
- Oriental Languages* 112. Chinese Literature in Translation. (2)
- 132. Japanese Literature in Translation. (2)
- 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)
- Spanish* 150A-150B. Spanish and Spanish-American Literature in English Translation. (2-2)

FRENCH

(Department Office, 4303 Humanities Building)

- Gabriel Bonno, Docteur ès Lettres, *Professor of French*.
- Francis J. Crowley, Ph.D., *Professor of French*.
- John C. Lapp, Ph.D., *Professor of French (Chairman of the Department)*.
- Mareel A. Ruff, Docteur ès Lettres, *Visiting Professor of French*.
- Myron Irving Barker, Ph.D., *Associate Professor of French*.
- Judd 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*.
- †Oreste F. Pucciani, 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*.
- Neal Oxenhandler, Ph.D., *Assistant Professor of French*.
- Paul Pimsleur, Ph.D., *Assistant Professor of French*.
- Marius Ignace Biencourt, Docteur de l'Université de Paris, *Assistant Professor of French, Emeritus*.
- Colette Brichant, Docteur de l'Université de Paris, *Associate in French*.
- Jacqueline Hamel, Licence ès Lettres, *Associate in French*.
- Jacques Jauvert, Licence ès Lettres, *Associate in French*.
- Yvone Lenard, M.A., *Associate in French*.
- Yvette R. Richard, Licence ès Lettres, *Associate in French*.

* Not to be given, 1959-1960.

† Absent on leave, 1959-1960.

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 5.

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 101A-101B, 109A-109B, 120A-120B, and at least one other year course in literature. With permission of the department 4 units of the 24 may be satisfied by appropriate upper division courses in the following departments: Classics, English, German, History, Italian, Philosophy or Spanish. 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 majors in French must consult the major adviser before registering for French courses in the upper division.

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 a second foreign language 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, 230A, 201, and 220. 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, 230, 201, and 220. 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, and *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.

III. Department requirements:

(a) On entering the department, the candidate will present to the chairman a written statement of his preparation in German, Latin, and either Italian or Spanish. He must take the reading test in one of the two required modern languages during the first year of residence, the test in the other language not later than the fourth semester of residence.

(b) In the first year (normally two semesters) of graduate study, the candidate will take the following courses: 131A-131B, 235, 201 and 202, 220, one seminar, and four units of electives.

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. All students will take Part I of the qualifying examination.

(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 he 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 seminars in French or in related subjects, after which he will take Part II of the qualifying examination and the qualifying oral, and 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 154 of the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION.

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.
Sections meet five hours weekly. | The Staff |
| 1G. Reading Course for Graduate Students. (No credit) I, II. | The Staff |
| 2. Elementary French. (4) I, II.
Sections meet five hours weekly.
Prerequisite: course 1 or two years of high school French. | The Staff |

- 3. Intermediate French. (4) I, 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) Beginning each semester.** The Staff
The class meets two hours weekly. Open to students who have completed course 2 or its equivalent with Grade A or B.

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, except where so designated, are conducted mainly in French. Courses 101A-101B and 109A-109B are ordinarily prerequisite to other upper division courses but unusually well prepared students, or those whose major is not French, may be admitted to any upper division courses by permission of the major adviser and the instructor.

- 101A-101B. Intensive Reading. Grammar and Composition. (3-3) Yr.** Mr. Oxenhandler in charge
Beginning either semester.

- 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. A Survey of French Literature from the Middle Ages to the Present. (3-3) Yr. Beginning either semester.**

Mr. Oxenhandler, Mr. Nouty

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. Nouty

- 114A-114B. Contemporary French Literature. (2-2) Yr.** Mr. Ruff

The French novel, poetry, and essay since 1835. Symbolism, surrealism, existentialism, as represented by Rimbaud, Mallarmé, Gide, Proust, Apollinaire, Valéry, Malraux, Sartre, 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.
- 134A-134B. Survey of French Culture and Institutions.** (3-3) Yr.
Required for the Certificate of Completion. Mrs. Brichant
- 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, Mr. Barker
- 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. Williams
Grammar of medieval northern dialects; intensive reading and translation of representative texts.
- 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

* Not to be given, 1959-1960.

- 230. French Literary Criticism.** (2) I, II. Mr. Hubert
The history of 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. Williams
B. Medieval Literature of the 14th and 15th Centuries. (3) II. Mr. Barker
- 251A-251B.-251C-251D. Studies in the Renaissance.**
*A. Rabelais. (3) I. Mr. Lapp
B. Montaigne. (3) I. Mr. Lapp
*C. Poetry. (3) I. Mr. Humiston
*D. Drama. (3) II. Mr. Humiston
- 252A-252B-252C-252D. Studies in Classicism.**
A. Classic Tragedy. (3) II. 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. The Philosophes: Rousseau. (3) I. Mr. Thielemann
*C. The Philosophes: Diderot. (3) II. Mr. Thielemann
*D. Studies in 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) I. Mr. Nouty
*C. Realism and Naturalism. (3) II. Mr. Barker
*D. Theater. (3) II. Mr. Nouty
- 255A-255B-255C. Studies in Contemporary Literature.**
*A. The Novel. (3) I. _____
*B. The Theater. (3) I. Mr. Oxenhandler
C. Lyric Poetry. (3) I. Mr. Buff
- 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, II. Mr. Miller
Prerequisite: courses 101A-101B and 109A-109B, the latter being permitted concurrently. Required of all candidates for the Certificate of Completion in French; should be completed before practice teaching.

RELATED COURSE IN ANOTHER DEPARTMENT

- Latin 220. Vulgar Latin: Introduction to Romance Linguistics.** (3) II. Mr. Puhvel
- Classics 178. Greek and Roman Mythology.** (3) I. Mr. Puhvel

* Not to be given, 1959-1960.

GEOGRAPHY

(Department Office, 55A Haines Hall)

Henry J. Bruman, Ph.D., *Professor of Geography (Chairman of the Department)*.

W. Gordon East, M.A., *Visiting 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*.

Ruth 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*.

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*.

Norman J. W. Thrower, Ph.D., *Assistant Professor of Geography*.

Myrta L. McClellan, M.A., *Assistant Professor of Geography, Emeritus*.

Charles F. Bennett, Ph.D., *Instructor in 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 5.

Two principal objectives may be recognized for those who select geography as a major: (1) *professional* training in the subject and preparation for graduate study, and (2) *semiprofessional* training for the student who wishes to gain a broad understanding of the world and its people. Most courses in the department are designed to meet the needs of both groups of students but some are offered primarily to meet the special requirements of students who plan to make professional use of geography.

Preparation for the Major.—Geography 1A–1B, 3, and 4 are required of all majors. In addition, Geology 2 or 101 is required of professional majors. Introductory courses in anthropology, botany, economics, geology, history, political science, and the modern foreign languages are recommended for all majors.

The Major.—The minimum requirement for all majors is 30 units of upper division work in geography.

Professional majors are required to take as Group I: Geography 101, 105, 115, 175; and three courses from Group II: Geography 121, 122A, 122B, 123A, 123B, 124A, 124B, 125, 126, 127, 131; plus three courses from Group III: Geography 106, 113, 118, 119, 141, 142, 155, 161, 165, 171, 173, 181.

Semiprofessional majors are required to take as Group I: Geography 115 and 175; and normally four courses from Group II: Geography 121, 122A, 122B, 123A, 123B, 124A, 124B, 125, 126, 127, 131; plus four courses from Group III: Geography 101, 105, 106, 113, 118, 141, 142, 155, 161, 165, 171, 173, 181.

A list of upper division courses in other departments recommended for

† Absent on leave, 1959–1960.

‡ In residence fall semester only, 1959–1960.

§ In residence spring semester only, 1959–1960.

geography majors may be secured from the departmental advisers. The development of some competence in an allied subject is recommended for professional majors.

LOWER DIVISION COURSES

1A. 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 1A.

A study of the basic physical elements of geography (especially climate, land forms, soils, and natural vegetation), and their integrated patterns of world distribution.

1B. Introduction to Geography: Cultural Elements. (3) I, II.

Mr. Spencer in charge

Prerequisite: course 1A or 5A. Students who have had course 5B or 100 will receive only half credit for course 1B.

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

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. (2) I, II.

Mr. Dahlberg

Lecture, one hour; laboratory, two 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, II.

Mr. Dahlberg in Charge

Not open to students who have credit for course 1A-1B. Students who have credit for course 1A or 100 will receive only 1½ 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 1A, or 5A, or 100. Students who have credit for course 1B 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

100. Principles of Geography. (3) I, II.

Mr. Pattison

Prerequisite: junior standing. Not open to those who have credit for course 1A-1B 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 integration on a world-wide regional basis.

Technique Courses

101. Fundamentals of Geographic Field Work. (3) I, II.

Mr. Bennett

Saturdays. Prerequisite: course 1A-1B or 5A-5B, and consent of the 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, II. Mr. Dahlberg

Prerequisite: course 4 and one of the following: 1A-1B, or 5A-5B, or 100, or consent of the 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. Thrower

Prerequisite: course 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.

Physical Geography

113. General Climatology. (3) I. Mr. Bailey

Prerequisite: course 3 and one of the following: 1A-1B or 5A-5B, or 100, or consent of the 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

Prerequisite: course 1A-1B or 5A-5B. 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.

118. Plant Geography. (3) II. Mr. Gaines

Prerequisite: course 1A-1B, or 5A-5B, or 100.

Character, distribution, and environmental relationships of the principal vegetation regions of the world.

119. Geography of the Arid Lands. (3) I. Mr. Bailey in charge

Prerequisite: course 1A-1B, 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 occupancy, including future possibilities for human utilization

Regional Courses

121. The Geography of Anglo-America. (3) I. Mr. Zierer

Prerequisite: course 1A-1B, 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

Prerequisite: course 1A-1B, or 5A-5B, or 100.

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

Prerequisite: course 1A-1B, or 5A-5B, or 100.

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 economic and social geography of the individual South American countries.

123A. The Geography of Western Europe. (3) I. Mr. East

Prerequisite: course 1A-1B, or 5A-5B, or 100.

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.

Prerequisite: course 1A-1B, or 5A-5B, or 100. 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

Prerequisite: course 1A-1B, or 5A-5B, or 100.

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

Prerequisite: course 1A-1B, or 5A-5B, or 100

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: course 1A-1B, 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. _____

Prerequisite: course 1A-1B, or 5A-5B, or 100.

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

Prerequisite: course 1A-1B, or 5A-5B, or 100.

A regional survey of the physical and cultural features which characterize 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

Prerequisite: course 1A-1B, or 5A-5B, or 100.

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.

Cultural Geography

141. Commercial Geography. (3) I. Mr. Nelson

Prerequisite: course 1A-1B, or 5A-5B, or 100, or consent of the instructor.

Analysis of the geographic distribution of basic raw materials in relation to world trade centers and trade routes.

142. Industrial Geography. (3) II. Mr. Nelson

Prerequisite: course 1A-1B, or 5A-5B, or 100, or consent of the instructor.

Analysis of the distribution of the manufacturing industries.

* Not to be given, 1959-1960.

- 155. Urban Geography. (3) II.** Mr. Nelson
Prerequisite: course 1A-1B, or 5A-5B, or 100, or consent of the instructor.
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
Prerequisite: course 1A-1B, or 5A-5B, or 100, or consent of the instructor.
The general principles of conservation and their application, especially in the United States.
- 165. Geographical Aspects of Land Planning. (3) I.** Mr. Glendinning
Prerequisite: course 1A-1B, 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
Prerequisite: course 1A-1B, or 5A-5B, or 100.
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 1A-1B, or 5A-5B, 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. Brumau, Mr. Spencer
Prerequisite: course 1A-1B, or 5A-5B, or 100.
The geographic factor in the evolution of primitive cultures and of advanced civilizations.
- 181. Political Geography. (3) I, II.** Mr. East
Prerequisite: course 1A-1B, or 5A-5B, or 100, or the consent of the instructor.
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
Prerequisites: senior standing and consent of the instructor.

GRADUATE COURSES‡

- 205. Advanced Cartography. (3) II.** Mr. Thrower
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.

‡ Requirements for the degree of Master of Arts in geography normally are met via Plan I, although they may be met, at the discretion of the Staff, via Plan II (see below regarding Plan I and Plan II).

Plan I, a strictly professional plan, requires the following courses (or equivalent), as an absolute minimum: 250, 275, and 280; plus a thesis and the passing of examinations in an acceptable foreign language.

Plan II, a semiprofessional plan, requires the following (or equivalent) as an absolute minimum: four courses chosen from the following groups (at least one course from each of four of the six groups): 250; 255, 256, 257, 258, 259, or 273; 261 or 262; 270, 271, or 272; 275; 205, 280, or 290; plus a comprehensive examination (in lieu of a thesis) and the passing of examinations in an acceptable foreign language.

The general requirements (of the Graduate Division) for the M.A. and Ph.D. degrees are stated on pages 69 and 71 of this bulletin.

- 250. The Growth of Geographic Thought. Seminar. (3) I.** Mr. Spencer
Prerequisite: consent of the instructor.
Normally the first seminar to be taken by graduate students in geography.
- 255. Seminar in the Geography of Asia. (3) II.** Mr. Spencer
Prerequisite: course 124A, or 124B, or the equivalent, and consent of the instructor.
- 256. Seminar in the Geography of Anglo-America. (3) I.** Mr. Zierer
Prerequisite: course 121 or the equivalent, and consent of the instructor.
- *257. Seminar in the Geography of Latin America. (3) I.** Mr. Bruman
Prerequisite: course 122A, or 122B, or the equivalent, and consent of the instructor.
- 258. Seminar in California Geography. (3) II.** Mr. Gaines
Prerequisite: consent of the 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 the instructor.
- 262. Land Forms and Their Geographic Significance. Seminar. (3) II.** Mr. Glendinning
Prerequisite: course 115 or the equivalent, and consent of the instructor.
- *270. Seminar in Economic Geography. (3) I.** Mr. MacFadden
Prerequisite: course 141 or 142, or the equivalent, and consent of the instructor.
- 271. Seminar in Political Geography. (3) II.** Mr. Kostanick
Prerequisite: course 181 or the equivalent, and consent of the instructor.
- 272. Seminar in Cultural Geography. (3) II.** Mr. East
Prerequisite: consent of the instructor.
- 273. Seminar in Selected Regions. (3) I.** Mr. East
Prerequisite: course 127, and consent of the instructor.
- 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 the 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.**
Prerequisite: consent of the instructor. Mr. Gaines, Mr. Pattison
- 290. Research in Geography. (1-6) I, II.** The Staff
Prerequisite: consent of the 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.*
 †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.*
 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.*
 John C. Crowell, Ph.D., *Associate Professor of Geology (Chairman of the Department).*
 Clemens A. Nelson, Ph.D., *Associate Professor of Geology.*
 John M. Christie, 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.*
 Edward L. Winterer, Ph.D., *Assistant Professor of Geology.*
 Ronald L. Shreve, Ph.D., *Instructor in Geology and Geophysics.*
 Charles E. Corbató, A.B., *Acting Instructor in Geology.*
 Alexander Stoyanow, Ph.D., *Research Associate in Geology.*
 †Ted L. Bear, A.B., *Lecturer in Petroleum Geology.*
 †Helen Tappan Loeblich, Ph.D., *Lecturer in Geology.*



- David T. Griggs, *Professor of Geophysics.*
 George C. Kennedy, Ph.D., *Professor of Geochemistry.*
 Gordon J. F. MacDonald, Ph.D., *Professor of Geophysics.*
 Louis B. Slichter, Ph.D., *Professor of Geophysics and Director of the Institute of Geophysics.*
 Leon Knopoff, Ph.D., *Associate Professor of Geophysics.*
 James F. Gilbert, Ph.D., *Assistant Professor 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 5.

GEOLOGY

Students may elect the (1) General Geology program or an emphasis in any one of four fields: (2) Physical Geology, (3) Mineralogy and Petrology or Mineral Deposits, (4) Paleontology and Stratigraphy, (5) Theoretical Geology. By petition students may submit alternative programs for approval by a committee of the geology faculty. A student completing only the General Geology program who wishes to continue to an advanced degree will be required to complete in graduate standing courses in his field of emphasis which he did not take as an undergraduate.

Preparation for the Major.—Courses 2, 2L, 3; Mineralogy 6A–6B, and Chemistry 1A–1B are required for all students. In addition, the following courses are required for particular programs:

- (1) General Geology. Physics 1A or 2A, and 1B or 1C or 1D or 2B; Mathe-

† Absent on leave, 1959–1960.

¹ In residence fall semester only, 1959–1960.

matics D or 1, 3A; Engineering 1A; English 106S; any one of Zoology 1A, Life Science 1A, Mathematics 3B, or Chemistry 5A.

(2) Physical Geology. Physics 1A or 2A, 1B, 1C, 1D; Chemistry 5A; Mathematics D or 1, 3A, 3B, 4A, 4B, or 5A, 5B, 6A, 6B; Engineering 1A; English 106S.

(3) Mineralogy and Petrology or Mineral Deposits. Physics 1A or 2A, 1C; Chemistry 5A; Mathematics D or 1, 3A, 3B, 4A, 4B, or 5A, 5B, 6A, 6B; Engineering 1A; English 106S.

(4) Paleontology and Stratigraphy. Physics 1A or 2A, and 1B or 1C or 1D or 2B; Mathematics D or 1, 3A; Engineering 1A; English 106S; Statistics 1; Zoology 1A, 1B.

(5) Theoretical Geology. Physics 1A, 1B, 1C, 1D; Chemistry 5A; Mathematics 5A, 5B, 6A, 6B.

Students intending to major in geology should confer with a departmental adviser as early as possible. Suggested programs leading to attainment of the A.B. degree in eight semesters plus the summer field course are available in the departmental office. These programs assume that the entering student will have taken trigonometry and three years of one foreign language in high school.

The Major.—Courses 102A, 102B, 103, 116, 118A, 118B; Paleontology 110 are required for all students. In addition the following courses are required for particular programs:

(1) General Geology. Courses 107, 119, 158; Paleontology 111 or 114. (Recommended: courses 110 or 111, 117; Mineralogy 108, 109 or 110.)

(2) Physical Geology. Course 119; Mineralogy 108, 109 or 110. (Recommended: courses 107, 117, 158; Physics 105.)

(3) Mineralogy and Petrology or Mineral Deposits. Courses 110, 119; Mineralogy 108, 109; Chemistry 110A; Chemistry 110B or Geophysics 122. (Recommended: Chemistry 110B, 111; Geology 107.)

(4) Paleontology and Stratigraphy. Courses 119, 158; Paleontology 111, and 114 or 136 or 137 or Geology 111; Zoology 112, 159. (Recommended: course 107; Mineralogy 108, 110.)

(5) Theoretical Geology. Mineralogy 108; Mathematics 110C, 122A; Chemistry 110A–110B; Chemistry 111 or Physics 105 (Recommended: Physics 107, 107C; Mineralogy 109; Mathematics 122B.)

At the end of the senior year each student must take a comprehensive final examination.

In addition to the five programs stated above, candidates for the bachelor's degree may submit alternative programs for approval by a committee of the geology faculty.

Requirements for the M.A. Degree.—A candidate for the M.A. degree in geology may elect one of four fields of emphasis in geology and must have to his credit, in addition to the general University requirements, the minimum lower and upper division requirements or their equivalents, for the departmental major in the field of emphasis chosen. He must also complete the following course requirements for the M.A. degree in the field chosen.

(1) Physical Geology. Course 107 and 117 or 158; Chemistry 110A, 110B; Physics 105 or Paleontology 111 or 114.

(2) Mineralogy and Petrology or Mineral Deposits. Courses 107, 158, and Mineralogy 101 or 110 or 181; Chemistry 110B, 111. (Recommended: course 117; Geophysics 122.)

(3) Paleontology and Stratigraphy. Course 107; Paleontology 114, 136, 137; Zoology 130A; Mineralogy 108, 110.

(4) Theoretical Geology. Courses 107 or 158, 119; Mineralogy 108, 109 or 110; Physics 105, 107, 107C; Chemistry 111; Mathematics 122B.

In addition to these programs, candidates for the Master of Arts degree

may submit alternative programs for approval by a committee of the geology faculty.

Requirements for the Ph.D. Degree.—Prospective candidates for the Ph.D. degree in geology must either (1) elect one of the four fields of emphasis in geology and will be held responsible for material in courses required for the master's degree in their respective fields of emphasis; or (2) submit alternative programs for the Ph.D. degree for approval by a committee of the geology faculty.

GEOPHYSICS

For the interdepartmental curriculum in geophysics, see page 12.

GEOLOGY

LOWER DIVISION COURSES

2. **General Geology—Physical.** (3) I, II. The Staff
 Not open to students who have taken Geology 5.
 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: course 2 or 5.
 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, 3, or 5.
 A survey of the principles of physical and historical geology.

- 102A. **Geologic Problems.** (2) I. The Staff
 Laboratory, three hours; field, seven days per semester. Prerequisite: courses 2 and 2L or 5, 103 (may be taken concurrently); Engineering 1A (may be taken concurrently).
 Application of descriptive geometry and trigonometry to geologic problems; interpretation of geologic maps and aerial photographs. Preparation of topographic and simple geologic maps; measurement and description of stratigraphic sections.

- 102B. **Field Geology.** (2) II. The Staff
 Lecture, one hour; laboratory: field Tuesday or Saturday all day. Prerequisites: Geology 102A; English 106S (should be taken concurrently). Principles and methods of geologic mapping.

- 102C. **Geologic Problems.** (1) I. The Staff
 Laboratory, three hours. Prerequisite: course 102A must be taken concurrently.

Application of descriptive geometry and trigonometry to geologic problems; interpretation of geologic maps and air photographs; preparation of geologic illustrations.

103. **Petrology.** (3) I. Mr. Watson
 Lecture, two hours; laboratory, four hours. Prerequisite: Mineralogy 6A-6B or 6; 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: course 3.

A regional study of North American geology.

110. Economic Geology. (3) II. Mr. Tunell

Lecture, two hours; laboratory, three hours. Prerequisite: course 103.

Origin and occurrence of the important metallic and nonmetallic mineral deposits.

111. Petroleum Geology. (3) I. Mr. Bear

Prerequisite: courses 102A, 116.

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: courses 102A and 103. A knowledge of descriptive geometry (e.g., Engineering 2) is desirable.

Fracture, folding, and flow of rocks. Solution of structural problems.

117. Geomorphology. (3) I. Mr. Putnam

Prerequisite: course 2, or 5, or 101.

Principles of geomorphology.

118A. Intermediate Field Geology. (4) The Staff

Eight weeks, commencing with Summer Session. Prerequisite: courses 102B or the equivalent and 116. Course 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. Course 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. Prerequisites: courses 118A-118B or the equivalent.

Problems in field geology with some choice of emphasis available to the student.

158. Foundations of Stratigraphy. (2) II. Mr. Lane

Prerequisite: course 102B.

A survey of geologic, paleontologic, biologic, and climatic principles applicable to stratigraphy, and their bearing on paleogeography.

199. Special Studies in Geology. (1 to 5) I, II. The Staff (Mr. Crowell in charge)

Prerequisite: senior standing and consent of the department chairman.

GRADUATE COURSES

214A-214B. Advanced Petrographic Laboratory. (2-5; 2-5) Yr. Mr. Rosenfeld, Mr. Watson

Prerequisite: Mineralogy 109. Recommended: course 251. Offered in alternate years.

Igneous rocks.

- *215A-215B. Advanced Petrographic Laboratory.** (2-5; 2-5) Yr.
Mr. Rosenfeld, Mr. Durrell
Prerequisite: Mineralogy 109. Offered in alternate years.
Metamorphic rocks.
- *236. Physical Geology of California.** (3) II. Mr. Durrell
- *251. Seminar in Chemical Petrology.** (3) II. Mr. Tunell
Prerequisite: Mineralogy 109.
- 252. Seminar in Geomorphology.** (3) II. Mr. Putnam
Prerequisite: course 117 or the equivalent.
- *255. Seminar in Dynamical Geology.** (3) I. _____
Prerequisite: consent of the instructor; calculus required.
- 258. Seminar in Stratigraphy.** (3) I. Mr. Winterer
Prerequisite: course 158.
- 259. Field Investigations in Geology.** (2) II. The Staff
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.
- 260A-260B. Seminar in Structural Geology.** (3-3) Yr.
Mr. Crowell, Mr. Christie
The second semester of this course may be taken without the first.
- 263A-263B. Seminar in Economic Geology.** (3-3) Yr. Mr. Carlisle
Occasional field trips during the course. Prerequisite: course 110. The second semester of this course may be taken without the first.
- 299. Research in Geology.** (1 to 6) I, II. The Staff (Mr. Nelson in charge)

MINERALOGY

LOWER DIVISION COURSES

- 6A. Introductory Mineralogy.** (3) I. Mr. Tunell
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. Tunell
Laboratory, six hours. Prerequisite: Mineralogy 6A.
Continuation of Mineralogy 6A.

UPPER DIVISION COURSES

- *101. Paragenesis of Minerals.** (2) I. _____
Prerequisite: course 6A-6B or 6 and one year of college chemistry.
- *102. Advanced Mineralogy.** (3) II. _____
Lecture, one hour; laboratory, six hours. Prerequisite: course 6A-6B or the equivalent.
Crystallography with study of models and natural crystals; determination with fuller treatment of nonsilicate minerals; principles of geochemistry.

* Not to be given, 1959-1960.

108. Optical Mineralogy and Petrography. (4) I. Mr. Rosenfeld
Lecture, two hours; laboratory, six hours. Prerequisite: course 6A-6B or 6; Geology 103 (may be taken concurrently).

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. Rosenfeld

Laboratory, six hours. Prerequisite: course 108 (formerly numbered 109A).
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: course 108 (formerly numbered 109A).
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: course 108 (formerly numbered 109A).
Determination of opaque minerals in polished sections; recognition of common ore minerals; paragenetic relationships.

GRADUATE COURSES

274. Seminar in Structural Crystallography. (2-5) I. Mr. Tunell
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, 2 and 2L or 5.

Methods and principles of paleontology for geology majors 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.
The study of invertebrate fossils.

114. Micropaleontology. (3) I. Mrs. Loeblich
Lecture, one hour; laboratory, six hours. Prerequisite: course 111 and Geology 102B.
Study of the microfossils important in stratigraphic work.

* Not to be given, 1959-1960.

- *120. Paleobotany.** (3) II. Mr. Axelrod
Lecture, two hours; laboratory, three hours. Prerequisite: Geology 3, Botany 2. 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: course 111.

- 137. Paleontology and Stratigraphy of the Cenozoic.** (3) II. Mr. Hall
Lecture, two hours; laboratory, three hours. Prerequisite: course 111.

GRADUATE COURSES

- 258. Seminar in Paleontology.** (3) I. Mr. Popenoe
Prerequisite: course 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, Mr. Gilbert
Prerequisite: consent of the instructor.
The principles of geophysical prospecting for ores, petroleum, and other economic minerals.

GRADUATE COURSES

- 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).

* Not to be given, 1959-1960.

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 (Chairman of the Department).*
 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 R. 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.*
 Kenneth G. Chapman, Ph.D., *Assistant Professor of Scandinavian Languages.*
 William F. Roertgen, Ph.D., *Lecturer in German.*
 Stephanie Lombardi, Ph.D., *Associate in German.*
 Edith A. Schulz, M.A., *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 5.

Preparation for the Major.—Required: course 1, 2, 3, (3LS, 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.

Requirements for Admission to Graduate Courses

A candidate for admission to graduate courses in Germanic languages and literatures must meet, in addition to the general University requirements, the minimum requirements for an undergraduate major in this department. If the candidate is deficient in this prerequisite he must fulfill it by undergraduate courses taken as a graduate student.

Requirements for the Master's Degree

For the general requirements, see page 69. The Department of Germanic Languages favors the Comprehensive Examination Plan. For specific departmental requirements, see the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION.

Requirements for the Ph.D. Degree

For the general requirements, see page 71. For specific departmental requirements, see the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION.

¹ In residence fall semester only, 1959–1960.

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 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 in charge
Prerequisite: course 1 or two years of high school German.

‡3. Intermediate German. (4) I, II. Mr. Wilbur 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. Wilbur 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.

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. Sobel, Mr. Bäuml
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

* Not to be given, 1959-1960.

‡ The two courses numbered 8 and 3PS, may be taken for credit. It is recommended that German 8 be taken before the specialized course 3PS.

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. Heitner
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 *Göts*, *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 1880.
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. Arlt
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. Heitner
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. Hoffmann
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
European 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) I. Mr. Robinson

226. Naturalism. (3) I. Mr. Hoffmann

228. German Literature after 1890. (3) II. Mr. Oswald

*229. Expressionism. (2) II. Mr. Melnitz

230. Survey of Germanic Philology. (3) I. Mr. Wilbur

231. Gothic. (3) I. Mr. Dolch

232. Old High German. (3) II. Mr. Dolch

*233. Old Saxon. (3) I. 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 the equivalent.

*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. Mr. Arlt
Prerequisite: course 208.

*259. Seminar in Germanic Linguistics. (1 to 3) II. Mr. Dolch
Prerequisite: course 230 and one dialect or the equivalent.

* Not to be given, 1959-1960.

298A-298B. Special Studies. (1-6; 1-6) Yr.

The Staff

PROFESSIONAL COURSE IN METHOD

370. The Teaching of German. (3) I.

Mrs. Lombardi

Prerequisite: graduate standing in the Department of Germanic Languages. Recommended for all candidates for the general secondary credential in German. To be taken concurrently with Education 370.

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 Danish and Norwegian. (4) I.

Mr. Chapman

12. Intermediate Danish and Norwegian. (4) II.

Mr. Chapman

Prerequisite: course 11 or the equivalent.

UPPER DIVISION COURSES

141A. Scandinavian Literature in English Translation. (2) I. Mr. Wahlgren

No prerequisite; open to all upper division students.

From earliest times to 1750.

141B. Scandinavian Literature in English Translation. (2) II.

Mr. Wahlgren

No prerequisite; open to all upper division students.

From 1750 to the present.

GRADUATE COURSES

*243. Old Icelandic. (3) I.

Mr. Wahlgren

*244. Old Norse-Icelandic Prose and Poetry. (2) II.

Mr. Wahlgren

GREEK

For courses in Greek, see under Department of Classics.

HEBREW

For courses in Hebrew, see under Department of Near Eastern Languages.

HISTORY

(Department Office, 264 Haines Hall)

Eugene N. Anderson, Ph.D., *Professor of History.*Truesdell S. Brown, Ph.D., *Professor of History.*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.*Yu-Shan Han, Ph.D., *Professor of History.*Clinton N. Howard, Ph.D., *Professor of History.*Roland D. Hussey, Ph.D., *Professor of History.*

* Not to be given, 1959-1960.

† Absent on leave, 1959-1960.

- W. Ross Livingston, Ph.D., *Visiting Professor of History.*
 George E. Mowry, Ph.D., *Professor of History (Chairman of the Department).*
 †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.*
 Marie Boas, Ph.D., *Associate Professor of History.*
 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.*
 Harold M. Hyman, Ph.D., *Associate Professor of History.*
 Jere C. King, Ph.D., *Associate Professor of History.*
 Andrew Lossky, Ph.D., *Associate Professor of History.*
 Bradford Perkins, Ph.D., *Associate Professor of History.*
 Andrew F. Rolle, Ph.D., *Visiting 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.*
 Mortimer H. Chambers, Jr., Ph.D., *Assistant Professor of History.*
 William R. Hitchcock, Ph.D., *Assistant Professor of History.*
 Albert Hoxie, M.A., *Acting Assistant Professor of History.*
 †Donald B. Meyer, Ph.D., *Assistant Professor of History.*
 *Robert W. Winter, Ph.D., *Assistant Professor of History.*
 ———, *Assistant Professor of History.*
 Lucy M. Gaines, M.A., *Assistant Professor of History, Emeritus.*
 Keith Berwick, M.A., *Acting Instructor in History.*
 Stanley Wolpert, Ph.D., *Instructor in History.*

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 5.

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 whose lower division program does not include courses 6A–6B or 7A–7B must take 6 units of United States history in 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 ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION.

The Major

- (1) A minimum of 24 units of upper division work in history, including
- 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.
 - History 162A–162B or 6 units chosen from courses numbered 171 to 188 or History 191A–191B.
 - Course 197 or 198.
 - Course 199 in a field for which preparation has been made. Course 199 may be taken before or after 197 or 198.
- (2) Six units of approved upper division courses in an allied field. Allied

† Absent on leave, 1959–1960.

* In residence fall semester only, 1959–1960.

‡ In residence spring semester only, 1959–1960.

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.

Honors in History.—Inquiries regarding honors may be directed to the chairman of the department.

Graduate Work in History.—See the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION, and the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES.

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, Mr. Tholfsen, Mr. Curtis

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. (4-4) 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 lectures 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. Saloutos, 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.

8A-8B. History of the Americas. (3-3) Yr.

Mr. Hussey, 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.

† Credit will not be given for both 6A and 7A or for both 6B and 7B.

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 American principles and ideals. 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. Brown, 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.

114. History of the Founding of Christianity. (2)*117A-117B. History of Ancient Egypt. (3-3) Yr.**

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

Prerequisite: course 1A-1B or 5A-5B, or consent of the instructor.

A survey of religious, intellectual, artistic, social, and economic changes in Europe from the decay of the Roman Empire until about 1050.

121B. The Later Middle Ages. (3) II.

Mr. White

Prerequisite: course 1A-1B or 5A-5B, or consent of the instructor.

A continuation of 121A, from 1050 to about 1450, with the added consideration of the new scientific movements.

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.

Miss Boas

Scientists and scientific thought in relationship to societies from Aristotle to the present.

* Not to be given, 1959-1960.

- 126. History of Cosmological Thought. (3) I.** Miss Boas
Discussion, based on a reading of the sources, of selected scientific cosmological ideas from Aristotle to the present.
- 127. Science and Thought in the Nineteenth Century. (3) II.** Miss Boas
The impact, influence, and conflict of scientific discoveries and upon the ideas of the nineteenth century.
- 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. 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. 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. 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. The Near East in the Nineteenth and Twentieth Centuries. (3) I.** Mr. 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. Development of Modern Turkey. (3) I.** _____
A survey of modern Turkish society and government from the eighteenth century to the present. The decay of Ottoman society and government in the eighteenth century, first attempts at civilization, the Turkish reformers, successes and failures of the reforms, ideological trends, the young Ottomans, the age of despotism, the young Turks, the Kemalist republic, the republic since Kemal.
- 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
(Former number, 142.)
European culture, institutions, and politics in the seventeenth century.

* Not to be given, 1959-1960

* Courses 141C through 148 have been renumbered. Courses taken for credit under old number may not be repeated under new number.

- 141D. **Europe in the Eighteenth Century.** (3) II. Mr. Lossky
(Former number, 143)
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
(Former number, 144.)
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, Mr. Hitchcock
(Former number, 145.)
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
(Former number, 147.)
Political, economic, and cultural developments since the outbreak of the First World War.
- 142A-142B. **European Diplomacy and Imperialism.** (3-3) Yr. Mr. Hitchcock
(Former number, 148A-148B.)
A study of European international rivalries primarily in the nineteenth and twenties centuries.
- 142C. **Social History of Europe in the Nineteenth Century.** (3) I. Mr. Anderson
(Former number, 148C.)
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
(Former number, 148D.)
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 ancient regime 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, 1959-1960.

• Courses 141C through 148 have been renumbered. Courses taken for credit under old number may not be repeated under new number.

- *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
(Former number, 149A-149B.)
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.
- *148. History of Spain and Portugal. (3) I.** Mr. Hussey
(Former number, 161.)
Emphasizes the history of Spain since Ferdinand and Isabel; discusses ancient and medieval days, and Portugal, to the degree necessary for comprehension of the history of the Peninsula since the fifteenth century.
- 150. Modern British Biography. (3) I.** 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.** Mr. Howard, Mr. Tholfsen, Mr. Curtis
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.

* Not to be given, 1959-1960.

* Courses 141C through 148 have been renumbered. Courses taken for credit under old number may not be repeated under new number.

154. Great Britain in the Seventeenth Century. (3) II.

Mr. Howard, Mr. Curtis
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) II.

Mr. Howard
The structure of the British government, society, and economic life under the Hanoverians.

156. Great Britain in the Nineteenth Century. (3) I.

Mr. Tholfsen
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.

Mr. Tholfsen
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.

Mr. Hussey
162A-162B. Hispanic America from the Discovery to the Present. (3-3) Yr.
Mr. Hussey, Mr. Burr

***166A-166B. History of Mexico. (2-2) Yr.**

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
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
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.

* Not to be given, 1959-1960.

- 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. To 1898. The establishment of an independent foreign policy, the territorial expansion of the United States, and the emergence of a world power.
178B. Since 1898. The role of the United States in the twentieth-century world. Recommended preparation: 178A.
- 179. Constitutional History of the United States. (3) 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.
- 188. History of California. (3) II.** Mr. Caughey
Recommended preparation: course 8A-8B or 39
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.

* Not to be given, 1959-1960.

- 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 Tungus 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. History of India Prior to 1526. (3) I.** Mr. Wolpert
A survey of the literature and civilization of the Vedic and the Brahmanic periods; the rise of Jainism and Buddhism; the Magadha and the Kushan Empires; the Gupta period; Mohammedan invasions and conquest to the establishment of the Mogul Empire.
- 196B. India and the Indies Since 1505. (3) II.** Mr. Han
A survey of European expansion into India and the Indies, the decline of the Mogul Empire, and the rise of native leadership. Special attention will be given to India under British administration, including the rise of nationalism and the establishment of the dominions of Pakistan and Hindustan.
- 197. Aids to Historical Research. (3) I.** Mr. White
Study of the auxiliary sciences. A senior course.
- 198. History and Historians. (3) I, II.** The Staff
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. A senior course.
- 199. Special Studies in History. (3) I, II.** The Staff
An introduction to historical method, followed by individual investigation of selected topics.
Required of all history majors. To be taken in the 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 |
| 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. Tholfsen |
| Section 6. American Colonial History. | Mr. Smith |
| Section 7. United States History. | Mr. Perkins |
| Section 8. Recent United States History. | Mr. Meyer |

- Section 9. Hispanic-American History.
 Section 10. Pacific Coast History.
 Section 11. The British Empire.
 Section 12. The Far East.

Mr. Burr
 Mr. Caughey
 Mr. Galbraith, Mr. Wolpert
 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.
- 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. Miss Boas
 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 Stuart period.
- 261A-261B. Seminar in British Empire History.** (3-3) Yr. Mr. Galbraith
 Studies in nineteenth- and twentieth-century imperial history.
- 265A-265B. Seminar in Hispanic-American History.** (3-3) Yr. Mr. Hussey
 Studies in the colonial and early national periods.
- 268A-268B. Seminar in Near Eastern History.** (3-3) Yr. Mr. Grunebaum
 Studies in the history of the Near East.
- 269A-269B. Seminar in United States History.** (3-3) 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) 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 Study and Readings for Master's Degree Candidates. (1-3) I, II. The Staff

HOME ECONOMICS

(Department Office, 1209 Home Economics Building)

- Gladys A. Emerson, Ph.D., *Professor of Home Economics and Nutrition (Chairman of the Department)*.
- Dorothy Leahy, Ed.D., *Professor of Home Economics*.
- Helen B. Thompson, Ph.D., *Professor of Home Economics, Emeritus*.
- Roslyn B. Alfin-Slater, Ph.D., *Associate Professor of Nutrition*.
- Frances Obst, Ed.D., *Associate Professor of Home Economics*.
- Greta Gray, Ph.D., *Associate Professor of Home Economics, Emeritus*.
- Marguerite G. Mallon, Ph.D., *Associate Professor of Home Economics, Emeritus*.
- Edward L. Rada, Ph.D., *Associate Professor of Family and Consumer Economics*.
- Marian Swendseid, Ph.D., *Associate Professor of Nutrition and Physiological Chemistry*.
- Ada Marie Campbell, Ph.D., *Assistant Professor of Home Economics*.
- Olive Hall, Ph.D., *Assistant Professor of Home Economics*.
- Clarice H. Lindsey, M.S., *Assistant Professor of Home Economics*.
- Cora Miller, Ph.D., *Assistant Professor of Foods*.
- Edith M. Carlisle, Ph.D., *Acting Assistant Professor of Home Economics*.
- Stefania Przeworska Holt, *Lecturer in Home Economics*.
- Florence C. McGucken, M.S., *Lecturer in Home Economics*.
- Theodora Corey, M.A., *Associate in Home Economics*.
- Donovan Hester, M.S., *Associate in Home Economics*.
- Myrtle Loehr, M.S., *Associate in Home Economics*.
- Kay Mercer, B.S., *Associate in Home Economics*.
- Florence A. Paull, M.S., *Associate in Home Economics*.
- Eleanora Petersen, M.S., *Associate in Home Economics*.
- Mary Rogers, M.S., *Associate in Home Economics*.

College of Applied Arts

All students intending to major in home economics must submit the results of diagnostic tests given by the University. Students may contact the office of the Dean of Students or Department of Home Economics for schedule as to when the tests will be given.

The Department of Home Economics offers the following specializations:

* Not to be given, 1959-1960.

1. General Home Economics. This major is for students who wish home economics as a background for everyday living and homemaking, nursery school work, and business. (Students desiring to work toward the general elementary teaching credential may select this major.)

Preparation for the Major.—Courses 9, 11, 12, 14, 15, 16; Art 6A; Chemistry 2A; Psychology 1A-1B.

The Major.—Courses 102, 134, 135, 138, 143, 144, 145, 146, 154, 155 or 157, 161, 172; Psychology 112; and additional upper division home economics courses to total 36 units.

2. Home Economics Teacher Education.

Preparation for the Major.—Courses 9, 11, 12, 14, 15, 16; Art 6A; either Chemistry 2A and 10 or 1A-1B and 8; English 1A-1B, or Speech 1, 2, or English 1A and Speech 1; Psychology 1A-1B; Zoology 15.

The Major.—Courses 102, 113 (4 units), 134, 135, 138, 144, 145, 146, 155 or 157, 172, 181, 370; Psychology 112; and additional upper division home economics courses to total 36 units.

3. Foods and Nutrition. This major is for students preparing for dietetic internships, institutional management, and promotional work in foods.

Preparation for the Major.—Courses 9, 11, 12, 14, 15, 16; Bacteriology 1; Business Administration 1A; either Chemistry 2A and 10 or 1A-1B and 8; Economics 1A-1B; English 1A-1B or Speech 1, 2; Psychology 1A-1B; Zoology 15.

The Major.—Courses 100, 101, 102, 105, 113 (4 units), 114, 116, 121, 122, and electives selected from 145, 146, 370, Business Administration 150, 160 or Agricultural Economics 130 to total 36 units.

4. Food Technology. This major is for students preparing to be food technicians in food industries and for graduate work or research positions in foods.

Preparation for the Major.—Courses 9, 11, 12, 14, 15, 16; Bacteriology 1; either Chemistry 2A and 10, or 1A-1B and 8; Economics 1A-1B; Physics 2A, or 10 and 21; Psychology 1A-1B; Zoology 15. Recommended: Mathematics D.

The Major.—Courses 100, 101, 102, 105, 113 (4 units), 114, 116, 145, 146; Bacteriology 106; Education 147; at least 2 units selected from other upper division home economics courses, and electives selected from Botany 103, Chemistry 5A*, 107, 108A-B, 136, Education 114, Public Health 162, Statistics 131A to total 36 units.

5. Clothing, Textiles, and Related Arts.

Preparation for the Major.—Courses 9, 11, 12, 14, 15, 16; Art 6A-6B, 7A-7B; either Chemistry 2A and 10 or 1A-1B and 8; Economics 1A-1B.

The Major.—Courses 144, 155 or 157, 161, 162, 163, 170, 172, 175, 176A, 177A; Art 160, 163A; and additional courses chosen from Home Economics 134, 135, 138, 143, 145, 146, 171A, 181, 199 to total 36 units.

For courses required in the curriculum in apparel merchandising and in the curriculum in apparel design, see page 45.

College of Letters and Science

Letters and Science List.—Courses 113, 114, 134, 138, 143, 144, 154, and 170 are included in the Letters and Science List of Courses. For regulations governing this list, see page 5.

* Upper division major credit for Chemistry 5A allowed only if course is taken in upper division.

LOWER DIVISION COURSES

- 9. Introduction to Home Economics.** (2) I, II. Miss Hall
Lecture, two hours; field trips; two hours.
A study of the history and scope of home economics and the professional opportunities in this field.
- 11. Introduction to Nutrition and Foods.** (3) I, II. Miss Miller
Lecture, one hour; laboratory, six hours.
A study of the basic principles of nutrition and their relationship to the selection, preparation, and service of meals.
- 12. Introduction to Family Living.** (2) I, II. _____
A study of the activities of the family and the functions of the homemaker in modern society. Emphasis on understanding the contribution of family members to successful family living.
- 14. Management in Daily Living.** (2) I, II. Miss Hester
A study of the management of time, energy, and material resources and their contribution to personal and family living.
- 15. Selection of House Furnishings.** (3) I, II. Miss Obst
Lecture, two hours; laboratory, four hours. Prerequisite: Art 6A 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. Miss Corey, Mrs. Lochr, Mrs. Paull
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

Food and Nutrition

- 100. Food Economics.** (2) I. Mrs. McGucken
Lecture, one hour; laboratory, three hours. Prerequisite: course 11. Recommended: Economics 1A, 1B.
The production and distribution of food; grades and standards; legal controls; the cost to consumers and the relations to nutritive values.
- 101. Food Analysis.** (3) I. Miss Swendseid
Lecture, one hour; laboratory, six hours. Prerequisite or concurrent: course 113.
The application of quantitative methods to the study of foods.
- 102. Advanced Foods.** (3) I, II. Miss Campbell
Lecture, one hour; laboratory, six hours. Prerequisite: course 11, Chemistry 2A.
The application of science in the study of fundamental principles and practices of food preparation.
- 105. Experimental Cookery.** (3) II. Miss Miller
Lecture, one hour; laboratory, six hours. Prerequisite: course 102, Chemistry 8 or 10.
Qualitative and quantitative methods in food preparation under controlled conditions.
- 111. Principles of Nutrition.** (2) I, II. _____
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 majors who have had Home Economics 11.)

***112. Nutrition in Family Health Service. (2) II.** Mrs. McGucken

Lecture, one hour; laboratory, two hours; additional field work. Prerequisite: 111 or equivalent and consent of the instructor.

A study of food service for family groups at moderate and low income levels, considering persons of various ages within the family group. Also special consideration to be given to special dietary problems, food purchasing, protective food legislation, and the adaptation of foreign food habits to good nutrition. (This course is designed particularly for public health nurses and nutritionists in social agencies.)

113. Advanced Nutrition. (3 or 4) I, II. Miss Swendseid

Lecture, three hours; laboratory, three hours. Prerequisite: Chemistry 8 or 10, Zoology 15. (The lectures may be taken separately with credit value of 3 units.)

A chemical study of carbohydrates, fats, proteins, minerals, and vitamins in relation to human nutrition. Qualitative laboratory studies upon the components of food. Computation of normal diets for infants, children, and adults.

114. Metabolism Methods. (4) II. Mrs. Carlisle

Lecture, two hours; laboratory, six hours. Prerequisite: course 101 or the equivalent.

Observations of the influence of special diets upon various phases of metabolism; practice in the methods of determining blood constituents, basal metabolic rate, and nitrogen and mineral excretions.

116. Diet in Disease. (2) I, II. Mrs. Carlisle

Lecture, one hour; laboratory, three hours. Prerequisite: courses 102, 113 (4 units).

Modification of the normal diet for specific diseases: dietary calculations.

Institutional Management

121. Quantity Food Study. (4) I, II. Mrs. McGucken, Miss Mercer

Lecture, two hours; laboratory, six hours. Prerequisite: course 102. Recommended: 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

Lecture three hours; laboratory, four hours. Prerequisite: course 102. Recommended: Economics 1A-1B.

A study of organization and administration as applied to institutional households such as residence halls, hotels, hospitals, school cafeterias, etc.

Family Relations

134. Child Care and Guidance. (3) II.

Prerequisite: Psychology 112.

Application of the principles of growth and development to the care and guidance of young children in the home.

135. Laboratory in Child Study. (2) I, II.

Mrs. Rogers

Prerequisite: course 134 and Psychology 112, or consent of the instructor.

* Not to be given, 1959-1960.

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.

138. Family Relationships. (3) I, II.

Recommended: course 12.

A study of the modern family and its relationships. Emphasis on personal adjustment of the individual, problems concerning marriage relations, parenthood, and family administration.

Family Economics and Home Management

***140. Family Meal Service.** (2) II.

Lecture, one hour; laboratory, six hours. Prerequisite: courses 102, 11 or 113; Chemistry 2A.

Organization and management of family food service at different economic levels. Emphasis is placed on standard products, meal service, efficient kitchen planning, use and care of kitchen and dining equipment.

143. The Economic Problems of Families. (2) I, II.

Mr. Rada

Prerequisite: course 14 or consent of the instructor. Recommended: Economics 1A-1B.

Distribution of families as to size, composition, domicile, income, and expenditures. Economic and social developments which have influenced the activities of the members of the household and brought about changes in the family's economic problems and standards of living.

144. Management of Individual and Family Finances. (3) I, II.

Mr. Rada

Prerequisite: course 14 or consent of the instructor. Recommended: Economics 1A-1B.

Management of family income in relation to family expenditures, savings, consumer credit, personal investment, home ownership, insurance, social security and annuities, and income and estate taxes.

145. Home Management Problems. (3) I, II.

Miss Hester

Lecture, two hours; laboratory and demonstration, two hours. Prerequisite: course 14 or 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.

Miss Hester

Laboratory: six hours. Prerequisite: course 11; prerequisite or concurrent: course 145.

Experience in group living for five weeks in the home management house with the guidance of an instructor.

154. Housing. (3) I.

Mr. Rada

Recommended: Economics 1A-1B.

The contemporary housing situation, essentials of healthful housing, improvement in housing, components of a family's housing costs, and municipal, state, and federal activities. Three field trips to be arranged.

Clothing, Textiles, and Related Arts

155. House Planning and Furnishings. (2) II.

Miss Obst

Lecture, one hour; laboratory, three hours. Prerequisite: course 15, Art 6A.

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.

* Not to be given, 1959-1960.

- 157. Home Furnishings Workshop.** (2) I, II. Mrs. Loehr
 Laboratory: six hours. Prerequisite: course 15.
 Experiences in adapting furnishings budget to homes at different income levels. Application of principles of design through individual projects in refinishing, remodeling, and the making of simple furnishings, e.g., draperies, curtains, slip covers, and lampshades.
- 160. Fundamentals of Textiles.** (2) I, II. _____
 Lecture, two hours.
 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.
- 162. Textiles.** (2) I, II. _____
 Laboratory: six hours. Prerequisite: course 16 or 160.
 A study of the sources and properties of textile fibers, and fabric characteristics as related to selection, use, care.
- 163. Advanced Textiles.** (3) II. _____
 Lecture, two hours; laboratory, three hours. Prerequisite: courses 16, 162; Chemistry 2A and 10, or 1A-1B and 8.
 An intensive study of textile materials with special emphasis on the nature of the raw material and quantitative methods in textile analysis.
- 170. History and Development of the Clothing Industry.** (3) I, II. Mrs. Petersen
 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.
- 171A-171B. History and Design of Headwear.** (2-2) Yr. Mrs. Holt
 Lecture, one hour; laboratory, three hours. Prerequisite: course 16.
 The development and design of head covering as part of apparel design. Study of construction of the modern hat.
- 172. Advanced Clothing.** (3) I, II. Miss Corey, Mrs. Petersen, Mrs. Lindsey, Mrs. Paull
 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, Miss Corey
 Lecture, two hours; laboratory, four hours. Prerequisite: course 172.
 The design, fashion, construction, and economic factors involved in selecting and in making tailored garments.
- 176A-176B. Advanced Dress Design.** (3-3) Yr. Mrs. Petersen
 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.

Home Economics Teacher Education

- 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.

Special Study Course for All Majors

- 199. Special Studies in Home Economics.** (1-3) I, II. The Staff
Prerequisite: senior standing and consent of the instructor.

GRADUATE COURSES

- 227. Physical Analysis of Textiles.** (3) I. _____
Lecture, one hour; laboratory, six hours. Prerequisite: courses 16, 162, 163, or the equivalent.

Investigations into the physical and microscopic characteristics of fibers, yarns, and fabric structure in relation to fabric performance.

- 228. Chemical Analysis of Textiles.** (3) II. _____
Lecture, one hour; laboratory, six hours. Prerequisite: courses 16, 162, 163, or the equivalent.

Chemical analysis and research related to the natural and synthetic textile fibers and finishes used for clothing and furnishings. Investigations made of the chemical changes occurring during the use, maintenance, and storage of fabrics.

- 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 economics. Individual guidance in research in a selected problem. Assistance in the statistical treatment of data.

- 250. Seminar in Family Life.** (2) I. _____
A critical discussion of research literature concerning the problems of modern family living.

- 251. Seminar in Nutrition.** (2) I. Miss Swendseid
Recent advances in the science of nutrition and in the dietetic treatment of disease.

- 255. Food Technology Seminar.** (2) II. Miss Campbell
Review of recent and current developments in food study and cookery.

- 262. Personal and Family Economics Seminar.** (2) II. Mr. Rada
Standard of living: what it is; how measured; comparisons by income and social groups, regions, and countries; relation to personal and family economic decisions.

- 263. Seminar in Textiles and Clothing.** (1) II. _____
Readings and discussion of recent developments in textiles and clothing.

- 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. (Chairman of the Department).*

Robert W. Hodgson, M.S., *Professor of Subtropical Horticulture.*

Charles A. Schroeder, Ph.D., *Professor of Subtropical Horticulture.*

William H. Chandler, Ph.D., *Professor of Horticulture, Emeritus.*

George G. Laties, Ph.D., *Associate Professor of Horticultural Science.*

Arthur Wallace, Ph.D., *Associate Professor of Horticultural Science.*

George F. Ryan, Ph.D., *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; Horticultural Science 2. Recommended courses, or their equivalent: Irrigation and Soil Science 101; Entomology 134.

The Major.—Twelve units of upper division courses in the major, which should normally include Horticultural Science 100 and 110.

LOWER DIVISION COURSE

2. **Introduction to Horticulture.** (3) I. Mr. Cameron

Lecture, three hours. Prerequisite: Botany 1 or the equivalent. This course is equivalent to Pomology 2, given at Berkeley and at Davis.

The principles and practices of general horticulture.

UPPER DIVISION COURSES

101. **Citriculture.** (4) II. Mr. Hodgson, 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.

102. **Subtropical Fruits Other Than Citrus.** (4) I. Mr. Schroeder

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 indus-

tries. 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. Ryan

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

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

Lecture and discussion, two hours. Prerequisite: Botany 107 or the equivalent.

Anatomical, physiological, and chemical changes in developing fruits; composition of mature fruits; maturity standards; respiratory and fermentative processes; production of emanations; low-temperature effects; ordinary and modified air storage; field, packing house, and transit practices; frozen fruit products; specified fruit problems.

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. Cameron, 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 Ornamental Horticulture, page 212, and Horticulture Science, page 258.

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 5.

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

A Department of the School of Medicine
(Department Office, 33-241 Medical Center)

The Department of Infectious Diseases offers certain courses which are open to qualified graduate students who are not pursuing the professional curriculum of the School of Medicine. For information concerning these courses and degrees available, see the ANNOUNCEMENT OF THE SCHOOL OF MEDICINE, LOS ANGELES, and the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION.

INTEGRATED ARTS

Karl E. With, Ph.D., *Professor of Art.*

Letters and Science List.—Course 1A-1B is included in the Letters and Science List of Courses. For regulations governing this list, see page 5.

1A-1B. Man's Creative Experience in the Arts. (3-3) Yr. Mr. With

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.

IRRIGATION AND SOIL SCIENCE

(Department Office, 97 Physics-Biology Building)

David Appleman, Ph.D., *Professor of Plant Nutrition.*

Martin R. Huberty, Engr., *Professor of Irrigation.*

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.

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. Soil Management.** (3) I. Mr. Huberty, Mr. Lunt

Lecture, three hours. Prerequisite: course 101 and Bacteriology 1.
Relationships of soil management and conservation practices to the physical, chemical, and microbiological properties of soils.

* Not to be given, 1959-1960.

108. **The Soil as a Natural Resource.** (3) I. Mr. Huberty
Lecture, three hours. Prerequisite: Chemistry 1A or 2A, or high school chemistry and consent of the instructor.

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. Offered in alternate years.

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 of 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. Huberty in charge)

ITALIAN

(Department Office, 342 Royce Hall)

Pier-Maria Pasinetti, Ph.D., *Professor of Italian.*

Charles Speroni, Ph.D., *Professor of Italian.*

Carlo L. Golino, Ph.D., *Associate Professor of Italian (Chairman of the Department).*

Dante Della Terza, Dottore in Lettere, *Assistant Professor of Italian.*

Giuseppe Velli, Dottore in Lettere, *Instructor in Italian.*

Anna Brahm, 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 5.

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 Courses.—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 Master's Degree.—For the general requirements see page 69. Two years of high school Latin, or the equivalent, are a departmental prerequisite for the master's degree in Italian. The department follows both plans I and II. For specific departmental requirements, see the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION.

Requirements for the Ph.D. Degree.—For the general requirements, see page 71. For specific requirements, see the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION, *The Degree of Doctor of Philosophy in Romance Language and Literature.*

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. Brahm in charge
Prerequisite: course 1 or two years of high school Italian.
 3. **Intermediate Italian.** (4) I, II. Mrs. Brahm
Prerequisite: course 2 or three years of high school Italian.
 4. **Intermediate Italian—Continued.** (4) I, II. Mrs. Soli
Prerequisite: course 3 or four years of high school Italian.
- 8A–8B–8C. **Italian Conversation.** (1–1–1) Yr. Mrs. Brahm, Mrs. Soli
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 prerequisites 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) I. 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
- *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.

* Not to be given, 1959–1960.

- *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, II. Mr. Golino
- 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) II. Mr. Speroni
226. **Studies in Seventeenth-Century Italian Literature.** (2) I, II. Mr. Golino
- *228. **Studies in Eighteenth-Century Italian Literature.** (2-2) Yr. 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. Della Terza
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 (Chairman of the Department).*
- William J. Maxwell, Ph.D., *Visiting Associate Professor of Journalism.*
- Robert A. Rutland, Ph.D., *Assistant Professor of Journalism.*
- Frederick Clayton, M.A., *Acting Assistant Professor of Journalism.*
- Darsie L. Darsie, *Lecturer in Journalism.*
- Charles Katzman, M.S., *Lecturer in Journalism.*
- Lewis Rex Miller, M.A., *Lecturer in Journalism.*
- Richard W. Smith, *Lecturer in Journalism.*
- William J. Stout, *Lecturer in Journalism.*
- George F. Wasson, Jr., J.D., *Lecturer in Journalism.*
- Ann S. White, M.A., *Lecturer in Journalism.*



Franklin Fearing, Ph.D., *Professor of Psychology.*

The Department of Journalism offers a program leading to the Master of Arts or Master of Science degree. Applicants for admission must meet all

* Not to be given, 1959-1960.

requirements of the Graduate Division of the University as outlined in the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION. In addition, all prospective students must complete a departmental application form which may be obtained by writing to the Chairman, Department of Journalism. Personal interviews will be arranged at the request of the faculty.

The Department of Journalism does not offer an undergraduate major in journalism, but it does include in its undergraduate program certain courses which are designed to give students preparatory training and background in the field of communication.

Letters and Science List.—All undergraduate courses in Journalism are included in the Letters and Science List of Courses. For regulations governing this list, see page 5.

LOWER DIVISION COURSE

2. Introduction to Journalism. (3) I, II.

Lectures, workshops, and field trips.

Introduction to journalism for those interested in learning the skills of newspaper work. History of the newspaper in America and England, the role of the newspaper in contemporary society, libel, typography, and make-up.

UPPER DIVISION COURSES

101. History of American Journalism. (3) I, II.

Mr. Rutland

Study of the main forces in the development of American newspapers, including the concept of a free press and editorial responsibility. The principal forces in American history are incorporated.

102. Law of Libel in Communications. (2) I, II.

Mr. Wasson

The development of libel law in the United States, its relation to freedom of the press, and its responsibilities. Detailed studies of the right of privacy, copyright, etc.

111. Sources and Methods in Public Relations. (2) I, II.

Mr. Katzman

A course relating industrial and institutional public relations to the field of mass communications through journalistic techniques and background. Newspaper practices and germane journalistic topics will be integrated into the course.

152. Magazine Writing and Editing or Practices. (3) I, II.

Mr. Clayton

Writing for magazines, specialized publications, and newspaper feature sections. Magazine publishing practices as they affect the professional writer.

181. Reporting of Public Affairs. (3) I, II.

Mr. Harris, ———

Prerequisite: consent of the instructor.

A study of the various approaches to the reporting of governmental functions, particularly at the city and county level.

190. The Press and World Affairs. (3) II.

Mr. Harris

A study of the sources of foreign news, analysis of the foreign press, and the relation of international journalism to the American press.

195. Critical Reviewing for the Press. (3) I, II.

Mr. Brandt

Writing of reviews for the press in the field of art, books, radio-television, theater, dance, and motion pictures, followed by discussion of reviews submitted; special lectures by newspaper and periodical reviewers in the popular arts areas covered.

196. Analysis of International Persuasion Techniques. (3) I, II. Mr. Miller
Prerequisite: senior or graduate standing and consent of instructor.

A study of efforts at international persuasion by governments and private agencies; analysis of media and channels employed; comparisons of methods used to achieve specific objectives, and their effectiveness.

197. Problems of Freedom of Information. (3) II. Mr. Miller, Mr. Harris

An analysis of obstacles to freedom of the press, radio, television, motion pictures, and other communication media at home and abroad; inquiry into means and methods available for protecting and promoting this freedom.

GRADUATE COURSES

204. Ethics of Communications. (1) I. Mr. Clayton

An approach to the problems and responsibilities of a free press, drawing upon both historical and contemporaneous examples.

208. Planning and Design of Special Informational Publications. (3) II.

Mr. Clayton
A study of the methods and devices employed in writing and preparing informational materials intended to serve special purposes.

218. Radio and Television News Communication. (1) II. Mr. Stout

A discussion and writing course devoted to the preparation of news for radio and television.

241. Editorial and the Editorial Page. (2) I, II. Mr. Brandt

Prerequisites: 260A, 268A, 250, and 252 or consent of instructor for properly qualified persons.

Functions and purposes of the editorial; selections of subjects and research in editorial writing; writing editorial columns; planning editorial pages and "opposite" editorial pages; letters to editors; editorial page layouts; function, preparation and writing magazine editorial page.

250. News Communication. (3) I.

Mr. Katzman, Mr. Darsie, Mr. Haven, Mr. Rutland
The actual gathering of live news (on news beats), the writing and editing of copy, make-up and student participation in the production, in the publishing laboratory, of the departmental publications.

251. News Communication and Production. (4) II.

Mr. Katzman, Mr. Darsie, Mr. Smith, Mr. Stout
Emphasis is upon the investigative story, specialized features and magazine articles. A period of internship on newspapers concludes the course.

252. Editing the Newspaper. (1) I.

A workshop integrated with News Communication. Copy editing, headline writing and makeup are featured.

253. Seminar in the Literature and History of Journalism. (2) I.

Mr. Rutland

260A-260B. Seminar in Ideas That Changed History. (2-2) Yr.

Mr. Brandt, Mr. Miller, Mr. Clayton, Mrs. White

262A-262B. Seminar in the Theory and Practice of the Press. (1-1) Yr.

Mr. Katzman

268A-268B. Seminar in the Reporter and Society. (2-2) Yr.

Mr. Harris, Mr. Clayton, Mr. Rutland, Mrs. White

- 297. Individual Studies for Graduate Students.** (1-4) I, II. Mr. Rutland
Open to students not taking news communications.
Supervised research projects in the broad field of mass communications.

RELATED COURSE IN ANOTHER DEPARTMENT

- Psychology 267. Mass Communications as a Social Force.** (2) II.
Mr. Fearing

LATIN

For courses in Latin, see under Department of Classics.

LATIN-AMERICAN STUDIES

The following courses pertaining to Latin-American Studies are offered by the departments listed below. For details concerning the Curriculum in Latin-American Studies, see page 15.

- Anthropology and Sociology.* Anthropology 105. American Indians North of Mexico. (3)
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 119A. Art of the Americas. (2)
272, Section 7. Problems in Art History (Latin-American Art). (2)
Geography 122A. The Geography of Middle America. (3)
122B. The Geography of South America. (3)
199. Special Studies in Geography. (1-4)
*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)
166A-166B. History of Mexico. (2-2)
169. History of Inter-American Relations. (3)
199, Section 9. Special Studies in History (Hispanic-American History), (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)
199. Special Studies in Political Science. (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 220. The Spanish Chroniclers of the Americas. (2)

* Not to be given, 1959-1960.

- 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)
 Portuguese 123. Survey of Brazilian Literature. (3)

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., B.A., LL.B., LL.M., Jur.Sc.D., *Professor of Law.*
 Richard C. Maxwell, B.S.L., LL.B., *Professor of Law.*
 Addison Mueller, B.A., LL.B., *Professor of Law.*
 Ralph S. Rice, B.S., LL.B., LL.M., *Professor of Law.*
 Murray L. Schwartz, B.S., LL.B., *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.*
 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., *Visiting Associate Professor of Law.*
 William Cohen, A.B., LL.B., *Visiting Associate Professor of Law.*
 Robert L. Jordan, A.B., LL.B., *Visiting Associate Professor of Law.*
 Edwin F. Franke, A.B., LL.B., *Lecturer in Charge of Legal Aid.*
 William C. Mathes, A.B., LL.B., *Lecturer on Trial Practice and Judge of the Practice Court.*
 Herbert Morris, B.A., LL.B., D.Phil (Oxon.), *Assistant Professor of Philosophy and Lecturer in Law.*
 *Charles E. Rickershauser, Jr., A.B., LL.B., *Lecturer in Law.*
 Mitchel J. Ezer, B.S., LL.B., *Associate in Law.*
 Louis Piacenza, *Law Librarian.*

For information concerning courses and degrees offered, see the ANNOUNCEMENT OF THE SCHOOL OF LAW, which may be obtained from the School of Law, University of California, Los Angeles 24.

LIFE SCIENCES

For courses in Life Sciences, see under Department of Zoology.

LINGUISTICS AND PHILOLOGY

- Harry Hoijer, Ph.D., *Professor of Anthropology.*
 Jaan Puhvel, Ph.D., *Assistant Professor of Classics and Indo-European Linguistics.*

* Not to be given, 1959-1960.

† Absent on leave, 1959-1960.

* In residence spring semester only, 1959-1960.

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 5.

UPPER DIVISION COURSES

150. **Introduction to Indo-European Linguistics.** (3) I. Mr. Puhvel

A survey of the Indo-European languages from ancient to modern times; their relationships and their chief characteristics.

170. **Introduction to Linguistics.** (3) I.

An introduction to the fundamentals of structural and historical linguistics: phonetics and phonemics; linguistic structure; linguistic change; the relation of language to culture.

171. **Introduction to Phonetics.** (3) II.

Description and classification of speech sounds; methods in phonetic analysis and transcription; the theory of the phoneme.

*190. **The Elements of Sanskrit.** (3) I.

Mr. Puhvel

Prerequisite: consent of the instructor.

Introduction to the sounds, inflexions, and syntax of Sanskrit, with special attention to its significance for the understanding of other Indo-European languages.

191. **Advanced Sanskrit.** (3) I.

Mr. Puhvel

Prerequisite: course 190 or the equivalent.

Advanced aspects of grammar and the reading of literary texts.

GRADUATE COURSE

210. **Comparative Grammar of the Indo-European Languages.** (3) II.

Prerequisite: course 150. Recommended: course 190.

Mr. Puhvel

Comparative study of phonology, morphology, and syntax, with an analysis of selected texts.

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.

English 110. **Introduction to English Language.** (3) I.

Mr. Matthews, Mr. Stockwell

English 111. **The English Language in America.** (3) II.

Mr. Matthews, Mr. Stockwell

French 107A-107B. **French Phonetics.** (2-2) Yr.

Mr. Pimsleur

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

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, 1959-1960.

GRADUATE COURSES

- Anthropology 271A-271B. Structural and Historical Linguistics. (2-2) Yr.**
- 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
- 250A-250B. English Linguistics. Seminar. (3-3)** Mr. Matthews, Mr. Stockwell
- English 260A, B, C. Studies in Old and Middle English. Seminar.** Mr. Matthews
- French 201. History of the French Language. (3) I, II.** Mr. Williams
- French 202. Old French. (3) I, II.** Mr. Williams
- 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 to 3) II.** Mr. Dolch
- *Latin 220. Vulgar Latin: Introduction to Romance Linguistics. (3) I.** Mr. Puhvel
- Romance Languages 203A-203B. Old Provençal: Reading Texts. (2-2) Yr.** Mr. Williams
- Scandinavian 243. Old Icelandic. (3) I.** Mr. Wahlgren
- Scandinavian 244. Old Norse-Icelandic Prose and Poetry. (2) II.** Mr. Wahlgren
- Semitics 280A-280B. Seminar in Comparative Semitics. (3-3) Yr.** Mr. Leslau
- Spanish 255. Contemporary Spanish Linguistics. (2) II.** Mr. Bull
- Spanish 256. Spanish Historical Grammar. (3) II.** Mr. Zeitlin

MATHEMATICS

(Department Office, 6115 Mathematical Sciences Building)

- Richard 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.*
 Paul H. Daus, Ph.D., *Professor of Mathematics.*
 John W. Green, Ph.D., *Professor of Mathematics.*

* Not to be given, 1959-1960.

- Magnus R. Hestenes, Ph.D., *Professor of Mathematics.*
 Paul G. Hoel, Ph.D., *Professor of Mathematics.*
 Ralph S. Phillips, Ph.D., *Professor of Mathematics.*
 Leo R. Sario, Ph.D., *Professor of Mathematics.*
 †I. S. Sokolnikoff, 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.*
 George E. F. Sherwood, Ph.D., *Professor of Mathematics, Emeritus.*
 Peter Henrici, Ph.D., *Associate Professor of Mathematics.*
 †Alfred Horn, 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, Jr., Ph.D., *Associate Professor of Mathematics.*
 Raymond M. Redheffer, Ph.D., *Associate Professor of Mathematics.*
 Robert H. Sorgenfrey, Ph.D., *Associate Professor of Mathematics.*
 Thomas H. Southard, Ph.D., *Visiting Associate Professor of Mathematics.*
 Robert Steinberg, Ph.D., *Associate Professor of Mathematics.*
 †Ernst G. Straus, 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.*
 C. C. Chang, Ph.D., *Assistant Professor of Mathematics.*
 Philip C. Curtis, Ph.D., *Assistant Professor of Mathematics.*
 †Thomas S. Ferguson, Ph.D., *Assistant Professor of Mathematics.*
 Basil Gordon, Ph.D., *Assistant Professor of Mathematics.*
 Kenneth Rogers, Ph.D., *Assistant Professor of Mathematics.*
 Hubertus Weinitzschke, Ph.D., *Assistant Professor of Mathematics.*
 †Edwin Weiss, 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.*
 L. J. Adams, M.A., *Lecturer in Mathematics.*
 Robert Herrera, M.A., *Lecturer in Mathematics.*



- Theodore S. Motzkin, Ph.D., *Research Mathematician.*
 Richard E. Bellman, Ph.D., *Research Associate.*
 Theodore E. Harris, Ph.D., *Research Associate.*
 Frederick H. Hollander, M.A., *Associate Research Mathematician.*

Letters and Science List.—All undergraduate courses in mathematics and statistics except Mathematics 370 are included in the Letters and Science List of Courses. For regulations governing this list, see page 5.

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, 113, together

† Absent on leave, 1959–1960.

¹ In residence first semester only, 1959–1960.

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. 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 course 100. 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.

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.

Qualifying Examinations.—Examinations covering trigonometry and two years of high school algebra are given each semester at 9:00 a.m. on the Wednesday of registration week to allow qualified students to modify their programs as described under courses 1, 3A, 5A, 32A and 32B below. 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) 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.

LOWER DIVISION COURSES†

C. Trigonometry. (2) I, II.

Mr. Sorgenfrey in charge

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.

D. Intermediate Algebra. (3) I, II.

Mr. Paige in charge

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.

** Mathematics 4B may apply toward the teaching minor in lieu of an upper division
† 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. course in the 100 series.

1. College Algebra. (2) I, II.

Mr. Swift 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 page 271). 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. Plane Analytic Geometry. (3) I, II.

Mr. Redheffer 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 271).

A study of the straight line, the conics and higher plane curves, by means of rectangular and polar coordinates and parametric representation.

3B. First Course in Calculus. (3) I, II.

Mr. Weiss in charge

Prerequisite: course 3A.

Differentiation of algebraic and transcendental functions with applications.

3H. First Honors Course in Calculus. (3) I, II.

Mr. Arens in charge

Prerequisite: course 3A with high attainment and consent of the department.

Similar to course 3B but has less emphasis on drill and more emphasis on ideas. The purpose is to permit exceptionally able students to progress at a pace commensurate with their abilities, but without extra demands on their time.

4A. Second Course in Calculus. (3) I, II.

Mr. Chang in charge

Prerequisite: course 3B.

Integration with applications; infinite series.

4G. Differential and Integral Calculus, Second Course. (3) I, II.

Mr. Redheffer in charge

Prerequisite: course 3H or 3B with high attainment and consent of the department.

Continuation of course 3H. Theory and technique of differential and integral calculus with applications; convergence of sequences and infinite series.

4B. Third Course in Calculus. (3) I, II.

Mr. O'Neill 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.

Infinite series, continued; solid analytic geometry, partial differentiation, multiple integration with applications.

5A. Analytic Geometry and Calculus. (5) I, II.

Mr. Henrici in charge

Prerequisite: admission to the College of Engineering. Prescribed in the College of Engineering. Nonengineering students will be admitted upon passing a qualifying examination (see page 271).

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. Curtis 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. Blattner 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. Sario 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. Daus in charge

Prerequisite: sophomore standing. Not open for credit to students who have received credit for course D, or 1. A student may enroll in course 32B without taking course 32A by passing a qualifying examination (see page 271).

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.

Mr. Daus in charge

Prerequisite: course 32A or the equivalent or the passing of a qualifying examination (see page 271).

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. Swift

Prerequisite: course C, and one of D, 32A, 1, 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.

Prerequisite: one year of college mathematics. Mr. Southard in charge

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. Daus

Prerequisite: course 4A.

Selected topics in geometry, with particular emphasis on recent developments.

101A. Fundamental Concepts of Mathematics. Algebra. (3) I.

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) II. Mr. Daus
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-Euclidian geometry; projective, metric, and affine geometry.

108. Linear Algebra. (3) I, II. Mr. Paige

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. Curtis 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. Curtis 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 one unit of differential equations.

110D. Advanced Engineering Mathematics. (3) II. Mr. Beckenbach

Prerequisite: course 110AB or 110C.

Complex variable, probability, curve fitting.

111A. Introduction to Higher Algebra. (3) I, II. Mr. Paige

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) II. Mr. Paige

Prerequisite: course 111A.

Rings and ideals, linear algebras, field extensions, algebraic numbers, Galois theory.

112A. Introduction to Higher Geometry. (3) I, II. Mr. Daus

Prerequisite: course 108.

Homogenous point and line coordinate, cross ratio, one- and two-dimensional projective geometry, point and line conics.

112B. Introduction to Metric Differential Geometry. (3) II. Mr. Steinberg

Prerequisite: course 119A or consent of the instructor.

Classical differential geometry of curves and surfaces; special problems.

***113. Synthetic Projective Geometry. (3) II.** Mr. Steinberg

Prerequisite: course 112A or consent of the instructor.

Axioms of incidence, order and continuity; projectivities, polarities and

* Not to be given, 1959-1960.

conics; projective, affine and Euclidean geometry; introduction and use of coordinates.

114. Mathematical Ideas. (3) II. Mr. Redheffer

Prerequisite: course 4B or its equivalent.

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. Green

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. Phillips

Prerequisite: course 119A.

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. (3) II. Mr. Steinberg

Prerequisite: senior standing in mathematics.

Basic laws of probability. Bayes' formula, discrete and continuous variable problems, mathematical expectations, laws of large numbers.

122A-122B. Advanced Calculus. (3-3) Yr. Beginning either semester.

Prerequisite: course 110C or 119A.

Mr. Coddington

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. Hestenes

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) I. 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.

128. Fourier Series and Laplace Transforms. (3) I. Mr. Green
Prerequisite: course 119A or consent of the instructor.

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. Motzkin
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. Weinitzschke
Prerequisite: courses 119A and 135 and some knowledge† of coding for automatic digital computers, or consent of the instructor.

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. _____
Prerequisite: course 135 and some knowledge† of coding for automatic digital computers, or consent of the instructor.

Polynomial approximation of functions of one or more variables in the senses of least-squares and least deviation. 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.

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) I, 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.

† Such knowledge may be obtained by taking either course 41 or course 139 or by suitable experience.

142. Introduction to Linear Programming. (3) I, II.

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.

197. Directed Group Studies for Advanced Students. (2-4) I, II.

Prerequisite: consent of the instructor. Mr. Sorgenfrey 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 regular 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.

209. Introduction to Advanced Analysis. (3) I.

Mr. Taylor

Prerequisite: course 122A-122B or the approximate equivalent.

Point set theory in Euclidean space. The real number system and its relation to the rational field. Convergence and limits. Continuous functions. Infinite convergent processes. Existence theorems. Theories of integration (Riemann, Stieltjes), and a short introduction to measure and the Lebesgue integral.

***212. Algebraic Geometry.** (3) II.

Prerequisite: courses 111A, 112A.

Algebraic preliminaries, projective space, Grassmann coordinates, collineations and correlations.

214. Topics in the Theory of Convex Sets. (3) I.

Mr. Valentine

Prerequisite: either one of the courses 209, 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. Daus

Prerequisite: consent of the instructor. Recommended: course 113 or 208.

220A-220B. Advanced Probability. (3-3) Yr.

Mr. Breiman

Prerequisite: course 242A.

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. Paige

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.

* Not to be given, 1959-1960.

224A-224B. Functions of a Complex Variable. (3-3) Yr. Beginning either semester. Mr. Hestenes, Mr. Straus, Mr. Sorgenfrey

Prerequisite: course 122A-122B.

Properties of complex numbers and sets of complex numbers, analytic functions and the Cauch-Riemann equations, complex integration, Cauchy's integral theorem and its consequences, power series, infinite series and products, conformal mapping, elementary Riemann surfaces and special functions.

225A-225B. Mechanics of Continua. (3-3) Yr. Mr. Weinitschke

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. O'Neill

Prerequisite: course 209 or 242A, 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 and 242A, 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. Arens

Prerequisite: course 209, 224A, 242A or consent of instructor.

Linear spaces, especially with topology or norm. Dual space. The standard theorems on linear operators. Introduction spectral theory in Hilbert space. Analysis of vector valued functions. Operational calculus. Commutative normed rings. Spectral representation and multiplicity.

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: course 224A-224B.

Surface topology: topological spaces, surfaces, covering surfaces, combinatorial approach, triangulations. Riemann surfaces: construction, analysis on Riemann surfaces, Dirichlet problems, harmonic functions, extremum problems, planar surfaces, capacities. Differentials: existence, extremal properties, Abelian integrals. Classification: removability, metric tests, type problems.

***235. Lie Groups.** (3) II. Mr. Arens

Prerequisite: course 209 or 226A, 221A, or consent of instructor.

Covering spaces, analytic manifolds, infinitesimal transformations, Lie groups (Chevalley's presentation).

* Not to be given, 1959-1960

- *236. Topological Groups. (3) II.** Mr. Arens
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, 242A, 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, 242A, 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.** Mr. Phillips
Prerequisite: course 228A-228B.
Theory of semigroups of operators, with applications to the Cauchy problem in partial differential equations.
- 242A-242B. Functions of a Real Variable. (3-3) Yr. Beginning second semester.** Mr. Green, Mr. Taylor
Prerequisite: course 122A-122B.
The real number system, point set theory, Lebesgue measure and Lebesgue integral. Iterated integration, absolute continuity, and fundamental theorem of the calculus.
- *243A-243B. Ordinary Differential Equations. (3-3) Yr.** Mr. Coddington
Prerequisite: courses 224A, 242A, 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 of Mathematical Physics.**
(3-3) Yr. Mr. Redheffer

Prerequisite: course 224A or 242A or Engineering 181A.

Boundary value and characteristic value problems. Separation of variables and expansion in series of characteristic functions. Fourier and Laplace transforms. Green's functions. Integral equations. Characteristic approximate solutions.

***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.

260. Seminars in Mathematics. (3) I, II.

The Staff

Topics in analysis, geometry, algebra, and numerical analysis, and in their applications, by means of lectures and informal conferences with members of the staff.

290. Research in Mathematics. (1 to 6) I, II.

The Staff

PROFESSIONAL COURSE IN METHOD

370. The Teaching of Mathematics. (3) II.

Mr. Bell

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. (2) I, II.

Mr. Hoel in charge

For students without the mathematical background for course 131A.

Emphasis is placed on the understanding of statistical methods. Topics covered are frequency distributions, measures of central tendency, measure of variation, moments, theoretical frequency distributions, sampling, standard errors, linear regression and correlation.

UPPER DIVISION COURSE

131A-131B. Statistics. (3-3) Yr.

Mr. Hoel

Prerequisite: Mathematics 4B.

A base introductory course in the theory and applications of statistical methods.

* Not to be given, 1959-1960.

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. Hoel

Prerequisite: Statistics 131A-131B; recommended: Mathematics 122A.
Estimates. Asymptotic efficiency and normality. Neyman-Pearson theory of tests.

*233. **Stochastic Processes.** (3) I. Mr. Ferguson

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.

260. **Seminars.** Prerequisite: Statistics 231 or 232.

Theoretical Statistics. (3) II. Mr. Hoel

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)

Jacob, Bjerknæs, Ph.D., *Professor of Meteorology.*

Jürgen Holmboe, M.Sc., *Professor of Meteorology.*

Basil John Mason, D.Sc., *Visiting Professor of Meteorology.*

† Morris Neiburger, Ph.D., *Professor of Meteorology.*

Zdenek Sekera, Ph.D., *Professor of Meteorology.*

* Not to be given, 1959-1960.

† Absent on leave, 1959-1960.

W. Lawrence Gates, Sc.D., *Associate Professor of Meteorology.*

Yale Mintz, Ph.D., *Associate Professor of Meteorology (Acting Chairman of the Department).*

James G. Edinger, Ph.D., *Assistant Professor of Meteorology.*

Morton G. Wurtele, Ph.D., *Associate 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 5.

Preparation for the Major.—Course 4A or 4 and 5 (course 3 will be accepted in place of course 4 for students registered in the University prior to the fall semester, 1957); 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.

The Major.—Courses 101A–101B, 107, 108, 120; and 12 units to be selected with departmental approval from upper division courses in mathematics, statistics, meteorology, and physics, of which at least 3 units must be in mathematics and 3 units must be in meteorology. Courses 100A, 100B, 100C, 100D may be substituted for 101A–101B by students who were registered in the University prior to the fall semester, 1957.

LOWER DIVISION COURSES

3. Descriptive Meteorology. (3) II.

Mr. Palmer

Not open for credit to students who have credit for Geography 3 or Meteorology 4.

Elementary survey of the causes and regional distribution of weather and climate.

4. General Meteorology. (3) I.

Mr. Wurtele

Prerequisite: Mathematics 1 and Physics 1B or 2A.

The composition, structure and circulation of the atmosphere, including elementary theory of storms and other weather disturbances. Theory of meteorological instruments and observations.

4A. General Meteorology. (5) I.

Mr. Wurtele and Mr. Edinger

Lecture, three hours; laboratory, six hours. Prerequisite: Mathematics 1 and Physics 1B or 2A. Students who have credit for Meteorology 4 or Meteorology 5 will receive two units of credit.

The composition, structure and circulation of the atmosphere, including elementary theory of storms and other weather disturbances. Theory of meteorological instruments and observations. Practical exercises in surface and upper air observations, weather codes, and elementary weather map analysis.

UPPER DIVISION COURSES

101A–101B. Weather Analysis and Forecasting. (5–5) Yr.

Mr. Edinger, Mr. Wurtele

Lecture, two hours; laboratory, demonstration, and quiz, thirteen hours per week. Prerequisite: courses 4A or 5, 107, 120.

Representation of the three-dimensional fields of the weather; structure of atmospheric pressure and wind systems and the laws of their development and motion; forecasting wind, temperature, clouds, precipitation, fog, icing, turbulence, and severe storms.

† Absent on leave, 1959–1960.

103. Oceanography. (2) II.

Mr. Gates

Prerequisite: courses 107, 120.

Principles and methods of physical oceanography. Energy exchange between ocean and atmosphere. Distribution of temperature. Current systems. Wind waves and swell.

104. Meteorological Physics. (3) I.

Mr. Sekera

Prerequisite: Physics 1A and 1B or 2A; Physics 1C and 1D or 2B. Prerequisite or concurrent: Meteorology 107.

Elementary theory of atmospheric radiation; atmospheric optics; introduction to atmospheric electricity; physics of cloud and precipitation.

107. Meteorological Thermodynamics. (3) I.

Mr. Gates

Prerequisite: Physics 1A and 1B, or 2A; prerequisite or concurrent: Mathematics 4B.

Thermodynamic properties of dry air, water substance, and moist air. Meteorological thermodynamic diagrams; atmosphere hydrostatics and stability.

108. Physical Climatology. (3) II.

Mr. Mintz

Prerequisite: courses 3, 107.

The general circulation of the atmosphere and the normal fields of temperature, cloudiness, and precipitation over the globe. Air masses and weather type zones of the earth.

111. Modern Meteorological Instruments. (3) II.

Mr. Edinger

Lecture, two hours; laboratory, three hours. Prerequisite: course 4A or 5.

A survey of modern instruments, their uses and limitations. Meteorological instrumentation, with emphasis on accuracy and applicability of various techniques; measurement of special meteorological elements; upper-air sounding methods; radar storm detection, aeries; rawins.

120. Dynamic Meteorology. (3) II.

Mr. Holmboe

Prerequisite: course 107.

Equations of atmospheric motion; continuity equation. Divergence, vorticity and circulation. Geostrophic, gradient and thermal winds. Simple atmospheric waves.

121. Dynamic Meteorology. (3) I.

Mr. Holmboe

Prerequisite: course 120 with grade of C or better. Students who have credit in course 120C will receive 2 units of credit for course 121.

Kinematics and dynamics of the field of motion, including the determination of the velocity field from its divergence, vorticity and boundary conditions. Applications to simple barotropic waves.

130. Introduction to Numerical Weather Prediction. (3) I, II.

Mr. Gates

Prerequisite: courses 107 and 120.

Formulation and analysis of the problem of numerical weather prediction. Study of simple atmospheric models. Numerical errors and integration methods.

140. Radiation Processes in the Atmosphere. (3) I.

Mr. Sekera

Prerequisite: course 104 and 107, 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. Sekera
Prerequisite: course 104, or Physics 108B or 113. (Not open to credit for students with credit in course 102.)
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.
199. **Special Studies in Meteorology.** (1-3) I, II. Mr. Mintz, Mr. Gates
Prerequisite: senior standing and consent of the instructor.

GRADUATE COURSES

Prerequisite to all graduate courses: courses 100A, 100B, 100C, 100D, 107, 120; or 101A, 101B, 107, 120.

- 201A-201B. **Advanced Synoptic Meteorology.** (2-2) Yr. Mr. Bjercknes
202. **Tropical Meteorology.** (2) I. Mr. Palmer
- 210A-*210B. **Meteorological Laboratory.** (4-4) Yr. Mr. Bjercknes
217. **Meteorological Hydrodynamics.** (3) II. Mr. Holmboe
Prerequisite: course 121.
220. **Advanced Dynamic Meteorology.** (3) I. Mr. Holmboe
260. **Seminar in Meteorology.** (2) I, II. Mr. Mintz
261. **Seminar in Cloud Physics.** (2) I. Mr. Mason
262. **Seminar in Hydrodynamics.** (2) I, II. Mr. Holmboe
- *263. **Seminar in Weather Forecasting.** (2) II. Mr. Mintz
264. **Seminar in Physical Meteorology.** (2) II. Mr. Sekera
297. **Individual Studies for Graduate Students.** (1-4) I, II. Mr. Gates in charge
299. **Research on Doctoral Dissertation.** (1-6) I, II. Mr. Wurtele in charge

RELATED COURSE IN ANOTHER DEPARTMENT

- *Geophysics 255. **Seminar in Atmospheric Physics.** (3) I. Mr. Holzer

MILITARY SCIENCE AND TACTICS

(Department Office, 127 Men's Gymnasium)

- William S. Bodner, B.S., Colonel, Infantry, *Professor of Military Science and Tactics (Chairman of the Department)*.
- George D. Ish, M.A., Lieutenant Colonel, Military Police Corps, *Associate Professor of Military Science and Tactics*.
- Alfred J. Cruz, B.A., Major, Corps of Engineers, *Assistant Professor of Military Science and Tactics*.
- Frederick T. Abt, Captain, Infantry, *Assistant Professor of Military Science and Tactics*.
- Ernest B. de Silva, Jr., B.A., 1st Lieutenant, Infantry, *Assistant Professor of Military Science and Tactics*.

* Not to be given, 1959-1960.

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 5.

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 Army. Successful completion of the four-year R.O.T.C. branch general curriculum qualifies graduates for a commission in any arm or service of the Army. 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 or 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 and tactics 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

weapons 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. (1½-1½) Yr. The Staff

Two hours of classwork and one hour of leadership, drill, and exercise of command each week.

Organization of the Army and R.O.T.C., American military history, individual weapons and marksmanship, school of the soldier and exercise of command.

20A-20B. Second-Year Basic Military Science. (1½-1½) Yr. The Staff

Prerequisite: course 1A-1B. Two hours of classwork and one hour of leadership, drill, and exercise of command each week.

Crew-served weapons and gunnery, map and aerial photography reading, role of the Army in national defense, school of the soldier and exercise of command.

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 after successful completion of one year of the Basic Course (or who have the credit for the Basic Course from other institutions authorized to present the equivalent instruction) or evidence of satisfactory service in the Armed Forces, and who can qualify for appointment as a 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. (4-4) Yr. The Staff

Prerequisite: Basic Course or the equivalent. Four hours of classwork and one hour of leadership, drill, and exercise of command each week.

Small-unit tactics and communications, organization, function and mission of the arms and services, military teaching methods, leadership, school of the soldier and exercise of command.

104A-104B. Second-Year Advanced Military Science. (4-4) Yr. The Staff

Prerequisite: Basic Course and course 103A-103B.

Four hours of classwork and one hour of leadership, drill, and exercise of command each week.

Command and staff, military intelligence, estimate of the situation, company orders, the military team, training management, troop movements, supply and evacuation, military administration, military justice, role of the United States in world affairs, leadership, officer indoctrination, school of the soldier and exercise of command.

MUSIC

(Department Office, 2449 Music Building)

†Lukas Foss, *Professor of Music.*

Boris A. Kremeniiev, Ph.D., *Professor of Music.*

*Robert U. Nelson, Ph.D., *Professor of Music (Chairman of the Department).*

*Laurence A. Petran, Ph.D., F.A.G.O., *Professor of Music and University Organist.*

H. Jan Popper, Ph.D., *Professor of Music.*

Walter H. Rubsamen, Ph.D., *Professor of Music.*

Clarence Sawhill, M.M., *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.*

†Feri Roth, Mus.Doc., *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.*

Maryo Van Deman, M.M., *Acting Assistant Professor of Music.*

Sylvesta Wassum, Ph.D., *Assistant Professor of Music.*

———, *Assistant Professor of Music.*

———, *Instructor in Music.*



Gerald Caylor, *Lecturer in Music.*

Robert L. DiVall, A.B., *Lecturer in Music.*

George Drexler, *Lecturer in Music.*

Arthur Edwards, Ph.D., *Lecturer in Music.*

Bert Gassman, *Lecturer in Music.*

† Absent on leave, 1959-1960.

* In residence fall semester only, 1959-1960.

* Sabbatical leave in residence fall semester, 1959-1960.

*Albert Goldberg, Mus.M., *Lecturer in Music.*

Sinclair Lott, A.B., *Lecturer in Music.*

Harry E. Myhr, *Lecturer in Music.*

Frederick Moritz, *Lecturer in Music.*

Alexander Reisman, M.M., *Lecturer in Music.*

Magdaleno Rivera, *Lecturer in Music.*

Leo Smit, *Lecturer in Music.*

Paul O. W. Tanner, A.B., *Lecturer in Music.*

Erwin Windward, A.B., *Lecturer in Music.*

Waldo Winger, A.B., *Lecturer in Music.*

Roger Wagner, Mus.Doc., *Lecturer in Music.*

Irving Beckman, M.A., *Associate in Music.*

Lotfollah Mansouri, A.B., *Associate in Music.*

Pauline Turrill, M.A., *Associate in Music.*



———, *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 entering undergraduate intending to prepare for the major or teaching minor in music must take the Basic Music Test and the Sight Reading Test during the week prior to his first registration in the University. The student with previous preparation may substitute the corresponding Advanced Standing Examination (Musicianship or Piano).

Every student who fails the Basic Music Test or the Sight Reading Test must immediately enroll in course A (Basic Music) or course B (Sight Reading). Any student failing either of these courses will be required to repeat the course in the next semester of his residence in the University.

Advanced Standing Examination.—Any student wishing to be placed above the beginning level in course 1A-1B-1C (Musicianship), 3A-3B-3C (Harmony), 40 (Voice), or 41 (Piano) must take the Advanced Standing Examination covering the subject matter of this course during the week prior to his first registration in the University. Placement depends on the results of these examinations rather than on any unit credit previously received. If he already has unit credit for part or all of these courses, he retains that credit, but receives no further unit credit for any part repeated as a result of the Advanced Standing Examinations.

For details concerning the Basic Music Test, the Sight Reading Test, and the Advanced Standing Examinations, inquire 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 Applied 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 31; 100A to 115D, 118, 121 to 139, 170 to 178, and 199. For regulations governing this list, see page 5.

Preparation for the Major.—Courses 1A-1B-1C, 3A-3B-3C, 5A-5B, 20A-20B, and two semesters from the series 59 to 64. Recommended: a reading knowledge of German, and French or Italian, 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 121

¹ In residence spring semester only. 1959-1960.

to 139, 170 to 178, (c) at least 4 units chosen from courses 101 to 109B, and (d) additional upper division courses in music, including four semesters from the series 159 to 166.

College of Applied Arts

Four specializations are available:

1. FOR THE BACHELOR'S DEGREE ALONE.

Preparation for the Major.—Courses 1A-1B-1C, 3A-3B-3C, 5A-5B, 20A-20B, and a year course from the series 59 to 64. Recommended: a reading knowledge of French, German, or Italian, and 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 139, 170 to 178, (c) at least 4 units chosen from courses 101 to 109B, and (d) additional upper division courses in music, including two year courses from the series 159 to 166, but not more than 8 units from courses 140 to 166, 180 to 195.

2. FOR THE BACHELOR'S DEGREE LEADING TO THE *SPECIAL SECONDARY TEACHING CREDENTIAL. This major also meets the departmental requirements for admission to the graduate courses leading to the general secondary credential.

Preparation for the Major.—Courses 1A-1B-1C, 3A-3B-3C, 5A-5B, 20A-20B, 40 (4 units), 41 (4 units), and a year course from the series 59 to 64. Recommended: a reading knowledge of French, German, or Italian, and Physics 2A-2B or 10.

The Major.—Thirty-six units of upper division courses, distributed as follows: (a) courses 100A-100B, 107A, 109A, 110, 111, 115A-115B-115C-115D, (b) at least 4 units chosen from courses 121 to 139, 170 to 178, and (c) additional upper division courses in music, including two year courses from the series 159 to 166.

3. FOR THE BACHELOR'S DEGREE WITH CERTIFICATE IN PERFORMANCE. This major normally requires five years for completion. The study list for each semester should not include more than 12 units of courses other than applied music.

Preparation for the Major.—Courses 1A-1B-1C, 3A-3B-3C, 5A-5B, 20A-20B, a two-year course from the lower division applied music classes (40 through 55), four semesters of membership in a performance organization (59 through 64). Recommended: a reading knowledge of French, German, or Italian, and Physics 2A-2B or 10.

The Major.—A two-year course from the upper division applied music classes (140 through 155), a year course from the master classes (180 through 195), six semesters of membership in a performance organization (159 through 166); plus 36 units of upper division courses, including (a) courses 100A-100B, 107A, 109A, 110, 111, (b) at least 4 units chosen from 121 to 139, 170 to 178, (c) at least 4 units chosen from courses 101 to 109B, and (d) additional courses in upper division music.

4. FOR THE BACHELOR'S DEGREE WITH CERTIFICATE IN OPERA.

Prerequisite: consent of the instructor. This specialization normally requires five years for completion

Preparation for the Major.—Courses 1A-1B-1C, 3A-3B-3C, 5A-5B, 20A-20B, and 59 (8 units); Physical Education 1 (1 unit in Modern Dance,

* Recommended programs on the Los Angeles campus leading to the special secondary credential are being discontinued. Certificates of completion for these credentials will not be awarded after September 15, 1961.

$\frac{1}{2}$ unit in Fencing) and 34. Recommended: Italian 1, 2, 3, 8A-8B; French 1 and 2 or German 1 and 2.

The Major.—At least 36 units of upper division courses, including (a) courses 100A-100B, 159 (8 units), 170, 177; (b) 6 units from the series 132 to 135; (c) 4 units from the series 101 to 109B; and (d) any additional upper division units in music outside the series 140 to 166, 180 to 195.

Required Minor in Theater Arts.—Courses 2A-2B, 28A, 28C, 102, 105, 142, 156A, and 163.

Certificate in Opera.—This program, together with approved vocal instruction, satisfies the major requirements for both the degree of Bachelor of Arts in music and the Certificate in Opera.

Graduate Division

All students planning to become candidates for the M.A. or Ph.D. degree in music are required to take a portion of the graduate placement examination as soon as they are admitted to regular graduate status. Passing the examination in its entirety is prerequisite to the final examination for the M.A. degree and the qualifying examination for the Ph.D. degree. Given in the fall and spring semester during the week before registration, and also during the summer session, this examination is designed to point out to the student possible weaknesses or gaps in his undergraduate work, and thus enable him to remove them early in his graduate program. The written part of the examination is normally taken at the beginning of the first semester of regular graduate work; the oral part, at the beginning of the second semester. The former includes dictation, harmony, counterpoint, orchestration, history and literature of music, and stylistic and formal analysis of scores. The latter includes sight singing, keyboard harmony, score reading, conducting, solo performance in the student's principal medium, and piano playing.

As soon as possible after being given regular graduate status and in any case before being assigned a committee to guide his studies for a higher degree, the student must submit to the Department of Music appropriate examples of completed work as evidence of his ability to write with insight on a musical subject in clear English, or to compose music showing definite promise.

A. Requirements 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 40 or 140 (4 units), 41 or 141 (4 units), 100A-100B, 107A, 109A, 110, 111, 115A-115B-115C-115D, 4 units chosen from courses 121-130, 170-178.

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 Art 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 candidates may place emphasis upon music education, composition, theory or musicology.

4. *Foreign language:* a reading knowledge of a foreign language is re-

quired for a program of study emphasizing musicology or theory, but it is not required for emphasis upon music education and composition.

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 Examination* and pass all parts of it before taking the *Final Examinations*.

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, as a prerequisite to regular graduate status, the completion of the undergraduate major in music in the College of Applied Arts or the College of Letters and Science, or an equivalent major completed elsewhere.

2. *The placement examination*: passing the placement examination 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*: all candidates are required to complete course 200A-200B (Research Methods and Bibliography); a year seminar in the subject most appropriate to the field of specialization, such as course 260A-260B (Historical Musicology), 280A-280B (Ethnomusicology), or 270A-270B (Music Education); and course 299 (Special Problems in Music). 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.

6. *The dissertation*: each candidate will be required to present a dissertation on a subject chosen by the candidate in consultation with his commit-

tee, of such a character as to show a thorough mastery of the sources of information and the ability to carry on independent and original research.

7. *The final oral examination*: after the acceptance of the dissertation in its final form the candidate will be required to pass an oral examination covering principally the field within which the dissertation falls. The candidate will be expected to show a mastery of his special field, as well as of any subject which has an immediate bearing upon the dissertation.

LOWER DIVISION COURSES

Theory and Literature

A. Basic Music. (No credit) I, II.

Two hours weekly. Although this course yields no credit, it displaces 2 units on the student's program. Every student failing the Basic Music Test is required to take course A in the semester immediately following this failure.

Fundamentals of music, including the major and minor scales, keys, the circle of fifths, accidentals, note-values and rest-values, time signatures, treble and bass clefs, and intervals in all forms; common musical terms; beginning ear training, sight singing, and dictation.

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. Hanley, 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. Hanley, 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.

5A-5B. Counterpoint. (2-2) Yr. Beginning either semester.

Mr. Beckman, Mr. Hood, Mr. Hanley, Mr. Kremenliev, Mr. Revitt

Prerequisite: course 3A-3B or consent of the instructor.

Two-voice writing and analysis of representative contrapuntal works in two and more voices. 5A, modal counterpoint, with emphasis on the motet; 5B, tonal counterpoint, with emphasis on the invention.

20A-20B. Survey of Musical Literature. (2-2) Yr. Beginning either semester. Mr. Hanley, Mr. Marrocco

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. History and Appreciation of Music. (2-2) Yr. Beginning either semester. Mr. Des Marais, Mr. Hanley, Mr. Revitt,

No prerequisite. (30A is prerequisite to 30B.) Mr. Travis, Mr. Trotter

Designed for the general University student. (Course 20A-20B is for the major and teaching minor in music.) A general survey of musical history, with emphasis on the chief composers from Bach's time to the present, including an introduction to the technical and formal principles employed in music.

31. Music for Classroom Teachers. (3) I, II.

Mr. Gerow, Miss Van Deman, Miss Wassum
Four hours weekly, including one laboratory hour. No prerequisite. Required of candidates for the general elementary credential. *Not open to students whose major is music.*

Emphasis upon developing the basic music skills essential to effective music teaching in elementary schools.

Group Instruction in Applied Music

Courses in this series may be repeated for credit.

Prerequisite: audition for consent of the instructor.

40. Voice. (2) I, II.	Mr. Moremen, Mr. Windward, Mr. Winger
41. Piano. (2) I, II.	Mrs. Turill
42. Violin. (2) I, II.	Mr. Both
43. Viola. (2) I, II.	_____
44. Cello. (2) I, II.	Mr. Reisman
45. Bass Viol. (2) I, II.	Mr. Rivera
46. Flute. (2) I, II.	Mr. Drexler
47. Oboe. (2) I, II.	Mr. Gassman
48. Clarinet. (2) I, II.	Mr. Caylor
50. Bassoon. (2) I, II.	Mr. Moritz
51. French Horn. (2) I, II.	Mr. Lott
52. Trumpet. (2) I, II.	Mr. DiVall
53. Trombone. (2) I, II.	Mr. Tanner
55. Percussion. (2) I, II.	Mr. Myhr
57. Organ. (2) I, II.	Mr. Petran

Performance Organizations

Courses in this series may be repeated for credit.

Prerequisite: audition for consent of the instructor.

- 59. Opera Workshop.** (1-2) I, II. Mr. Beckman, Mr. Mansouri, Mr. Popper
The study of the musical, dramatic, and language techniques in opera through the performance of representative scenes and acts.
- 60. University Symphony Orchestra.** (1-2) I, II. Mr. Foss
Two two-hour rehearsals each week.
The study and performance of standard symphonic literature.
- 61. University Band.** (1-2) I, II. Mr. Sawhill
Two two-hour rehearsals each week.
- 62. University Chorus.** (1) I, II. No audition. _____
Two one-hour rehearsals each week.
- 63. University A Cappella Choir.** (2) I, II. Mr. Wagner
Three one-hour rehearsals each week.
The study and performance of standard choral works.
- 64. University Glee Club.** (1) I, II. Mr. Gerow
Two one-hour rehearsals each week.

UPPER DIVISION COURSES

- 100A-100B. History and Analysis of Music.** (4-4) Yr. Beginning either semester. Mr. Hanley, 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. 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. Kremenliev, 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.
- 105. Advanced Modal Counterpoint.** (3) I. _____
Prerequisite: course 5A and consent of the instructor.
Writing in three and more voices, with emphasis on the motet.

- 106. Advanced Tonal Counterpoint. (3) II.** Mr. Nelson
Prerequisite: course 5A-5B 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, 5A-5B, 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.
- 109A. sec. 1, and 109B. (2-2) Yr.** Mr. Foss, Mr. Hood
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. Beckman, 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. Roth, 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. Myhr, 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. Workshop in Radio Music. (2) II.** Mr. Kremenliev
Prerequisite: consent of the instructor.
The function of music in radio. Problems of programming, acoustics, recording, and editing. Microphone technique. The nature of background music. Preparation of radio programs. Composition for radio.

***118. Acoustics in Music. (2) I.**

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**121. History of Music in America. (2) I.**

Mr. Marrocco

A survey of music in the United States from the colonial period to the present day.

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.**

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, 1829-1900. (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.

****130. Bach. (2) II.**

Prerequisite: courses 3A-3B-3C, 20A-20B.

****131. Beethoven. (2) I.**

Mr. Revitt

Prerequisite: courses 3A-3B-3C, 20A-20B.

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.

* Not to be given, 1959-1960.

** Offered in alternate years; not to be given 1959-1960.

- **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.
- 136A-136B. Musical Cultures of the World. (3-3) Yr.** Mr. Hood
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) I.** 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) II.** 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
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. Revitt
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
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.

* Not to be given, 1959-1960.

** Offered in alternate years; not to be given 1959-1960.

179. Musical Literature for Children. (2) II.

Miss Wassum

Study of original sources of folk and art music suitable for children, including piano, vocal, chamber, and orchestral literature of selected periods and countries.

Group Instruction in Applied Music

Courses in this series may be repeated for credit.

Prerequisite: audition for consent of the instructor.

140. Advanced Voice. (2) I, II.

Mr. Gerow, Mr. Moremen

Prerequisite: 4 units of course 40.

141. Advanced Piano. (2) I, II.

Mr. Smit

142. Advanced Violin. (2) I, II.

Mr. Roth, Mr. Marrocco

143. Viola. (2) I, II.**144. Cello. (2) I, II.**

Mr. Reisman

145. Bass Viol. (2) I, II.

Mr. Rivera

146. Flute. (2) I, II.

Mr. Drexler

147. Oboe. (2) I, II.

Mr. Gassman

148. Clarinet. (2) I, II.

Mr. Caylor

150. Bassoon. (2) I, II.

Mr. Moritz

151. French Horn. (2) I, II.

Mr. Lott

152. Trumpet. (2) I, II.

Mr. DiVall

153. Trombone. (2) I, II.

Mr. Tanner

155. Percussion. (2) I, II.

Mr. Myhr

157. Organ. (2) II.

Mr. Petran

158. Studies in Accompanying. (1-2) II.

Mr. Beckman, Mr. Popper

Pianists enroll for 2 units; other instrumentalists and singers desiring work in repertoire and interpretation may enroll for 1 unit.

Performance Organizations

Courses in this series may be repeated for credit.

Prerequisite: audition for consent of the instructor.

159. Opera Workshop. (1-2) I, II.

Mr. Beckman, Mr. Mansouri, Mr. Popper

The study of the musical, dramatic, and language techniques in opera through the performance of representative scenes and acts.

160. University Symphony Orchestra. (1-2) I, II.

Mr. Foss

Two two-hour rehearsals each week.

The study and performance of standard symphonic literature.

161. University Band. (1-2) I, II.

Mr. Sawhill

Two two-hour rehearsals each week.

162. University Chorus. (1) I, II. No audition.

Two one-hour rehearsals each week.

163. **University A Cappella Choir.** (2) I, II. Mr. Wagner
 Three one-hour rehearsals each week.
 The study and performance of standard choral works.
164. **University Glee Club.** (1) I, II. Mr. Gerow
 Two one-hour rehearsals each week.
165. **Madrigal Singers.** (2) I, II. Mr. Moremen
 Three one-hour rehearsals each week.
 The study and performance of significant music of the madrigal school.
166. **Chamber Music Ensemble.** (2) I, II. Mr. Roth
 The study and interpretation of chamber music literature.

Master Classes

Courses in this series may be repeated for credit.
 Prerequisite: audition for consent of the instructor.

180. **Voice.** (2) I, II. _____
181. **Piano.** (2) I, II. Mr. Smit
182. **Violin.** (2) I, II. Mr. Roth
183. **Viola.** (2) I, II. _____
184. **Cello.** (2) I, II. Mr. Reisman
185. **Bass Viol.** (2) I, II. Mr. Rivera
186. **Flute.** (2) I, II. Mr. Drexler
187. **Oboe.** (2) I, II. Mr. Gassman
188. **Clarinet.** (2) I, II. Mr. Caylor
190. **Bassoon.** (2) I, II. Mr. Moritz
191. **French Horn.** (2) I, II. Mr. Lott
192. **Trumpet.** (2) I, II. Mr. DiVall
193. **Trombone.** (2) I, II. Mr. Tanner
195. **Percussion.** (2) I, II. Mr. Myhr
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. Mr. Nelson and the Staff
- 210A-210B. **Early Notation.** (3-3) Yr. Mr. Popper
 (Formerly numbered 254A-254B.)
 Prerequisite: course 100A-100B, or the equivalent.
250. **Seminar in 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.
- 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.**
(Formerly numbered 253A-253B.) Mr. Bubsamen and the Staff
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.** Mr. Vincent
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, Miss Van Deman, Miss Wassum
Four hours weekly, including one laboratory hour. Prerequisite: sophomore 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.* (See course 369.)
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.
- 369. Music Education in Elementary Schools. (3) I.** Miss Wassum
Prerequisite: junior standing. Required of music majors who are candidates for the general elementary and special secondary credentials.
A study of the place and function of music in elementary schools.

** Offered in alternate years; not to be given, 1959-1960.

370. Music Education in Secondary Schools. (3) II. Mr. Gerow

Prerequisite: junior standing. Required of candidates for the special secondary and general secondary credentials.

A study of the place and function of music in junior and senior high schools.

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)

Anthony H. Dropp, B.S., Captain, U. S. Navy, *Professor of Naval Science*
(*Chairman of the Department*)

John M. Meyer, B.S., Commander, U. S. Navy, *Associate Professor of Naval Science.*

J. C. Brooks, B.S., Lieutenant, U. S. Navy, *Assistant Professor of Naval Science.*

John L. Halff, B.S., Lieutenant, U. S. Navy, *Assistant Professor of Naval Science.*

W. J. Harper, B.S., Lieutenant Commander, U. S. Navy, *Assistant Professor of Naval Science.*

Kenneth McLennan, B.S., Major, U. S. Marine Corps, *Assistant Professor of Naval Science.*

C. F. Palmer, B.S., Lieutenant, j.g., 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 5.

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. 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 midshipman. This orientation is vital in developing a common naval background and in stimulating 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. Brown

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. Palmer, Mr. McLennan

Infantry drill under arms and classroom weapons systems demonstration.

Junior Year

101A. Naval Engineering. (3) I.

Mr. Brooks

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. Brooks

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. McLennan

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. Half

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, and 102A and 102B.

102B. Principles and Problems of Naval Leadership. (3) II. Mr. Half
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. McLennan
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 LANGUAGES

(Department Office, 302 Royce Hall)

Wolf Leslau, Docteur ès Lettres, *Professor of Hebrew and Semitic Languages* (Chairman of the Department).

Wilhelm B. Hoenerbach, Ph.D., *Professor of Arabic.*

Andreas Tietze, Ph.D., *Associate Professor of Turkish and Persian.*

†Jonas C. Greenfield, Ph.D., *Assistant Professor of Hebrew.*

Irfan Kavar, Ph.D., *Assistant Professor of Arabic.*

Arnold Band, Ph.D., *Acting Assistant Professor of Hebrew.*

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 5.

The Major.—See the curriculum in Near Eastern Studies, pages 307 and 308.

The Master's Degree.—The degree is offered in Near Eastern Studies and Near Eastern Languages and Literatures. In order to qualify, the candidate must satisfy the requirements described on pages 114 and 115 of the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION.

ARABIC

LOWER DIVISION COURSE

3A-3B. Elementary Arabic. (4-4) Yr.

(Formerly Oriental Languages 3A-3B.)

Not open to students with previous training.

A course in standard Arabic.

UPPER DIVISION COURSES

103A-103B. Intermediate Arabic. (4-4) Yr.

(Formerly Oriental Languages 103A-103B.)

Prerequisite: course 3A-3B or consent of the instructor.

Mr. Kavar

120A-120B. Advanced Arabic. (3-3) Yr.

(Formerly Oriental Languages 120A-120B.)

Prerequisite: course 103A-103B or consent of the instructor.

Continuation of 103A-103B, with emphasis on grammar and composition.

130A-130B. Arabic Literary Texts. (2-2) Yr.

(Formerly Oriental Languages 130A-130B.)

Prerequisite: course 103A-103B, or consent of the instructor.

Readings in representative Arabic prose writers.

Mr. Kavar

* Not to be given, 1959-1960.

† Sabbatical leave in residence, spring semester, 1959-1960.

- 142A-142B. Arabic Literature.** (2-2) Yr. Mr. Kawar
 (Formerly Oriental Languages 142A-142B.)
 No knowledge of Arabic is required.
 142A. A series of lectures on classical Arabic poetry with emphasis on the culture it reflects.
 142B. A study of the Koran both as a literary masterpiece and as a religious document.
- 199. Special Studies in Arabic.** (1-4) I, II. The Staff
 Prerequisite: senior standing and consent of the instructor.

GRADUATE COURSES

- 230A-230B. Pre-Islamic Poetry.** (2-2) Yr. Mr. Kawar
 (Formerly Oriental Languages 230A-230B.)
- 231A-231B. Arab Historians.** (2-2) Yr. _____
 (Formerly Oriental Languages 231A-231B.)

HEBREW

LOWER DIVISION COURSES

- 5A-5B. Elementary Hebrew.** (4-4) Yr. _____
 Sections meet five hours weekly.

UPPER DIVISION COURSES

- *101. Hebrew Conversation and Composition.** (2) II. _____
 Prerequisite: course 105A or consent of the instructor.
 Practice in written and oral modern Hebrew.
- 105A-105B. Intermediate Hebrew.** (3-3) Yr. Mr. Greenfield
 Prerequisite: course 5A-5B or the equivalent.
- 110A-110B. Advanced Hebrew.** (3-3) Yr. _____
 Prerequisite: course 105A-105B or the equivalent.
 Selected modern literary texts.
- *120A-120B. Selected Texts of the Bible.** (3-3) Yr. Mr. Greenfield
 Prerequisite: course 105A-105B or the equivalent.
 Translation and analysis of portions of the Old Testament. Special attention will be given to texts of primary literary and historical importance.
- *130. Biblical Aramaic.** (2) I. Mr. Leslau
 Prerequisite: course 105A-105B or the equivalent.
 Grammar of Biblical Aramaic and reading of texts.
- *131. Ancient Aramaic.** (2) II. Mr. Greenfield
 Prerequisite: course 110A-110B or the equivalent.
 Study of the grammar and vocabulary of Ancient Aramaic and reading of the surviving inscriptions and texts.
- 132. Readings in Aramaic Literature.** (2) I. Mr. Greenfield
 Prerequisite: course 130 or the equivalent.
 Advanced readings in Aramaic papyri, inscriptions, literary and historical texts, and the Aramaic translations of the Bible.
- *135. Ugaritic.** (2) I. Mr. Greenfield
 Prerequisite: course 110A-110B 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.

182A-182B. A Survey of Hebrew Literature in English. (2-2) Yr. ———
 Courses 182A and 182B may be taken independently for credit. A knowledge of Hebrew is not required.

182A. From Biblical period to 1300.

182B. From 1300 to the present day.

199. Special Studies. (1-5) I, II. The Staff
 Prerequisite: senior standing and consent of the instructor.
 Studies in history, literature, and Semitic linguistics in accordance with the requirements of the students.

SEMITICS

GRADUATE COURSES

*211A-211B. **Ethiopic.** (2-2) Yr. Mr. Leslau

212A-212B. **Readings in Ethiopic Literature.** (2-2) Yr. Mr. Leslau

Prerequisite: Semitics 211A-211B.

Readings in Ethiopic literature in Geez (Old Ethiopic) and in the other Ethiopic languages such as Tigre or Tigrinya.

*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. Mr. Leslau

Comparative study of the noun and verb of the various Semitic languages (Arabic, Hebrew, Ethiopic, Akkadian and Aramaic).

298A-298B. **Special Studies.** (1-4; 1-4) Yr. ———

PERSIAN

UPPER DIVISION COURSES

104A-104B. **Elementary Persian.** (3-3) Yr. Mr. Tietze

(Formerly Oriental Languages 104A-104B.)

Not open to students with previous training.

124A-124B. **Advanced Persian.** (3-3) Yr. Mr. Tietze

Prerequisite: course 104A-104B or the equivalent.

TURKISH

UPPER DIVISION COURSES

100A-100B. **Elementary Turkish.** (3-3) Yr. Mr. Tietze

(Formerly Oriental Languages 100A-100B.)

Not open to students with previous training.

140A-140B. **Introduction to Turkish Studies.** (2-2) Yr. Mr. Tietze

Introduction to the basic works of reference and the outlines of the history of this area of research.

143A-143B. **Turkish Literature.** (2-2) Yr. Mr. Tietze

(Formerly Oriental Languages, 143A-143B.)

190A-190B. **Advanced Turkish.** (3-3) Yr. Mr. Tietze

Prerequisite: course 100A-100B or the equivalent.

* Not to be given, 1959-1960.

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, 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 Bachelor's Degree.—For details concerning the curriculum in Near Eastern Studies leading to the degree of Bachelor of Arts see page 17.

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, required of the Hebraist, cf. 5c) and Plan II (Comprehensive Examination Plan). See page 70. 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 and of Master of Arts in Near Eastern Languages and Literatures 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 one of the following three fields: (a) Arabic, Persian or Turkish (Islamic) Studies; (b) Semitic Studies; and (c) Hebraic Studies. (a) Is intended for the student desiring a broad knowledge of the Arab (Islamic) world or to prepare for an academic career in this field; (b) and (c) are designed primarily for the student wishing to round out a theological degree or desiring to prepare for an academic career.

(a) 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.

(b) and (c) Programs in Hebrew and Semitic Languages and Literatures.

The program of both (b) the Semitist and (c) the Hebraist will have to include a full year course in comparative semitics (Semitics 280A-280B. 2-2) and a full year course in general linguistics (Anthropology 271A-271B. 2-2) and two minor Semitic languages (totaling 4 units), other than those taken in their undergraduate work. The remaining units of (b) the

Semitist will generally be Arabic Poetry (Arabic 230A-230B) and/or Arab Historians (Arabic 231A-231B), Ethiopic (Semitics 211A-211B) and Semitics 298A-298B (Special Studies).

The program of (e) the Hebraist will include Semitics 280A-280B, Hebrew 135 (Ugaritic), Hebrew 131 (Ancient Aramaic), Anthropology 271A-B (General Linguistics) and Semitics 298A-298B (Special Studies).

LOWER DIVISION COURSES

Near Eastern Languages

Arabic 3A-3B. Elementary Arabic. (4-4) Yr.

Hebrew 5A-5B. Elementary Hebrew. (4-4) Yr.

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 100B. The Art of Early Historical Cultures. (2)

120. Arts of the Orient, a Survey. (2)

121C. Arts of India and Indonesia. (3)

121D. Islamic 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.

134A-134B. Near and Middle East from 600 A.D. (3-3) Yr.

135. Introduction to Islamic Culture. (2)

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. Development of Modern Turkey. (3)

Near Eastern Languages

Arabic 103A-103B. Intermediate Arabic. (4-4) Yr.

120A-120B. Advanced Arabic. (4-4) Yr.

130A-130B. Arabic Literary Texts. (2-2) Yr.

142A-142B. Arabic Literature. (2-2) Yr.

199. Special Studies in Near Eastern Languages. (1-4)

Hebrew *101. Hebrew Conversation and Composition. (2)

105A-105B. Intermediate Hebrew. (3-3) Yr.

110A-110B. Advanced Hebrew. (3-3) Yr.

120A-120B. Selected Texts of the Bible. (3-3) Yr.

*130. Biblical Aramaic. (2)

*131. Ancient Aramaic. (2)

132. Readings in Aramaic Literature. (2)

*135. Ugaritic. (2)

182A-182B. A Survey of Hebrew Literature in English. (2-2) Yr.

199. Special Studies. (1-5)

Persian 104A-104B. Elementary Persian. (3-3) Yr.

124A-124B. Advanced Persian. (3-3) Yr.

Turkish 100A-100B. Elementary Turkish. (3-3) Yr.

140A-140B. Introduction to Turkish Studies. (2-2) Yr.

143A-143B. Turkish Literature. (2-2) Yr.

190A-190B. Advanced Turkish. (3-3) Yr.

Political Science 134. International Relations of the Middle East. (3)

151. Governments of the Middle East. (3)

* Not to be given, 1959-1960

GRADUATE COURSES

- Anthropology and Sociology.* Anthropology 271A-271B. Structural and Historical Linguistics. (2-2) Yr.
 Sociology 236. Social Change in the Middle East. (2) I.
 Sociology 237. Social Stratification in the Middle East. (2) II.
- Art* 272. Problems in Art History. (2)
- Geography* 273. Seminar in Selected Regions (The Middle East). (3)
- History* 215A-215B. Westernization of the Arabic Speaking World. (2-2) Yr.
 268A-268B. Seminar in Near Eastern History. (3-3) Yr.
 298. Directed Readings. (1-3) I, II.
- Near Eastern Languages*
- Arabic 230A-230B. Arabic Poetry. (2-2) Yr.
 231A-231B. Arab Historians. (2-2) Yr.
 Semitics *211A-211B. Ethiopic. (2-2) Yr.
 212A-212B. Readings in Ethiopic Literature. (2-2) Yr.
 280A-280B. Seminar in Comparative Semitics. (2-2) Yr.
 290A-290B. Comparative Morphology of the Semitic Languages. (2-2) Yr.
 298A-298B. Special Studies. (1-4; 1-4) Yr.

NURSING

(Department Office, 12-139C Medical Center)

- Lulu Wolf Hassenplug, R.N., M.P.H., *Professor of Nursing (Chairman of the Department).*
- Harriet M. Coston, R.N., M.A., *Associate Professor of Medical Nursing.*
- Dorothy E. Johnson, R.N., M.P.H., *Associate Professor of Pediatric Nursing.*
- Agnes A. O'Leary, R.N., M.P.H., *Associate Professor of Public Health Nursing and Lecturer in Public Health.*
- _____, *Assistant Professor of Nursing.*
- Mildred A. Disbrow, R.N., M.Litt., *Assistant Professor of Maternity Nursing.*
- I. Estelle Dunlap, R.N., M.A., *Assistant Professor of Psychiatric Nursing.*
- Mabel Johnson, R.N., M.A., *Assistant Professor of Public Health Nursing.*
- _____, *Assistant Professor of Maternal-Child Health Nursing.*
- Margaret A. Kaufman, R.N., Ed.D., *Assistant Professor of Medical-Surgical Nursing.*
- _____, *Assistant Professor of Pediatric Nursing.*
- Eleanor E. Drummond, R.N., M.S., *Assistant Professor of Medical-Surgical Nursing.*
- Esther D. Schulz, R.N., M.S., *Assistant Professor of Public Health Nursing.*
- Jamella M. Bell, R.N., M.S., *Instructor in Nursing.*
- Dorothy E. Brown, R.N., M.S., *Instructor in Psychiatric Nursing.*
- Marjorie L. Chun-Hoon, R.N., M.A., *Instructor in Nursing.*
- Betty Jo Hadley, R.N., M.A., *Instructor in Nursing.*
- Barbara J. Hudziak, R.N., M.S., *Instructor in Maternal-Child Health Nursing.*
- Ethel L. Kallins, R.N., B.S., *Instructor in Public Health Nursing.*
- _____, *Instructor in Maternal-Child Health Nursing.*
- Mary E. Meyers, R.N., M.S., *Instructor in Nursing.*
- _____, *Instructor in Medical-Surgical Nursing.*
- Millicent Stein, R.N., M.S., *Instructor in Public Health Nursing.*
- Mary Swartz, R.N., M.S., *Instructor in Medical-Surgical Nursing.*
- Mary E. Wylie, R.N., M.S., *Instructor in Public Health Nursing.*

* Not to be given, 1959-1960.

Virginia P. Crenshaw, R.N., M.S., *Lecturer in Nursing.*
 Marjorie S. Dunlap, R.N., Ed.D., *Lecturer in Nursing.*
 Charles K. Ferguson, Ed.D., *Lecturer in Nursing.*
 Kathryn L. Argabrite, R.N., M.S., *Teacher-Health Supervisor.*



Eleanor Sheldon, Ph.D., *Associate Research Sociologist.*
 Miriam Morris, Ph.D., *Assistant Research Sociologist.*
 Leta M. Adler, Ph.D., *Junior Research Sociologist.*
 Louise M. Boettcher, R.N., M.S., *Junior Research Nurse.*
 Joan E. Butler, R.N., M.S., *Junior Research Nurse.*
 Elizabeth J. Cooley, R.N., M.S., *Career Teacher.*
 Ruby A. Palmer, R.N., M.A., *Junior Research Nurse.*
 Suzanne E. Swaine, R.N., M.S., *Junior Research Nurse.*



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.*
 Clara Arndt, R.N., M.S., *Assistant Clinical Professor of Nursing Service Administration.*
 Cynthia A. Dauch, R.N., M.A., *Assistant Clinical Professor of Public Health Nursing.*
 Olive Whitlock Klump, R.N., B.S., *Assistant Clinical Professor of Public Health Nursing.*
 Lucile Perozzi, R.N., M.A., *Assistant Clinical Professor of Public Health Nursing.*
 Mary E. Ahern, R.N., B.S., *Clinical Instructor in Surgical Nursing.*
 Ruth E. Augustson, R.N., *Clinical Instructor of Maternity Nursing.*
 Colleen W. Blair, R.N., B.S., *Clinical Instructor in Medical Nursing.*
 Beverly V. Davies, R.N., B.S., *Clinical Instructor in Pediatric Nursing.*
 Mary S. Harper, R.N., M.S., *Clinical Instructor in Psychiatric Nursing.*
 Eleanor E. Hicks, R.N., B.S., *Clinical Instructor in Psychiatric Nursing.*
 Ferne D. Hood, R.N., M.A., *Clinical Instructor in School Nursing.*
 Gladys M. Hughes, R.N., *Clinical Instructor in 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.*
 Marion S. Mayne, R.N., B.S., *Clinical Instructor in Industrial Nursing.*
 Mary McQuillen, R.N., M.A., *Clinical Instructor in Public Health Nursing.*
 Helen F. Nicholson, R.N., M.S., *Clinical Instructor in Medical-Surgical 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.*
 Edith Pross, R.N., B.S., *Clinical Instructor in Public Health Nursing.*
 Theresa C. Ryan, R.N., B.A., *Clinical Instructor in Nursing Service Administration.*

School of 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 following courses or transfer credit evaluated as equivalent:

<i>Course</i>	<i>Units</i>
Physical Education	2
Foreign Language or History or Mathematics	8-13
English	6
English 1A, 1B	
Natural Sciences	26-31
Chemistry 1A, 1B, 8; or 2A, 8	
Physics 10	
Bacteriology 1	
Psychology 1B	
Zoology 1A, 1B; or 15, 25	
Social Sciences	9
Sociology 1	
Anthropology 2	
Psychology 1A	
Humanities	6
Literature, Philosophy, or the Arts	

The Major.—Seventy-four units of upper division nursing 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 42 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. Miss Crenshaw and the Staff

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. The Staff

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 Kaufmann and the Staff

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.

110. Survey of Nursing. (3) I.

Mrs. Schulz

Critical analysis of studies in nursing and their relationship to the development of the profession.

***120A-B-C-D. Family Nursing Program. (1-1-1-1) Two years** The Staff
Prerequisite: course 5.

A continuing observation of a family, over a two-year period, in order to increase the student's understanding of a pattern of family life, the factors that influence the selection of family health practices, and the relationships of individuals within the family.

***125A. Medical-Surgical Nursing. (8) II.**

Miss Coston, Miss Kaufmann, and the Staff

Lecture, four hours; laboratory, sixteen hours. Prerequisite: satisfactory completion of course 130.

Study of the nursing care of adults and the nursing functions essential to meeting the needs of the adult patient in health and disease. Diet and drug therapy are integrated throughout. Guided participation in the care of selected patients in the hospital and community.

125B. Medical-Surgical Nursing. (8) I.

Miss Coston, Miss Drummond, Miss Kaufmann, Miss Quint, and the Staff

Lecture, four hours; laboratory, sixteen hours. Prerequisite: satisfactory completion of course 125A.

Study of the nursing care of selected patients with medical and surgical conditions. Nursing functions essential to meeting the psychological, social, and physical needs of the patient in the hospital and community.

***130. Maternal and Child Health Nursing. (8) I.**

Miss Disbrow, and the Staff

Lecture, four hours; laboratory and conference, sixteen hours. Prerequisite: satisfactory completion of courses 20 and 30.

Study and experience in the nursing care of mothers and children with major health problems. Nursing care in homes, clinics, doctors' offices, and hospitals. Includes planning with families and other professional groups and the use of community resources.

144. Community Health Nursing, Including School Nursing. (6) II.

Miss M. Johnson, Miss O'Leary, Mrs. Schulz, and the Staff

Lecture, two hours; laboratory, sixteen hours. Prerequisite: Public Health 180 (may be taken concurrently) and/or consent of the instructor. 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) II.

Miss I. E. Dunlap, and the Staff

Lecture, two hours per week; laboratory, eight hours per week.

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.

†185. The Nurse and the Law. (2) II.

Prerequisite: senior standing and consent of the instructor.

Analysis and discussion of the legal status, obligations, and liabilities of

* Courses 120A, 120B, 125A, and 180 not to be given after 1959-1960.

† Not to be given, 1959-1960.

the nurse. Consideration will be given to the significance of the court's interpretation of the law.

***190. The Nurse and Rehabilitation. (3) I.**

Prerequisite: senior standing and consent of the instructor.

Exploration and critical examination of modern concepts of rehabilitation; responsibilities and functions of the nurse to the individual patient and family, to the health team, and to the program. Study and discussion of knowledges and skills needed and consideration of areas needing special study and review.

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.

108. Nursing in Maternal and Child Health Services. (5) II.

The Staff

Lecture, four hours; laboratory, four hours.

Exploration and critical examination of modern concepts of maternal and child care coordinated with guided participation in meeting the nursing needs of children and families in hospital, home, and public health agency. Participation in individual and group teaching.

109. Nursing in Adult Health Services. (5) II.

Mrs. Chun-Hoon, Miss Drummond

Lecture, four hours; laboratory, four hours.

Exploration and critical examination of modern concepts of care of adults. Guided participation in meeting nursing needs of individuals and families; special emphasis upon health promotion, disease prevention, nursing care; rehabilitation in hospital, home, public health and other community agencies. Participation in individual and group teaching.

110. Survey of Nursing. (3) II.

Mrs. Schulz

(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.

Miss Drummond

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.

144. Community Health Nursing, Including School Nursing. (3) I.

Miss M. Johnson, Miss O'Leary, Mrs. Schulz, Mrs. Stein

Lecture, two hours; laboratory, sixteen hours. Prerequisite: Public Health 180 (may be taken concurrently) and/or consent of the instructor. 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 I. E. Dunlap and the Staff
 Section 2 for graduate students only. Lecture, two hours; laboratory, eight hours.
 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.
- 180. Survey of Hospital Nursing Service.** (2) I. Mrs. M. S. Dunlap
 Lecture, two hours per week.
 Analysis of the administrative aspects of the hospital nursing unit and of the functions and relationships of the nursing team.
- 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. M. S. Dunlap, Mrs. Sheldon
 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.
- *210. Changing Perspectives in the Nursing Profession.** (2) I. _____
 A critical examination of the current situation in nursing and a consideration of the changing perspectives in the health fields. Consideration of the social and economic aspects of nursing and the interrelationship of the nurse as a member of the health team. Discussion is directed toward developing a working philosophy for leaders of professional nursing.
- 225. Human Relations in Administration.** (2) I, II. Mr. Ferguson
 Prerequisite or concurrent: course 205A.
 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
 Prerequisite: course 210.
 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 I. E. Dunlap and the Staff
 Prerequisite: consent of the instructor.
 A study of theoretical and practical problems in human behavior which the nurse encounters when meeting mental health needs of individuals and their families.

* Not to be given, 1959-1960.

252A-252B. Seminar in Nursing Service Administration. (2-2) Yr.

Miss Arndt, Mrs. M. S. Dunlap

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 Tuberculosis Nursing. (2-4) II.

Miss Drummond

Prerequisite: consent of the instructor.

Study of the fundamentals of administration of tuberculosis 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) II.

Miss Crenshaw, 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.

Automobile required.

Miss O'Leary, Mrs. Schulz

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 I. E. Dunlap 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 and the Staff

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 and the Staff

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.**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.

OCEANOGRAPHY

- Roger B. Revelle, Ph.D., Sc.D., *Director of the Scripps Institution of Oceanography and Professor of Oceanography.*
 Harold C. Urey, Ph.D., Sc.D., *Professor at Large, of Chemistry.*
 Milton N. Bramlette, Ph.D., *Professor of Geology.*
 †Adriano A. Buzzati-Traverso, Ph.D., *Professor of Biology.*
 Carl Eckart, Ph.D., *Professor of Geophysics.*
 Walter M. Elsasser, Ph.D., *Professor of Theoretical Physics.*
 Denis L. Fox, Ph.D., *Professor of Marine Biochemistry.*
 Carl L. Hubbs, Ph.D., *Professor of Biology.*
 Martin W. Johnson, Ph.D., *Professor of Marine Biology.*
 Leonard N. Liebermann, Ph.D., *Professor of Geophysics.*
 Walter H. Munk, Ph.D., *Professor of Geophysics.*
 Fred B. Phleger, Ph.D., *Professor of Oceanography.*
 Russell W. Raitt, Ph.D., *Professor of Geophysics.*
 Norris W. Rakestraw, Ph.D., *Professor of Chemistry.*
 Per F. Scholander, M.D., Ph.D., *Professor of Physiology.*
 Francis P. Shepard, Ph.D., *Professor of Submarine Geology.*
 Hans E. Suess, Ph.D., *Professor of Geochemistry.*
 Charles D. Wheelock, M.A., *Professor of Marine Resources.*
 Claude E. ZoBell, Ph.D., *Professor of Marine Microbiology.*
 G. F. McEwen, Ph.D., *Professor and Curator of Physical Oceanography, Emeritus.*
 James B. Arnold, Ph.D., *Associate Professor of Chemistry.*
 Gustaf O. Arrhenius, Ph.D., *Associate Professor Biogeochemistry.*
 Robert S. Arthur, Ph.D., *Associate Professor of Oceanography.*
 E. William Fager, Ph.D., D.Phil., *Associate Professor of Biology.*
 Edward D. Goldberg, Ph.D., *Associate Professor of Chemistry.*
 Francis T. Haxo, Ph.D., *Associate Professor of Biology.*
 Douglas L. Inman, Ph.D., *Associate Professor of Geology.*
 John D. Isaacs, B.S., *Associate Professor of Oceanography.*
 Henry W. Menard, Ph.D., *Associate Professor of Geology.*
 Seibert Q. Duntley, Ph.D., *Research Physicist and Director of the Visibility Laboratory.*
 †Alfred B. Focke, Ph.D., *Research Physicist.*
 James M. Snodgrass, A.B., *Research Engineer.*
 Fred N. Spiess, Ph.D., *Research Geophysicist and Director of the Marine Physical Laboratory.*
 Victor Vacquier, M.A., *Research Geophysicist.*
 Victor C. Anderson, Ph.D., *Associate Research Physicist.*
 Roswell W. Austin, B.S., *Associate Research Engineer.*
 Maurice Blackburn, D.Sc., *Associate Research Biologist.*
 Almerian R. Boileau, M.A., *Associate Research Engineer.*
 Kenneth A. Clendinning, Ph.D., *Associate Research Biologist.*
 Harmon Craig, Ph.D., *Associate Research Geochemist.*
 Gifford C. Ewing, Ph.D., *Associate Research Oceanographer.*
 Jeffery D. Frautschy, B.A., *Associate Research Engineer and Assistant Director of the Scripps Institution of Oceanography.*
 Philip Rudnick, Ph.D., *Associate Research Physicist.*
 George G. Shor, Jr., Ph.D., *Associate Research Geophysicist.*

† Absent on leave, 1959-1960.

Frank E. Snodgrass, M.S., *Associate Research Engineer.*
 John E. Tyler, B.S., *Associate Research Physicist.*
 Tjeerd H. van Andel, Ph.D., *Associate Research Geologist.*
 Warren S. Wooster, Ph.D., *Associate Research Oceanographer.*
 William L. Belser, Ph.D., *Assistant Research Biologist.*
 George S. Bien, Ph.D., *Assistant Research Chemist.*
 Brian P. Boden, Ph.D., *Assistant Research Biologist.*
 E. N. C. Bowen, Ph.D., *Assistant Research Geologist.*
 Charles S. Cox, Ph.D., *Assistant Research Oceanographer.*
 Peter X. Eberhardt, Ph.D., *Assistant Research Physicist.*
 Frederick H. Fisher, Ph.D., *Assistant Research Physicist.*
 Robert L. Fisher, Ph.D., *Assistant Research Geologist.*
 Gordon W. Groves, Ph.D., *Assistant Research Oceanographer.*
 Robert W. Holmes, B.S., *Assistant Research Biologist.*
 Masatake Honda, Sc.D., *Assistant Research Chemist.*
 Galen E. Jones, Ph.D., *Assistant Research Microbiologist.*
 Charles D. Keeling, Ph.D., *Assistant Research Chemist.*
 Ronald G. Mason, Ph.D., *Assistant Research Geophysicist.*
 Wheeler J. North, Ph.D., *Assistant Research Biologist.*
 Grace L. Orton, Ph.D., *Assistant Research Biologist.*
 Frances L. Parker, M.S., *Assistant Research Geologist.*
 June C. Pattullo, Ph.D., *Assistant Research Oceanographer.*
 Rudolph W. Preisendorfer, Ph.D., *Assistant Research Mathematician.*
 Joseph L. Reid, Jr., M.S., *Assistant Research Oceanographer.*
 William B. Riedel, M.S., *Assistant Research Geologist.*
 Gene A. Rusnak, Ph.D., *Assistant Research Geologist.*
 Beatrice M. Sweeney, Ph.D., *Assistant Research Biologist.*
 John H. Taylor, Ph.D., *Assistant Research Psychologist.*
 William H. Thomas, Ph.D., *Assistant Research Biologist.*
 Theodore J. Walker, Ph.D., *Assistant Oceanographer.*
 Elbert H. Ahlstrom, Ph.D., *Research Associate.*
 David H. Davies, Ph.D., *Research Associate.*
 Edwin L. Hamilton, Ph.D., *Lecturer and Research Associate.*
 Elizabeth Kampa, Ph.D., *Research Associate.*
 John C. Marr, M.A., *Research Associate.*
 Martin J. Pollak, M.A., *Research Associate.*
 John Radovich, A.B., *Research Associate.*
 †Marston C. Sargent, Ph.D., *Research Associate.*
 Milner B. Schaefer, Ph.D., *Research Associate.*
 Charles R. Schroeder, Ph.D., *Research Associate.*

Courses in oceanography, marine biology, and geochemistry are given at the Scripps Institution of Oceanography, La Jolla, California. For further information concerning the Institution, write to the Director.

Letters and Science List.—All undergraduate courses in oceanography and marine biology are included in the Letters and Science List of Courses. For regulations governing this list, see page 5.

Advanced Degrees.—Three curricula are offered, leading to graduate degrees in oceanography, marine biology, and geochemistry, respectively. A limited number of qualified students are accepted under the provisions set forth in the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION. A student must be well trained in the fundamentals before coming to the Scripps Institution and must obtain the approval of both the Director of the Institution and the Dean of the Graduate Division, Southern Section. Resident work at Los Angeles or Berkeley may be required of candidates for advanced degrees.

† Absent on leave, 1959–1960.

Requirements for Admission to the Graduate Curricula

In the Division of Marine Geophysics:

The standard requirements for entrance are those described by a major in physics. In addition, some course work in biology and geology is very desirable.

Students having majored in other subjects such as mathematics, meteorology, geophysics, or engineering, must have an adequate preparation in:

1. Mathematics through differential equations; vector analysis recommended.
2. Physics, two years; electronics laboratory recommended.
3. Chemistry, one year; a second year recommended.

In the Division of Marine Biology:

1. Undergraduate major in biology or the substantial equivalent.
2. One year each of: English, mathematics, and physics with appropriate laboratory.
3. One and one-half years of chemistry, including organic chemistry. Physical and biochemistry are recommended.
4. Two and one-half years of biology, including basic courses in botany and zoology.

In the Division of Marine Geology and Geochemistry:

1. Undergraduate major in geology, chemistry, geochemistry, or physics.
2. Mathematics through differential and integral calculus.
3. Physics and chemistry, one year of each, designed for physics or chemistry majors.
4. (a) For marine geology majors: one additional year of either physics or chemistry; physical geology, historical geology, optical mineralogy, petrology. (b) For geochemistry majors: quantitative analysis and one year of physical chemistry.

For all Divisions.—Preparation in modern foreign language sufficient to pass reading examinations by the end of the second year. One language (German, French or Russian) is required for the master's degree, two for the degree of Doctor of Philosophy.

Requirements for Advanced Degrees

(For general requirements see pages 17-23 in the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION.)

MASTER OF SCIENCE

In Oceanography: Offered under Plan II only, except by special arrangement. Required courses: 110, 111, 112, 113, and 12 units in graduate courses. A reading knowledge of German or a suitable substitute is required.

In Marine Biology: Offered under either Plan I or II. Required courses: 110, 112, 113, 252, two of 225, 226, and 227; additional elective courses may be chosen from those listed in either oceanography or marine biology. A reading knowledge of German, French, or Russian is required.

In Geochemistry: Offered under either Plan I or II. Course requirements are determined by consultation between the student and his guidance committee. A reading knowledge of German, French, or Russian is required.

DOCTOR OF PHILOSOPHY

In Oceanography: Required courses: 110, 111, 112, 113, 299. Foreign languages: German and either French or Russian. Independent study and re-

search in such fields as those listed in course 299. In addition each division will require certain other courses of students in its particular field.

In Marine Biology: Required courses: 299 and those required for the M.S. degree. Foreign languages: German, and either French or Russian. Independent study and research in such fields as those listed in course 299.

In Geochemistry: Required courses: 110, 130-130B, 133, 228, 230A-230B, 253, 299. Foreign languages: German, and either French or Russian. Independent study and research.

Advanced Degrees in Other Fields.—Students from other departments of the University may arrange to do their research work at the Scripps Institution, in fields closely related to oceanography, such as chemistry, geological sciences, meteorology, microbiology, plant science, or zoology. In addition to requirements of their major departments, such students will be expected to complete two of the courses in oceanography 110 to 113.

Any department of the University is invited to send students to the Scripps Institution for special work, either under its own direction or under joint direction with members of the staff of the Institution. The credentials and study programs of such students must be approved by the major department, the Director of the Scripps Institution and the Dean of the Graduate Division, Southern Section.

OCEANOGRAPHY

UPPER DIVISION COURSES

110. Introduction to Physical Oceanography. (3) I. Mr. Revelle, Mr. Arthur
111. Submarine Geology. (3) I. Mr. Shepard, Mr. Inman
112. Biology of the Sea. (3) I. Mr. Johnson
113. Chemistry of Sea Water. (3) I. Mr. Rakestraw, Mr. Goldberg
116. Principles of Underwater Sound. (2) II. Mr. Raitt
Elementary discussion of the propagation of sound in an ideal medium. Differences between the ocean and an ideal medium. Refraction of sound rays by the temperature gradients in the ocean. Experimental results on the transmission of sound in the ocean. Oceanography of temperature gradients. The scattering of sound by the ocean surface, bottom, and volume. Theoretical and experimental results on backward scattering (reverberation).
117. Chemical Methods. (1) II. Mr. Rakestraw
Prerequisite: Oceanography 113.
A laboratory course dealing with the chemical methods of analysis in routine use in oceanographic observations and the assembling and correlating of chemical data.
- †118. Statistics. (3) II. Mr. Fager
Methods of statistical analysis, sampling and design of experiments applicable to marine studies.
199. Special Studies. (1-4) I, II. The Staff
Prerequisite: senior standing and consent of the instructor.

GRADUATE COURSES

210. Physical Oceanography—General. (3) II. Mr. Arthur
Dynamics of ocean currents; turbulence; wind currents; atmospheric boundary layer; water masses and currents of the ocean; work at sea.

† Offered in alternate years.

211. Waves. (3) II.

Mr. Munk

Theory of surface and internal waves; wind waves, swell and surf; wave action on beaches; methods of observation; field work.

212. Tides. (3) I.

Mr. Munk

Theory of tides; seiches; tides in adjacent seas; character of tides in different oceans; application of harmonic analysis.

217. Hydrodynamics. (3) I.

Mr. Eckart

A systematic exposition of the principles governing the flow of fluids. The various mathematical forms of the conservation principles (matter, momentum, energy), and of the second law of thermodynamics, are derived and illustrated by examples and problems.

219. Micropaleontology. (2) II.

Mr. Phleger

Prerequisite: course 111 or the equivalent.

Laboratory work, with occasional lectures, on the identification and ecology of foraminifera, with special emphasis on their significance in marine geology.

220. Special Topics in Oceanography. (2-4) I, II.

The Staff and Visitors
Lectures and demonstrations by different members of the staff and visitors. Present problems in oceanography; applications of oceanographic knowledge.

†223. Beach and Nearshore Processes. (2) II.

Mr. Inman

Prerequisite: courses 110, 111.

Study of the physical processes in the nearshore environment, including waves and currents, and their effect on the transportation of sediments.

224. Petrography of Sediments. (2) II.

Mr. Bramlette

Laboratory and occasional lectures on determination of the important constituents of sediments, organic and inorganic, with special emphasis on the immersion method of identifying mineral grains.

228. Sedimentary Petrogenesis. (2) II.

Mr. Van Andel

Prerequisite: optical mineralogy.

Formation of sediments; classification, depositional environments and sedimentary facies; sediments in stratigraphy and paleogeography.

250. Seminar in Oceanography. (1) I, II.

The Staff

251. Problems in General Oceanography. (3) I.

Presentation of reports and review of literature in general oceanography.

†254. Marine Sediments. (3) II.Mr. Bramlette, Mr. Inman, Mr. Menard,
Mr. Phleger, Mr. Revelle, Mr. Shepard

Seminar and laboratory. Origin, distribution, interpretation, and methods of study of marine sediments.

†255. Problems in Submarine Geology. (2) IIMr. Bramlette, Mr. Inman, Mr. Menard,
Mr. Phleger, Mr. Revelle, Mr. Shepard

Seminar.

299. Research. (1-6) I, II.

The Staff

Research in one or more of the following oceanographic sciences: physical oceanography; submarine geology; chemical oceanography; biological oceanography, including marine biochemistry, marine microbiology, marine botany, marine vertebrates and invertebrates. Students must present evidence of satisfactory preparation for the work proposed.

† Offered in alternate years.

MARINE BIOLOGY

UPPER DIVISION COURSES

114. **Marine Vertebrates.** (3) I. Mr. Hubbs
121. **Marine Microbiology.** (3) II. Mr. ZoBell, Mr. Jones
Prerequisite: courses 110, 112, 113.
Methods of studying bacteria and allied microorganisms, with particular reference to their importance as biochemical and geological agents in the sea.
- †122. **Marine Biochemistry.** (3) II. Mr. Fox
Prerequisite: fundamental courses in chemistry and biology, or Oceanography 112 and 113, and consent of the instructor.
The chemistry of living matter; marine colloids, comparative biochemical and physiological activities of marine animals; biochemical cycles in the sea.
125. **Physiology of Marine Algae.** (2) II. Mr. Haxo
Prerequisite: basic courses in biology and chemistry, and Oceanography 112, 113.
Comparative physiology and biochemistry of algae with emphasis on marine problems.
126. **Microbial Genetics.** (3) I, II. Mr. Belser
Prerequisites: general biology, microbiology, and biochemistry, or their substantial equivalent.
Lectures, laboratory demonstrations and special problems in principles and techniques of genetics, with particular reference to microorganisms.
199. **Special Studies.** (1-4) I, II. The Staff
Prerequisite: senior standing and consent of the instructor.

GRADUATE COURSES

- †222. **Biochromes.** (2-3) II. Mr. Fox, Mr. Haxo
Prerequisites: course work in organic chemistry and in the biochemistry of physiology of plants or animals.
Physical and chemical foundations of color manifestation; the chemistry, distribution, metabolism and significance of pigments occurring in the living world.
225. **Marine Ecology.** (3) II. Mr. Fager
Behavior, single-species population dynamics, interspecific relationships and environmental factors as they relate to the distribution and abundance of marine organisms.
226. **Biochemical Problems in the Sea.** (3) II. Mr. Fox, Mr. Haxo, Mr. Scholander, Mr. ZoBell
Biochemical and physiological processes in marine plants and animals and the influence of these kinds and concentration of nonconservative components of the sea. Biochemical cycles in the hydrosphere.
227. **Evolution in the Marine World.** (2) II. Mr. Hubbs
Origin and evolution of the sea and its organisms. Migration from and to the sea. Adaptation and speciation in various habitats.
Experimental studies on evolution of marine forms.
252. **Seminar in Experimental and Comparative Biology.** (2) I, II. Mr. Fager

299. Research. (1-6) I, II.

The Staff

Research in such biological fields as: algology, biophysics, genetics, microbiology, vertebrate and invertebrate zoology, comparative biochemistry or physiology of marine animals and plants, evolution and population dynamics. Students must present evidence of satisfactory preparation for the work proposed.

GEOCHEMISTRY**UPPER DIVISION COURSES****130A-130B. Topics in Geology. (2-2) I, II.**

Mr. Arrhenius, Mr. Craig

Prerequisite: none.

Reading course, with preparation of written reports, dealing with basic subjects and problems in the earth sciences.

132. Introduction to Geochemistry. (2) I.

The Staff

(Formerly numbered Oceanography 123.)

Prerequisite: Oceanography 113.

Survey of general topics in geochemistry, with special emphasis on marine geochemical problems. This course, offered from time to time, is designed for oceanographers, geologists, and biologists; it is not a prerequisite for those specializing in geochemistry.

133. Instrumental Geochemistry. (3) II.

Mr. Goldberg and Staff

Prerequisite: physical chemistry and consent of the instructor.

Lectures and laboratory work on instrumental methods in chemical research, with applications to geochemistry. Topics include absorption and flame spectrophotometry; X-ray diffraction and fluorescence; alpha, beta, and gamma counting; nuclear emulsions; mass spectrometry; vacuum techniques and gas analysis.

199. Special Topics. (1-4) I, II.

The Staff

Prerequisite: senior standing and consent of the instructor.

230A. Geochemistry. (3) I.

Mr. Goldberg

Prerequisite: physical chemistry; igneous, metamorphic, and sedimentary petrology. Students who have not had course 237 or the equivalent should take course 237 concurrently.

Chemistry of the lithosphere, atmosphere, and oceans; the geochemical balance; marine chemistry; geochemical cycles or major and minor elements; the origin of life, geochronology.

230B. Geochemistry. (3) II.

Mr. Craig

Prerequisite: course 230A and 237.

A continuation of Geochemistry 230A. General topics in geochemistry including: composition of the earth and meteorites; geochemistry of stable and radioactive isotopes; evolution of the atmosphere; chemical petrology; chemical and phase equilibria of geological importance; geochemistry of volcanic gases.

231. Nuclear Geochemistry. (3) II.

Mr. Suess

Prerequisite: physical chemistry or atomic physics.

Radioactive and stable isotopes; stability of nuclei; radioactive decay schemes; natural radioactivities and geological applications; origin and relative abundances of the elements; fission elements and extinct natural radioactivities.

- 237. Chemical Thermodynamics. (3) I.** Mr. Craig
Prerequisite: physical chemistry and integral calculus.
Extension of the thermodynamics of Gibbs following the formulation of De Donder and Prigogine and Defay. Fundamental theorems; homogeneous and heterogeneous systems; thermodynamic stability and theorems of moderation; equilibrium displacements and transformations; relaxation phenomena; solutions; indifferent states.
- 253. Seminar in Geochemistry. (2) II.** Mr. Arrhenius and the Staff
Prerequisite: consent of the instructor.
Oral and written reports on important topics in geochemistry. Subjects include; silicate chemistry; geochemistry of specific elements; chemical and phase equilibria; geochronology, climatology; geochemical cycles; nuclear geochemistry.
- 256. Topics in Physical and Inorganic Chemistry. (3) I, II.** Mr. Arnold
Prerequisite: consent of the instructor.
Advanced topics in physical and inorganic chemistry will be discussed, with special emphasis on theories of chemical binding, chemistry of the transition elements, high pressure and high temperature chemistry, and other active fields.
- 299. Research. (1-6) I, II.** The Staff

ORIENTAL LANGUAGES

- Kenneth K. S. Ch'en, Ph.D., *Professor of Oriental Languages (Acting Chairman of the Department)*.
† Richard C. Rudolph, Ph.D., *Professor of Oriental Languages (Chairman of the Department)*.
¹ Ensho Ashikaga, M.Litt., *Assistant Professor of Oriental Languages*.
———, *Assistant Professor of Oriental Languages*.
Y. C. Chu, M.A., *Associate in Chinese*.
———, *Associate in Arabic*.
Taitetsu Unno, M.A., *Associate in Japanese*.

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 5.

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 121A, 121B, 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

† Absent on leave, 1959-1960.

¹ In residence fall semester only, 1959-1960.

under certain conditions the thesis plan may be approved. For specific departmental requirements, see the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION.

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.
- *29A-29B. Japanese Oral and Written Composition.** (3-3) Yr. _____
An elementary course for those who have had previous training in Japanese.
- *32. History of Japanese Civilization.** (2) II. Mr. Rudolph
A survey of the development of Japanese culture and its relationship to the Asiatic mainland.
- *42. History of Chinese Civilization.** (2) I. Mr. Ch'en
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. Unno
A continuation of 9A-9B.
- *112. Chinese Literature in Translation.** (2) II. _____
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. Ch'en
Further readings in the classics.
- 119A-119B. Advanced Modern Japanese.** (3-3) Yr. Mr. Ashikaga
A continuation of 29A-29B and 109A-109B.
- 121A-121B. Advanced Chinese.** (3-3) Yr. Mr. Chu
A continuation of 21A-21B and 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. Unno
History of Japanese literature from the beginning to modern times, emphasizing Chinese, Buddhist, and Western influences.

* Not to be given, 1959-1960.

- *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. Ch'en
 Prerequisite: course 113A-113B.
 Selections from masters in the *Ku wen* style.
- *164A-164B. Tibetan. (2-2) Yr. Mr. Ch'en
- *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. Mr. Ch'en
 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. Rudolph
 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.
- 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

A Department of the School of Medicine
 (Department Office, 13-267 Medical Center)

PERSIAN

For courses in Persian, see under Department of Near Eastern Languages.

* Not to be given, 1959-1960.

PHARMACOLOGY

A Department of the School of Medicine

(Department Office, 23-267 Medical Center)

The departments of Pathology and Pharmacology offer certain courses which are open to qualified graduate students who are not pursuing the professional curriculum of the School of Medicine. For information concerning these courses and advanced degrees available, see the ANNOUNCEMENT OF THE SCHOOL OF MEDICINE, LOS ANGELES, and the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION.

PHILOSOPHY

(Department Office, 3303 Humanities Building)

Rudolf Carnap, Ph.D., *Professor of Philosophy.*
 Abraham Kaplan, Ph.D., *Professor of Philosophy.*
 Hans Meyerhoff, Ph.D., *Professor of Philosophy.*
 Ernest 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.*
 Donald Kalish, Ph.D., *Associate Professor of Philosophy.*
 Robert M. Yost, Jr., Ph.D., *Associate Professor of Philosophy (Chairman of the Department).*
 Richard Montague, Ph.D., *Assistant Professor of Philosophy.*
 Herbert Morris, LL.B., D.Phil., *Assistant Professor of Philosophy.*
 Mary Stewart, Ph.D., *Instructor 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 5.

Preparation for the Major.—Twelve units of lower division courses in philosophy, including courses 20A and 20B. Course 30 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. 126, 148, 184A, 184B, 185, 187A, 187B.

Group III. 104, 105, 121, 136, 147, 149, 188, 189, 190.

Group IV. 101, 111, 112, 123, 124, 125, 146, 175, 180, 181.

Requirements for Admission of Philosophy Majors to Graduate Courses.—

1. Regular graduate standing.
2. At least 6 units in each of the four groups specified for the major.
3. Course prerequisites as stated, or consent of the instructor.

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 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, (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, and metaphysics. Ordinarily, preparation for these examinations includes some work in courses numbered over 200. In addition, there is an oral qualifying examination in one of the four 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. Kaplan
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. Miss Stewart
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. Kalish, Mr. Meyerhoff, Mr. Morris, Miss Stewart, 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. Piatt, Mr. Robson
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. Moody, Mr. Piatt, 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. Kaplan
Not open to freshmen.

Contemporary philosophic conceptions of the relation between the state, society, and culture.

30. **Inductive Logic and Scientific Methods.** (3) I, II.

Mr. Kalish, Mr. Montague
The use of logic in science and practical life; fallacies; theory of indirect evidence; construction of scientific hypotheses; probability and statistical methods.

31. **Deductive Logic.** (3) I, II.

Mr. Kalish, Mr. Montague
The elements of symbolic logic; forms of reasoning and structure of language.

UPPER DIVISION COURSES

Upper division courses in philosophy include: (a) *General Studies* (numbered 101 to 149), dealing with the principles of wide fields of inquiry such as the natural sciences, the social sciences, and the humanities, or surveying the chief tendencies in the thought of a period. (b) *Historical Studies* (numbered 152 to 175), dealing more intensively with special periods or with individual thinkers. (c) *Systematic Studies* (numbered 180 to 190), pursuing a more rigorous analysis of the logical foundations of mathematics, science, and philosophy. Course 199 is an individual problem course, available to exceptional students whose special studies are not included in the above curriculum.

General Studies

Prerequisite for all courses in this group: 6 units in philosophy or upper division standing, except as otherwise stated.

101. **The Philosophical Enterprise.** (3) II. Mr. Kaplan

Prerequisite: course 6A-6B or 20A-20B, or consent of the instructor.
Modern conceptions of the aims, problems, and methods of philosophy as a part of culture.

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.

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. Miss Stewart

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.

* Not to be given, 1959-1960.

- *114. American Philosophy. (3) II.** 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) I.** 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. 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.
- *126. Nineteenth Century: Scientific Philosophy. (2) II.** Mr. Robson
 Prerequisite: course 20B.
 Scientific philosophies of the nineteenth century, including positivism, materialism, and evolutionary philosophy, with special reference to Comte, Mill, Spencer, and Mach.
- 136. Philosophy of Art. (3) II.** Mr. Kaplan
 Theaesthetic experience; form and expression; the functions of art; bases of art criticism.
- 146. Philosophy in Literature. (3) II.** Mr. Robson
 A study of philosophical ideas expressed in the literary masterpieces of Plato, Lucretius, Dante, Shakespeare, Goethe, Tolstoy, Lewis Carroll, Thomas Mann, and others.
- *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.
- 148. Philosophy of Science. (3) II.** Mr. Montague
 Prerequisite: course 30 or 31, or adequate preparation in mathematics or a physical science.
 A general survey and philosophical analysis of the concepts and laws of modern natural science.
- 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.

Historical Studies

Prerequisite for all courses in this group: upper division standing in addition to the specific requirements stated.

***152. Plato and His Predecessors. (3) II.** Mr. Meyerhoff
Prerequisite: course 20A or consent of the instructor.

153. Aristotle and Later Greek Philosophy. (3) II. Mr. Moody
Prerequisite: course 20A or consent of the instructor.

157A. 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.

***162. Continental Rationalism. (3) I.** Mr. Yost
Prerequisite: course 20B.

The philosophies of Descartes, Spinoza, and Leibniz.

163. British Empiricism. (3) II. Miss Stewart
Prerequisite: course 20B.

The philosophies of Locke, Berkeley, and Hume.

166. Kant. (3) I. Mr. Kaplan
Prerequisite: course 162 or 163.

170A. Contemporary Philosophy. (3) I. _____
Prerequisite: course 20B. Recommended: course 31.
Analysis of the views of several recent philosophers.

***170B. Contemporary Philosophy. (3) II.** Mr. Kalish
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 systematic and critical analysis of American pragmatism, with special reference to James, Dewey, and Mead.

Systematic Studies

Prerequisite for all courses in this group: upper division standing in addition to the specific requirements stated.

***180. Philosophy of Mind. (3) II.** Mr. Yost
Prerequisite: course 30 or 31, or upper division standing in psychology.
Analysis of psychological concepts.

* Not to be given, 1959-1960.

- 181. Theory of Knowledge. (3) II.** Mr. Yost
Prerequisite: course 30 or the equivalent.
Philosophical problems of perception, memory, belief, and knowledge.
- 184A. Intermediate Logic. (3) I.** Mr. Montague
Prerequisite: course 31 or the equivalent.
Symbolic logic; set theory; foundations of mathematics; concept of the infinite.
- 184B. Advanced Logic. (3) II.** Mr. Kalish
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) I.** Mr. Montague
Prerequisite: courses 30 and 31, or the equivalent.
Logical and mathematical theories of probability; development of the mathematical calculus of probability in a logistic form; outlines of a general mathematical theory of probability and statistics; different interpretations of probability; problem of induction; probability logic.
- 187A. Semantics. (3) I.** Mr. Kaplan
Prerequisite: course 30 or the equivalent.
General theory of signs; meaning and communication; logic and natural languages.
- 187B. Semantics. (3) II.** Mr. Kalish
Prerequisite: course 31 or the equivalent.
Formalized languages; theory of truth; synonymy and analyticity.
- 188. Ethical Theory. (3) II.** Miss Stewart
Prerequisite: course 104.
A systematic study of moral philosophy; right and wrong; good and evil; and some leading theories about these topics.
- *189. Esthetic Theory. (3) I.** Mr. 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.
- 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 Foundations of Physics. (3) I.** Mr. Carnap
Prerequisite: course 148.
- 240. Semantics. (3) I.** Mr. Montague
Prerequisite: course 187B.

241. **Logic.** (3) II. Mr. Kalish
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. Mr. Yost
Prerequisite: course 111.
- *252. **Seminar: Naturalism.** (3) I. Mr. Piatt
253. **Seminar: Pragmatism.** (3) II. Mr. 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.
258. **Seminar: Hume.** (3) I. Mr. Robson
Prerequisite: course 163.
- *259. **Seminar: Leibniz.** (3) II. Mr. Yost
Prerequisite: course 162.
- *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.
- *269. **Seminar: Philosophy of Art.** (3) II. Mr. Kaplan
Prerequisite: course 136.
- *270. **Seminar: Methodology of the Human Sciences.** (3) I. Mr. Kaplan
- *271. **Seminar: Logical Theory.** (3) II. Mr. Carnap
Prerequisite: course 184A or 184B.
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.
297. **Individual Studies for Graduate Students.** (2-4) I, II. The Staff (Mr. Carnap in charge)
299. **Research on Dissertation.** (2-4) 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 (Chairman of the Department).*
 Laurence E. Morehouse, Ph.D., *Professor of Physical Education.*
 Raymond A. Snyder, Ed.D., *Professor of Physical Education (Acting Vice-Chairman of the Department).*
 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 Acting 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.*
 Marguerite Clifton, Ed.D., *Assistant Professor of Physical Education.*
 _____, *Assistant Professor of Physical Education.*
 _____, *Assistant Professor of Physical Education.*
 _____, *Assistant Professor of Physical Education.*
 Hope M. Smith, Ph.D., *Assistant Professor of Physical Education.*
 _____, *Assistant Professor of Physical Education.*
 _____, *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.*
 _____, *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.B., *Associate Supervisor of Physical Education.*
 Glen H. Egstrom, M.S., *Assistant Supervisor of Physical Education.*
 _____, *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.*
 William F. Pillich, M.S., *Assistant Supervisor of Physical Education.*
 Carol J. Scothorn, M.A., *Assistant Supervisor of Physical Education.*
 Mary E. Weber, M.S., *Assistant Supervisor of Physical Education.*
 Bryant J. Cratty, M.S., *Junior Supervisor of Physical Education.*
 Gerald W. Gardner, M.S., *Junior Supervisor of Physical Education.*
 Janice C. Hanlon, M.S., *Junior Supervisor of Physical Education.*

† Sabbatical leave in residence, 1959-1960.

* In residence fall semester only, 1959-1960.

‡ In residence spring semester only, 1959-1960.

Beverly K. Kozlow, M.S., *Junior Supervisor of Physical Education.*
 Aubrey A. McIntyre, 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.*
 Lenore L. Emery, M.S., *Associate in Physical Education.*
 Richard K. Means, M.S., *Associate in Physical Education.*
 Kenneth M. Moore, M.S., *Associate in Physical Education.*
 Gerald F. Norman, B.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.*



Donald S. MacKinnon, M.D., *Director, Student Health Service.*

Prescribed Physical Education

Physical Education 1 (men and women) as an integral part of a student's general education, is prescribed for all first-year and second-year undergraduate students who are under twenty-three years* of age until four semesters of work have been completed satisfactorily. Prescribed physical education must be taken in four *consecutive* semesters until the requirement is fulfilled. See course description on page 338.

Students may elect activities within the four-semester requirement with one exception—swimming is required for all lower division men.

The same level (beginning, intermediate, advanced) in activity courses may not be repeated to meet the requirement.

All general college students are restricted to one physical education class per semester except by special permission of the Men's or Women's Coordinator.

Any upper division student may elect Physical Education 1 for credit. However, the total units presented for graduation may not exceed 4 units or eight semesters of work.

Medical Examination.—(a) Students entering the University for the first time and (b) reëntering students are required to obtain a clearance of their health status from the Student Health Service prior to registration. In case of injury, illness, or special health problems the medical examiner may exempt the student from required physical education or refer the student for assignment in adapted physical education.

A student already enrolled in class whose health requires either exemption or special assignment reports directly to the Medical Examiner. Pending action on any petition, the student will regularly attend the required course in physical education.

Exemptions.—Students wishing exemption from the requirement because they are over twenty-three years of age must present to the Registrar a petition on the prescribed form for such exemption.

Lower division men who wish to obtain exemption from the swimming requirement may do so upon passing a competency test. Passing of this test in no way influences the four semester requirement; it merely removes the necessity of selecting swimming as one of the activity courses within the requirement.

Substitutions.—The student may petition for acceptance, in lieu of one semester of the required course, the satisfactory completion of Physical Education 44, Principles of Healthful Living, which is a 3-unit course in health education.

* See Exemptions below.

The student may petition for acceptance, in lieu of one semester of the required course, the satisfactory demonstration of proficiency (equivalent to that normally achieved by a beginner in a one semester course) in one personal-exercise sport, such as swimming, tennis, or golf.

NOTE: Proficiency examinations will be given each semester on the morning of the Friday following enrollment day prior to the first week of classes for each semester. Students wishing to take an examination must make an appointment *on or before* enrollment day in the Physical Education Office, Women's Gymnasium, Room 122A.

Course Description.—The following descriptions may be used as a guide in selecting activities:

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. \$12 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—basic 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 gymnasiums.

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.

College of Applied Arts

The Department of Physical Education offers the following majors:

1. Major in 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. Major in Dance.

Preparation for the Major.—Physical Education 35, 44, 36A-36B, 36C-36D, 38, 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 2A*, 2B*, 6B*, 44*, English 31*, Humanities 1A, 1B, Music 30A, 30B, Theater Arts 24.

The Major.—Physical Education 100, 150A-150B, 151, 152, 153A-153B, 154, 158A-158B, six units chosen from Art 108A-108B, 118A-118B, 119C, English 115, 117J, 133, Folklore 101, 105, Music 121, 136A, 136B, 137, 159, Philosophy 136, Theater Arts 102, 108, 109, 141, 142, 148A, 148B, 163, and electives from Anthropology 102, 124, 125, 127, Sociology 101, 126, Philosophy 101, 146, 147, to bring total to 36 units.

3. Major in 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 Home Economics 111, 138 or Sociology 142; Sociology 101; Psychology 145A; Education 110B; Public Health 100, 145; 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 110B; Home Economics 111, 138 or Sociology 142; Sociology 101; Psychology 145A–145B; Public Health 100, 110, 125, 134, 145; Physical Education 145A–145B, 160.

4. Major in Physical Therapy.

(a) *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 College of Applied Arts 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 1, 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.

(b) *Four-Year Plan* (leading to degree only). This program is designed for students who wish to earn the degree of Bachelor of Science before enrolling in a school of physical therapy. (To terminate in June, 1959.)

Preparation for the Major.—Courses 1, 43, 44; Chemistry 2A; Physics 10 or 2A; Zoology 15, 25. Recommended: Psychology 1A, 1B or 33; Speech 1–2; Sociology 1, 12.

The Major.—Thirty-six units of upper division courses, including Physical Education 100, 102, 103, 104, 190A, Public Health 106, 125; and electives selected from Physical Education 130, 139, 142A, 146, 171, 190B; Education 110A–110B, 116, 147, 108; Psychology 108, 110, 112, 113, 161, 168, 169; Anthropology 150; Home Economics 111; Public Health 148G, 170.

5. Major in 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.

† 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.

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, 189; Physical Education 138, 330; Theater Arts 108.

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.

Preoccupational Therapy Curriculum

For details concerning this curriculum, see page 46 of this bulletin.

Requirements for the Special Secondary Credential

Students may complete a teaching major in physical education for a special secondary credential. For the general requirements, consult the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES.

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.

Requirements for the Master's Degree

The degree of Master of Science is awarded with a program in either physical education, health education, or recreation education. With skillful planning, the student may combine a portion of the course work for the master's degree with the work for the general secondary credential, although, generally, to complete both programs will require approximately three semesters of work. For the general requirements, see page 69 of this bulletin and the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION.

College of Letters and Sciences

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 5.

LOWER DIVISION COURSES

†1. **Physical Education Activities (Men and Women).** (½) I, II. The Staff Classes meet three hours weekly. Section assignments are made by the department. This course is prescribed for freshmen and sophomores and may

† The University requirements in physical education referred to in this section cover Physical Education 1 (men and women), ½-unit courses which are required of students in the freshman and sophomore years.

‡ The University of California, Los Angeles, does not offer a major in physical education in the College of Letters and Science. A group major in physical education and hygiene is offered in the University at Berkeley. Students planning to transfer to Berkeley and to satisfy the requirements for this major are referred to the GENERAL CATALOGUE, DEPARTMENTS AT BERKELEY.

be elected by juniors and seniors. 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 335-336 of this bulletin.)

***†6. Professional Activities (Men) (1½) 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. (1½) 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). (1½) I, II.** Mr. Hunt

Designed for major and minor students in physical education. Fundamental knowledges in swimming and wrestling.

***†9. Professional Activities (Men). (1½) I.**

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.

***27B. Elementary School Physical Education Activities. (1) I, II.**

Prerequisite: sophomore standing.

Miss Latchaw, Mr. Pillich

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.

* 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. Elementary and recreation education students may substitute this course for the required course, Physical Education 1, for the two semesters in which they are enrolled in Physical Education 27A and Physical Education 27B.

‡ This course may be accepted in lieu of the required course, Physical Education 1, with the consent of the adviser.

§ Students may substitute this course for the required course, Physical Education 1, for the semester in which they are enrolled.

* Open to nonmajor students only by consent of the instructor.

§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. Mrs. Scothorn
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.

§36. A-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. Mrs. Scothorn

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

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.

§44. Principles of Healthful Living. (3) I, II.

Mr. Sutton, Mr. Means, Miss Thomson
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.

Prerequisite: Zoology 15, 25.

Miss Hunt, Mr. Gardner, Miss Weber
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 pos-

§ Students may substitute this course for the required course, Physical Education 1, for the semester in which they are enrolled.

† Open to nonmajor students only by consent of the instructor.

tures 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

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.

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. 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. Pike

A study of camping and outdoor education philosophy and practices including: the selection, use and care of camping equipment; trip planning; camp site development; preparation and care of food; outdoor science education; and conservation education. Laboratory experience required. Prerequisite for course Physical Education 142B.

142B. Outdoor Education Leadership. (2) I.

Mr. Pike

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. Prerequisite: course 142A or consent of the instructor.

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

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, Mr. Johns, Mrs. Bell

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

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, 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.

Mrs. Scothorn

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.** Mrs. Scothorn
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
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.** Mrs. Scothorn
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.**
Prerequisite: course 150A-150B, 151. Miss Hawkins
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.** Miss Cassidy
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
Prerequisite: Public Health 134 or consent of the instructor.

199. **Special Studies. (1-4) I, II.** Mr. Massey
Prerequisite: senior standing and consent of the instructor.

GRADUATE COURSES

201. **Secondary School Curriculum in Physical Education. (2) I, II.** Miss Brown
Seminar in laboratory assignments.
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
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
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.** Mr. Snyder
Seminar and group conferences.
Prerequisite: consent of the instructor.
A student-staff examination of changing perspective 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
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.

Prerequisite: consent of the instructor.

Mr. N. P. Miller

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 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.

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. 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. Morehouse

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
 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 development 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. Mr. Norman

371B. Baseball and Volleyball I, II. Mr. Moore

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 COURSES IN ANOTHER DEPARTMENT

- Integrated Arts 1A-1B. Man's Creative Experience in the Arts. (3-3) Yr.** Mr. With

PHYSICS

(Department Office, 115 Physics-Biology Building)

Alfredo Baños, Jr., Dr. Eng., *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*.
 Vern O. Knudsen, 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*.
 Steven A. Moszkowski, Ph.D., *Associate Professor of Physics*.
 Robert A. Satten, Ph.D., *Associate Professor of Physics*.
 Donald H. Stork, Ph.D., *Associate Professor of Physics*.
 David I. Paul, Ph.D., *Assistant Professor of Physics*.



David T. Griggs, Ph.D., *Professor of Geophysics*.
 Robert E. Holzer, Ph.D., *Professor of Geophysics*.
 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*.
 Leon Knopoff, Ph.D., *Associate 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 5.

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 271), 3A (taken concurrently with Mathematics 1 or after passing of the special mathematics examination—see prerequisites for Mathematics 3A on page 272), 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.†

† Absent on leave, 1959–1960.

‡ A mimeographed brochure, giving more detailed information than is contained in this bulletin, is obtainable from the office of the Department of Physics.

¹ In residence fall semester only, 1959–1960.

² In residence spring semester only, 1959–1960.

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 271), 3A (taken concurrently with Mathematics 1 or after passing of the special mathematics examination—see prerequisites for Mathematics 3A on page 272), 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 optics and spectroscopy:* Physics 105, 107, 107C, 108B, 108C, 112, 113, 113C, 114A, 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 or Meteorology 107, 113, 114A, 116A, 116C, 121, 124A; Meteorology 104.

An average grade of C or higher must be maintained in the above courses. Also required: Mathematics 110AB or 110C. 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.

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, bacteriology, geology, medical technology, predentistry, premedicine, pre-optometry, prepublic 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. Baños, Mr. Ellis, Mr. Watson

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 Sound. (3) I*.

Mr. Satten

Lecture and demonstration, three hours; laboratory, two hours. Prerequisite: course 1A or 2A; Mathematics 5B, or 4A taken concurrently.

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.

1D. General Physics: Light and Modern Physics. (3) II.

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) II.

Mr. Ticho, _____

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. _____

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.

* The fall semester, 1959, will be the last semester Physics 1D will be given with the prerequisites listed above and including study of sound. Beginning in the spring semester, 1960, and thereafter, the course will be given as listed in the next entry.

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. 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 Sound. I.

21 (1D). Light and Modern Physics. 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. Watson

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, Mr. Ticho
Lecture-discussion and laboratory to accompany course 107.**108B. Physical Optics. (3) I.**

Mr. Satten

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 charged 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.** Mr. Saxon
 Prerequisite: senior standing or consent of the instructor.
- 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.
- 116A. Electronics. (3) II.** Mr. Stork
 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. Stork, Mr. Cole
 Laboratory to accompany 116A.
- 116D. Electronics Laboratory. (2) I.** Mr. Leonard
 Laboratory to accompany 116B.
- *117. Hydrodynamics. (3) I.** _____
- 119. Kinetic Theory of Matter. (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.** _____
 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 magnetostatic fields, and a general discussion of plane homogenous waves in unbounded, isotropic media. Boundary value problems.

210B. Electromagnetic Theory. (3) I.

Mr. Bafias

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. MacDonald

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.

214. Advanced Acoustics. (3) I.

Mr. Delsasso

***215. Statistical Mechanics. (3) II.**

Mr. Finkelstein

* Not to be given, 1959-1960.

- *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, magnetohydrodynamic waves, hydromagnetic shock, and hydromagnetic turbulence.
- 220A. Theoretical Mechanics. (3) I.** Mr. Kinsey
- *220B. Theoretical Mechanics. (3) II.** Mr. Kinsey
- 220C. Quantum Mechanics. (3) II.** Mr. Saxon
- 220D. Quantum Mechanics. (3) I.** Mr. Moszkowski
- 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. Saxon
An advanced course in the structure of complex nuclei and nuclear radiation.
- 231. Methods of Theoretical Physics. (3) I.** Mr. Baños
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.
- 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. Hellsasso, Mr. Knudsen
- 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.** Mr. Pursey
- 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 12 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.

PHYSIOLOGICAL CHEMISTRY

A Department of the School of Medicine

(Department Office, 33-257 Medical Center)

PHYSIOLOGY

A Department of the School of Medicine

(Department Office, 23-250 Medical Center)

The Departments of Physiology and Physiological Chemistry offer certain courses which are open to qualified graduate students who are not pursuing the professional curriculum of the School of Medicine. For information concerning these courses and advanced degrees available, see the ANNOUNCEMENT OF THE SCHOOL OF MEDICINE, LOS ANGELES, and the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION.

PLANT PATHOLOGY

(Department Office, 288 Physics-Biology Building)

Kenneth F. Baker, Ph.D., *Professor of Plant Pathology.*

John G. Bald, Ph.D., *Professor of Plant Pathology.*

John T. Middleton, Ph.D., *Professor of Plant Pathology (Chairman of the Department), Riverside.*

Pierre A. Miller, *Professor of Plant Pathology, Emeritus.*

Donald E. Munnecke, Ph.D., *Assistant Professor of Plant Pathology.*

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. Munnecke

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. Baker, 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

* Not to be given, 1959-1960.

POLITICAL SCIENCE

(Department Office, 160 Haines Hall)

- 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.*
 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 (Chairman of the Department).*
 *H. Arthur Steiner, Ph.D., *Professor of Political Science.*
 Frank M. Stewart, Ph.D., *Professor of Political Science.*
 Charles H. Titus, Ph.D., LL.D., *Professor of Political Science.*
 John C. Bollens, Ph.D., *Associate Professor of Political Science.*
 James S. Coleman, 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.*
 Currin V. Shields, Ph.D., *Associate Professor of Political Science.*
 David T. Cattell, Ph.D., *Assistant Professor of Political Science.*
 Douglas H. Mendel, Jr., Ph.D., *Assistant Professor of Political Science.*
 Leonard Binder, Ph.D., *Assistant Professor of Political Science.*
 Richard N. Rosecrance, Ph.D., *Assistant Professor of Political Science.*
 Peter Woll, Ph.D., *Instructor in Political Science.*

Letters and Science List.—All undergraduate courses in political science are included in the Letters and Science List of Courses. For regulations governing this list, see page 5).

Preparation for the Major.—Two courses from among courses 1, 2, and 103.

The Major.—Twenty-four units in upper division political science courses numbered from 110 to 199. The work in political science must be so distributed that at least three courses are taken in one of the groups and at least one course in each of three other groups in which the upper division courses of the department are divided: Group I (Courses 110–118), Group II (Courses 120–138), Group III (Courses 141–148), Group IV (Courses 150–159), Group V (Courses 161–168, 117, 133A–133B, 187), and Group VI (Courses 171–187, 166). For details the student should consult a departmental adviser. The student must maintain an average grade of C or higher in all upper division courses in political science.

Related Curricula.—For the curriculum in public service and the curriculum in international relations, students are referred to pages 15 and 20.

LOWER DIVISION COURSES

1. Introduction to Government. (3) I, II.

Mr. Farrelly, Mr. Hinderaker, Mr. Marvick,
Mr. McHenry, Mr. Rosecrance, Mr. Woll

An introduction to the principles and problems of government with particu-

† Absent on leave, 1959–1960.

* In residence.spring semester only, 1959–1960.

lar 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 21 C 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, Mr. Shields

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. Shields

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, Mr. Shields
A survey of the development of American ideas concerning political authority from Cotton and Williams to the present.

117. Jurisprudence. (3) I.

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, Mr. Shields
Prerequisite: course 110, 112, or 113.
A systematic analysis of modern concepts and problems of political association.

*Group II.—International Relations***120. Colonies in World Politics. (2) II.**

Mr. Coleman
A brief survey of the more important historical imperial systems, followed by a study of colonial governments and the problems of imperialism in the world today.

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. Binder, Mr. Mendel, Mr. Rosecrance
(Replaces Political Science 130A.)
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.

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. Mr. Binder
A study of the relations among the countries of the Middle East with special reference to the policies of the Great Powers.

136. Problems of the Pacific Area. (3) I. Mr. Mendel
A survey of contemporary problems of special international interest, with particular reference to Japanese foreign affairs and the Western Pacific area.

138. Far Eastern International Relations. (3) II. Mr. Steiner
The relations of the countries of the East Asian seaboard, especially China, with their neighbors and the Western Powers, with emphasis on contemporary questions affecting the interests and policies of the United States.

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
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–150B. The Governments of Latin America. (3–3) Yr. Mr. Fitzgibbon
Neither semester is prerequisite to the other; either semester may be taken separately.
A study of the constitutional development, governmental organization and operation, and political practices and attitudes in Latin-American states.

151. The Governments of the Middle East. (3) I. Mr. Binder
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

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

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 interregional 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.

*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
Governmental 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, Mr. Stewart
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, Mr. Stewart
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, Mr. Stewart
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, Mr. Stewart
Problems of policy, organization and procedure in selected fields of public administration, with emphasis on administrative functions. It is anticipated that during 1959-1960, Semester I will be devoted to Metropolitan problems, and Semester II to resources problems.

184. Municipal Administration. (3) II. Mr. Bollens
A study of governmental functions performed at the municipal level, such as planning, zoning, water supply, housing, recreation and parks, public health, traffic, law enforcement, public works, and municipal finance; development of modern concepts of administration in local 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.

*Section 1. Techniques of Legal Research. Mr. Farrelly, Mr. Sherwood

Section 2. Problems in International Relations. Mr. Coleman, Mr. Graham

Section 3. Readings in Political Theory. Mr. Jenkin, Mr. Nixon, Mr. Shields

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

Section 9. Problems of the British Empire.

Mr. McHenry

Section 10. Problems in Public Administration.

Mr. Stewart

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. Shields, 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.

* Not to be given, 1959-1960.

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, Mr. Stewart

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.

228. Administrative Management. (3) II. Mr. Crouch, Mr. Stewart

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
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)	Mr. Binder
250G. Commonwealth Studies. (3)	Mr. McHenry
250H. Western European Studies. (3)	Mr. Neumann
250J. Southeast Asian Studies. (3)	_____

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, Mr. Stewart**256. Seminar in Comparative Government. (3)** Mr. Graham, Mr. McHenry, Mr. Neumann, Mr. Steiner**257. Seminar in Political Theory. (3)** Mr. Jenkin, Mr. Nixon, Mr. Shields**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.

PSYCHIATRY

A Department of the School of Medicine

(Department Office, 104 Building 5F)

The Department of Psychiatry offers certain courses which are open to qualified graduate students who are not pursuing the professional curriculum of the School of Medicine. For information concerning these courses and degrees available, see the ANNOUNCEMENT OF THE SCHOOL OF MEDICINE, LOS ANGELES, and the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION.

PSYCHOLOGY

(Department Office, 211 Franz Hall)

Harry W. Case, Ph.D., *Professor of Engineering and Professor of Psychology.*
Roy M. Doreus, Ph.D., *Professor of Psychology and Professor of Psychology in the School of Medicine.*

Franklin Fearing, Ph.D., *Professor of Psychology.*

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.*

† Absent on leave, 1959-1960.

* In residence spring semester only, 1959-1960.

- ¹Bruno Klopfer, Ph.D., *Clinical Professor of Psychology.*
 George F. J. Lehner, Ph.D., *Professor of Psychology.*
 Donald B. Lindsley, Ph.D., *Professor of Psychology (Chairman of the Department) and Professor of Psychology in the School of Medicine (Physiology).*
 Kenneth MacCorquodale, Ph.D., *Visiting Professor of Psychology.*
 †John P. Seward, Ph.D., *Professor of Psychology.*
 Marion A. Wenger, Ph.D., *Professor of Psychology.*
 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 Psychology and Associate Professor of Engineering.*
 Irving Maltzman, Ph.D., *Associate Professor of Psychology.*
 George E. Mount, Ph.D., *Associate Professor of Psychology and Associate Professor of Engineering.*
²Jessie L. Rhulman, 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.*
 †Richard C. Atkinson, Ph.D., *Assistant Professor of Psychology.*
 William E. Broen, Ph.D., *Assistant Professor of Psychology.*
 Edward C. Carterette, Ph.D., *Assistant Professor of Psychology.*
 Michael J. Goldstein, Ph.D., *Assistant Professor of Psychology.*
 Jaques W. Kaswan, Ph.D., *Assistant Professor of Psychology.*
 Erwin J. Lotsof, 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.*



- Harry M. Grayson, Ph.D., *Clinical Professor of Psychology.*
 Frank J. Kirchner, Ph.D., *Clinical Professor of Psychology.*
 Morse P. Manson, Ph.D., *Clinical Professor of Psychology.*
 J. Arthur Waites, *Clinical Professor of Psychology.*
 Bertram E. Forer, Ph.D., *Associate Clinical Professor of Psychology.*
 F. Harold Giedt, Ph.D., *Associate Clinical Professor of Psychology.*
 Harrington V. Ingham, M.D., *Associate Clinical Professor of Psychology and Neuropsychiatrist, Student Health Service.*
 John B. Schlosser, Ph.D., *Associate Clinical Professor of Psychology.*
 Charlyne T. Seymour, Ph.D., *Associate Clinical Professor of Psychology.*
 Barbara M. Stewart, 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.*
 Nicholas Rose, Ph.D., *Assistant Clinical Professor of Psychology.*
 Mathew Ross, M.D., *Assistant Clinical Professor of Psychology and Neuropsychiatrist, Student Health Service.*
 George F. Seacat, Ph.D., *Assistant Clinical Professor of Psychology.*
 James L. Way, Ph.D., *Assistant Clinical Professor of Psychology.*
³Laurence A. Petran, Ph.D., F.A.G.O., *Professor of Music and University Organist.*

† Absent on leave, 1959-1960.

¹ In residence fall semester only, 1959-1960.

² In residence spring semester only, 1959-1960.

Gladys M. Jewett, Ph.D., *Lecturer in Psychology and Manager, Student Counseling Center.*

Warren H. Schmidt, Ph.D., *Lecturer in Psychology.*

Irving Weesler, Ph.D., *Associate Professor of Personnel Management, Associate Research Psychologist, Institute of Industrial Relations.*

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.*

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.*

Gerhart R. Sommer, 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 5.

Preparation for the Major.—Required of all majors: Psychology 1A–1B. Students who have upper division status and who have had 6 or more units of credit in lower division psychology but have not had 1B, will be required to take it if they are not eligible to take Psychology 108. 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 367.)

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. Courses 105A, 106A, 126, and 137 are to be taken in the junior year. Students coming to this campus in the second semester of the junior year or later, or who have changed to a psychology major late in their college career, will be asked to take these courses at the earliest opportunity. Normally, 105A and 126 will be taken in the first semester of the junior year, and 106A and 137 in the second semester.

Requirements for the M.A. Degree.—The department follows Plan II. (See page 69.) Detailed statements of the requirements and types of examinations may be obtained in the departmental office.

Requirements for the Ph.D. Degree.—In addition to the general requirements of the Graduate Division, students intending to become candidates for the Ph.D. degree must pass a series of examinations designated as Examina-

tions A, B, and C. The department will endorse petitions for candidacy, and will request the appointment of doctoral committees only for applicants who have passed the examinations with credit. Detailed statements of the requirements and a summary of graduate work in Psychology may be obtained from the departmental office.

LOWER DIVISION COURSES

1A. Introductory Psychology. (3) I, II. Mr. Raven in charge

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. Mr. Jones in charge

Prerequisite: course 1A

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. Exceptions to the requirements are made for students who are not majoring in psychology, for the following courses: 120, 126, 142, 143, 145A-145B, 146, 147, 149, 167A-167B, 180, 185, 186. For these courses, 1A and 33 or the equivalent will be accepted as meeting the prerequisite.

101. Principles of Psychology. (3) I, II.

Open to upper division students who do not have credit for courses 1A and 1B. For non-majors, may be offered in substitution for courses 1A and 1B as the prerequisite for certain upper division courses.

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. Comrey

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. Jeffrey

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. Carterette, 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
Prerequisite: course 1A-1B.

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.

Mr. Broen
Lectures, 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. Parducci
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. Anderson, Mr. MacCorquodale

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. Anderson

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.

Mr. Fearing

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.

Mr. Fearing

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.

Mr. Centers

Course 145A is prerequisite to course 145B.

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. Fearing
Psychological factors in major social problems, including social control, propaganda, group conflict, cultural determination, etc.

148. Personality Structure and Development. (3) I. Mr. Kaswan
Consideration of the cultural and biological determinants of personality.

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. _____
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. Mr. Lotsof
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.

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, Mr. Kaswan
Study of the dynamics and prevention of abnormal behavior, including neuroses, psychoses, character disorders, psychosomatic reactions and other abnormal personality patterns.

* Not to be given, 1959-1960.

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 reëducation 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 salesmen.

185. Personnel Psychology. (2) II.

Mr. Comrey

The methods of selection, classification, and training of employees.

186. Occupational Counseling and Job Classification. (2) I.

Mr. Barthol

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

Description of factors such as illumination, noise, and temperature as they affect production.

188A-188B. Psychological Bases of Counseling. (2-2) Yr.

Mrs. Jewett

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.

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 patterns, 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**201A-201B. Proseminar in Psychology. (2-2) Yr.**

Mr. Parducci, Mr. Maltzman, and the Staff

Required of all regular graduate students in the first year of residence.

An intensive survey of the major areas, problems, and methodologies in the field of psychology.

207A-207B. Advanced Psychometric Methods. (2-2) Yr.

Prerequisite: course 107 or the equivalent. Mr. Gengerelli, Mr. Comrey

213. Experimental Design in Psychology. (2) I, II.

Mr. Anderson

Prerequisite: courses 106B and 207A, or the equivalent.

Experimental testing of hypotheses; sources of error and methods of control; statistics appropriate to various designs. Students will evaluate and construct designs in preparation for original research.

- *214. Quantitative Analysis in Psychology.** (2) II. Mr. Atkinson
Prerequisite: course 207A, or the equivalent.
Nonstatistical mathematical analysis of psychological data. The theoretical and experimental implications of an analytic approach to psychology with emphasis upon applications of probability theory, Markov processes, linear operators, and set-theoretical methods.
- 215A-215B. Commercial and Industrial Psychology.** (2-2) Yr. Mr. Barthol
Prerequisite to 215B: course 107 or the equivalent.
Selection and training of employees; factors influencing efficiency of work.
- 216. Critical Problems in Psychology.** (2) I, II. Mr. Maltzman, Mr. Parducci
Some critical problems in the field of psychology will be discussed, depending on the interests of the instructor and the class. This course may be repeated without duplication of credit.
- 217A-217B. Clinical Psychology.** (2-2) Yr. Mr. Lotsof
Prerequisite: course 161 or 168, or the equivalent.
Discussion and integration of basic concepts in clinical psychology.
- 218. Communication, Propaganda, and Public Opinion.** (2) I. Mr. Fearing
Problems, methods, and theories in communications research. Particular attention is given to the analysis of communications content, the theory and role of propaganda, and the dynamics of public opinion.
- 219A-219B. Clinical Measurement Techniques.** (2-2) Yr. Mr. Sheehan
Advanced study of tests in clinical diagnostic study, including the special application of individual and group tests of intelligence, personality, diagnosis and projective techniques. Emphasis will be placed upon application in the clinical situation.
- 220. Clinical Neurology.** (2) II. _____
Prerequisite: courses 108 and 217A, or their equivalents.
Presentation of selected neurological cases. This course is designed to integrate the student's knowledge of mental and motor dysfunction with the neurological bases of such dysfunction.
- 221. Experimental Psychology.** (3) I. Mr. Mount
Prerequisite: course 106B and consent of the instructor.
Methods, techniques, and apparatus applicable to research problems of various types. Attention will be given to sources of error, difficulties in operation, and limitations on interpretations.
- 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. Doreus
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
Prerequisite: courses 217A, and 217B or 219A or 252A; consent of the instructor. Recommended: courses 144, 219B.
Survey of theories and fields of application of projective methods, and supervised practice in techniques.

* Not to be given, 1959-1960.

† Both 224A and 224B to be given fall semester only.

- 225. Rationale and Methods of Research in Projective Techniques.** (3) I. Mr. Klopfer
Prerequisite: course 224A-224B. Recommended: course 213.
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. Nakamura
Prerequisite: courses 105A-105B, 148, or the equivalents, recommendation of adviser, and consent of 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) II. 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.
- 251. Seminar in Learning.** (3) I. Mr. MacCorquodale
A consideration of typical models in current learning theory and their implications for research.
- 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
- 255A-255B. Seminar in Social Psychology.** (3-3) Yr. Mr. Fearing
- 256A-256B. Seminar in Group Behavior.** (3-3) Yr. Mr. Raven
Prerequisite: Psychology 149 or Sociology 161, or consent of the instructor.
Consideration of the psychological theories, methods of study, and dynamics of the various forms of collective behavior.
- 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 Motivation.** (3) II. Mr. Gilhousen
- *260. Seminar in Comparative Psychology.** (3) I. Mr. Gilhousen
- 261A*-261B-261C*. Seminar in Sensation.** (3 units each) II. Mr. Jones
Prerequisite: consent of the instructor.

* Not to be given, 1959-1960.

Consideration of the problems, methods, and research literature in the psychology of sensation.

262. **Seminar in Advanced Speech Pathology.** (2) I. Mr. Sheehan

266. **Seminar in Opinion and Attitude Research.** (3) I. Mr. Centers

267. **Mass Communication as a Social Force.** (2) II. Mr. Fearing

Prerequisite: open to graduate students in journalism and theater arts; open to graduate students in psychology with consent of the instructor.

The social implications of motion pictures, newspaper, radio, theater, and television in the integration of human society.

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, test 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.** Mr. Lehner and 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.**

Mr. Case

401A-401B. **Internship in Applied Psychology.** (3-6; 3-6) Yr.

Prerequisite: consent of the adviser.

Section 1. **Clinical Psychology.**

Mr. Lehner and the Clinical Staff

Section 2. **Psychological Counseling.**

Mr. Case and the Staff

Section 3. **Industrial Psychology.**

Mr. Barthol

PUBLIC HEALTH

(Department Office, 100A Building 3T)

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.*
- Wilfrid J. Dixon, Ph.D., *Professor of Biostatistics and Professor of Preventive Medicine and Public Health.*
- Jean S. Felton, M.D., *Professor of Preventive Medicine and Public Health and Professor of Occupational Health.*
- 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)*
- Wilton L. Halverson, M.D., Dr.P.H., *Professor of Public Health and Professor of Preventive Medicine and Public Health, Emeritus.*
- Edward B. Johns, Ed.D., *Professor of School Health Education and Professor of Physical Education.*
- Paul A. Lembeke, M.D., M.P.H., *Professor of Public Health and Professor of Preventive Medicine and Public Health.*
- Charles E. Smith, M.D., D.P.H., *Professor of Public Health (Berkeley).*
- John Beeston, M.B., D.P.H., *Associate Professor of Public Health and Associate Professor of Preventive Medicine and Public Health.*
- A. Harry Bliss, M.S., M.P.H., Dr.P.A., *Associate Professor of Public Health and Associate Professor of Preventive Medicine and Public Health.*
- Frank J. Massey, Ph.D., *Associate Professor of Biostatistics and Associate Professor of Preventive Medicine and Public Health (Vice-Chairman of the Department).*
- Wilfred Sutton, Ed.D., *Associate Professor of School Health Education and Associate Professor of Physical Education.*
- Olive Jean Dunn, Ph.D., *Assistant Professor of Biostatistics and Assistant Professor of Preventive Medicine and Public Health.*
- Frederick J. Post, Ph.D., *Assistant Professor of Sanitary Science.*
- Leo G. Reeder, Ph.D., *Assistant Professor of Public Health, Assistant Professor of Preventive Medicine and Public Health, and Lecturer in Sociology.*
- John N. Belkin, Ph.D., *Lecturer in Public Health and Professor of Entomology.*
- Kenneth M. Eastman, B.S., *Lecturer in Hospital Administration.*
- 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.*
- 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.*
- 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.*
- Melvin Robert Plancey, M.D., M.P.H., *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.*
- 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.—Courses 5, 100, 106, 110, 145, 147, 160A† are included in the Letters and Science List of Courses. For regulations governing this list, see page 5.

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 63-66 of this bulletin.

LOWER DIVISION COURSE

- 5. Introduction to Public Health.** (3) I, II. Mr. Beeston
A survey of the entire field of public health, including a consideration of the evolution of disease prevention and control; the social, medical, and economic aspects of sickness, disability, and death; and orientation in the administration of health programs by official agencies and by voluntary health organizations.

UPPER DIVISION COURSES

- 100. Principles of Public Health.** (3) I, II. Mr. Goerke
The philosophy and principles of public health programs and the fundamentals of organization in public health.

- †**101G. Hospital Administration.** (3) II. Mr. Eastman
Prerequisite: course 100 or consent of the instructor.
Principles of hospital and medical care organization and administration.

- 106. Medical Care Problems.** (2) I, II. Mr. Lembcke
A medical survey of social problems, including a survey of the medical care agencies and programs which exist and which may be required to meet the needs of the community.

- 110. Environmental Health.** (3) I, II. Mr. Bliss
Prerequisite: chemistry and bacteriology.
The fundamentals of environmental sanitation, including an introduction to the relationship of the physical environment to preventive medicine.

- 112. Principles of Sanitary Science—Physical Environment.** (3) I. Mr. Senn
Prerequisite: course 110, and consent of the instructor.
Public Health engineering principles for nonengineers, relating to surveys, review and sanitary control of water supplies, waste disposal, ventilation and air pollution, drainage and buildings design and equipment.

- 113. Principles of Sanitary Science—Foods.** (3) II. Mr. Post
Lectures, two hours; laboratory, three hours. Prerequisite: course 110 and senior or graduate standing.
Principles of sanitary science as related to food production, processing and distribution, and to food handling.

- 114. Advanced Study in Sanitation.** (1-5) I, II. Mr. Bliss
Prerequisite: senior or graduate standing in the School of Public Health.

† Primarily for graduate students.

‡ Students in the Curriculum in Premedical Studies who choose Public Health as one of their two fields may in addition receive Letters and Science credit for Public Health 160B and 170.

125. Maternal and Child Health. (3) II.

Mr. Beeston

A consideration of factors pertaining to the health of children from the time of conception to the end of puberty. Community health facilities needed for maternal and child care.

131. Health Education Laboratory. (2) I, II.

Mr. Beeston

Lecture, one hour; laboratory, three hours. Prerequisite: course 134, or taken concurrently with 134.

Emphasis will be placed on the methods of teaching adults, using the media of mass communication. The course is not designed to develop skills, but laboratory exercises will demonstrate the mechanics of preparing and evaluating these media of communication as well as the problems of their use.

134. Community Health Education. (2) I, II.

Mr. Beeston, Mr. Torribio

Primarily for students majoring in some area of health work.

The theory, principles, and practices of promoting health, including consideration of communication, motivation, and community organization.

145. Community Control of Communicable Disease. (3) I, II.

Mr. Heidbreder

Introduction to the epidemiology and community control of communicable disease.

147. Principles of Epidemiology. (3) I, II.

Mr. Chapman

Prerequisite: courses 145 and 162, or their equivalents, or consent of the instructor.

Introduction to epidemiologic factors governing the occurrence of disease in the population, including interrelationship of disease agents, host and environment. Laboratory problems illustrative of basic principles of epidemiology.

†148G. Epidemiology of Chronic Diseases. (2) I.

Mr. Chapman

Prerequisite: consent of the instructor.

The principles of epidemiology as related to the occurrence of noninfectious diseases.

153A. Sanitary Microbiology. (3) I.

Mr. Post

Lectures, two hours; laboratory, three hours. Prerequisite: Bacteriology 1; and Bacteriology 103 recommended.

Primarily for graduate students and seniors interested in sanitary science or sanitary engineering. Principles of microbiology relevant to sanitation of water, sewage, soils, and refuse environments.

153B. Sanitary Microbiology. (3) II.

Mr. Post

Lectures, two hours; laboratory, three hours. Prerequisite: Bacteriology 1; and Bacteriology 103 recommended.

Primarily for graduate students and seniors interested in sanitary science or food technology. Principles of microbiology relevant to sanitation of food and milk environments.

160A. Biometry. (3) I.

Mrs. Dunn, Mr. Massey

Lecture, two hours; laboratory, three hours. Prerequisite: courses in biological sciences. Students who have completed courses in statistics may enroll only with the consent of the instructor.

Introduction to the methods of statistical analysis with emphasis on their use in the biological sciences. Sampling, tests of significance, and analysis of variance.

† Primarily for graduate students.

- 160B. Biometry.** (3) I, II. Mrs. Dunn, Mr. Massey
Lecture, two hours; laboratory, three hours. Prerequisite: course 160A or consent of the instructor.
Modern research methods covering topics in regression and correlation, sequential and distribution-free methods, and introduction to bioassay.
- 161A. Biostatistics.** (3) I. Mr. Massey
Lecture, two hours; laboratory, three hours.
Statistical methods used in the study of existing human population. Elements of vital statistics, demography, and life tables. Choice of estimators and best tests in studies of human populations.
- 161B. Biostatistics.** (4) II. Mr. Massey
Lecture, two hours; laboratory, six hours. Prerequisite: course 161A.
Extension of methods introduced in course 161A to more advanced problems. Methods of sampling, multiple classification tables, regression techniques.
- 162. Public Health Statistics.** (3) I, II. Mrs. Dunn, Mr. Massey
Lecture, two hours; laboratory, three hours.
A course in public health statistics designed primarily for students not majoring in biostatistics.
- 170. Industrial Health.** (2) I, II. Mr. Bryan
A survey of the field of industrial health and hygiene. Discussion of occupational diseases and hazards, their evaluation, and methods of control; plant medical services and other organizations concerned with industrial health problems.
- 172. Industrial Toxicology.** (2) II. Mr. Stevenson
Prerequisite: Chemistry 1A-1B or Chemistry 2A and 10; Physics 2A-2B or Physics 10 and 21
The use of chemical and clinical laboratory techniques in the investigation of toxic manifestations of industrial hazards.
- 180. Principles of Public Health.** (5) I, II. Mr. Lembeke, Miss O'Leary, and Staff
Lecture, five hours. Prerequisite: R.N., or junior standing in the School of Nursing.
Principles of epidemiology, preventive medicine, and public health administration.
- 186. Venereal Disease Control and Epidemiology of Tuberculosis.** (2) II. Mr. LeVan, Mr. Tepper
Prerequisite: consent of the instructor.
A consideration of the basic medical data; epidemiology; the prevention and administrative control of tuberculosis and the venereal diseases; evaluation of methods used.
- 198. Special Courses.** (1-5) I, II. Mr. Bliss
Field trips are often required. Students will furnish their own transportation.
- 199. Special Studies.** (1-5) I, II. The Staff
Prerequisite: senior standing and consent of the instructor.

GRADUATE COURSES

- 206A-206B. Biostatistics.** (3-3) Yr. Mr. Dixon, Mr. Massey
Lecture, two hours; laboratory, three hours. Prerequisite: course 160A, 160B, 161A-161B, 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.

209A-209B. Principles of Health Administration. (2-2) Yr. Mr. Lembecke
Prerequisite: course 100 or equivalent, or 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.

210. Environmental Health. (3) II. Mr. Bliss
Prerequisite: course 110 or equivalent.

Theoretical considerations of the complex relationship of the physical environment to preventive medicine and public health.

213A-213B. Sanitary Science. (2-2) Yr. Mr. Bliss, Mr. Belkin
Prerequisite: consent of the instructor.

Advanced study of the relationship of the discipline of biology and physical sciences applied to the environment.

234. Community Health Education. (2) I. Mr. Beeston
Lectures, discussions, guest speakers, field trips. 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. Hospital Health Education. (2) II. Mr. Beeston
Prerequisite: course 234 and consent of the instructor.

Analysis of the role, methods and techniques of health education pertaining to hospitals, clinics, and patient education. Observation and discussion of clinical activities in the medical center in relation to the process of health education.

247. Epidemiology. (3) I. Mr. Chapman
Lecture, two hours; laboratory, three hours. Prerequisite: consent of the instructor.

Study and evaluation of epidemiologic information, analysis of factors governing the occurrence of disease in the human population.

249. Seminar in Epidemiology. (2) II. Mr. Chapman
Prerequisite: consent of the instructor.

259A-259B. Seminar in Public Health Practice. (1-1) Yr.
Prerequisite: consent of the instructor. Mr. Goerke, Mr. Lembecke
Current studies, programs, and practices in public health are critically reviewed.

269A-269B. Seminar in Biostatistics. (1-1) Yr. Mr. Dixon, Mr. Massey
Prerequisite: consent of the instructor.

297. Individual Studies for Graduate Students. (1-3) I, II. The Staff

299. Research for Graduate Students. (1-5) I, II. The Staff

RADIOLOGY

A Department of the School of Medicine
(Department Office, B5-117 Medical Center)

The Department of Radiology offers certain courses which are open to qualified graduate students who are not pursuing the professional curriculum of the School of Medicine. For information concerning these courses and advanced degrees available, see the ANNOUNCEMENT OF THE SCHOOL OF MEDICINE, LOS ANGELES, and the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION.

SCANDINAVIAN LANGUAGES

For courses in Scandinavian Languages, see under Department of Germanic Languages.

SLAVIC LANGUAGES

(Department Office, 332 Royce Hall)

Kirili Taranovski, Ph.D., *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 (Chairman of the Department).*

Fred C. Holling, M.A., *Acting 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 5.

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: 103A-103B; 8 units chosen from courses 104A-104B, 119A-119B, 120A-120B, 122A-122B, 124A-124B. (2) Requirement in literature: 130; 9 units chosen from courses 132, 137, 143A-143B, 145, 149.

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.

3A-3B. **Second-Year Russian.** (3-3) 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.

- *6. **Readings in Russian.** (3) I. Mr. Harper
Prerequisite: course 2. To be taken in conjunction with course 3A or 3B.
- 11A-11B. **Elementary Polish.** (3-3) Yr. Mr. Taranovsky
Basic course in the Polish language.
- 18A-18B. **Elementary Russian Conversation.** (1-1) Yr. The Staff
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. Mr. Worth
Prerequisite: course 3A-3B.
- 104A-104B. **Fourth-Year Russian.** (3-3) Yr. Mr. Markov
Prerequisite: course 103A-103B.
- 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. Mr. Taranovski, Mr. Worth
Prerequisite: course 3A-3B.
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. Harper
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
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.
- 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.
- *149. **Survey of Russian Poetry.** (3) I. Mr. Markov
Selected readings in the major poets from Pushkin to Blok. Conducted in Russian.
199. **Special Studies.** (1-3) I, II. The Staff
Prerequisite: senior standing and consent of the instructor.

GRADUATE COURSES

220. Old Church Slavic. (3) I. Mr. Worth
227. History of the Russian Language. (3) I. Mr. Taranovski
The historical development of the language in relation to other Slavic and non-Slavic languages.
265. Seminar in the Russian Novel. (3) I. Mr. Harper
297. Individual Studies for Graduate Students. (2-6) I, II. The Staff

SOCIAL WELFARE

(Department Office, 12 Building 1A)

- Donald S. Howard, Ph.D., L.H.D., *Dean of the School of Social Welfare and Professor of Social Welfare (Chairman of the Department).*
- Karl de Schweinitz, L.H.D., *Professor of Social Welfare, Emeritus.*
- Mary E. Duren, M.S., *Assistant Dean of the School of Social Welfare and Associate Professor of Social Welfare*
- Alfred H. Katz, D.S.W., *Associate Professor of Social Welfare and Associate Professor of Preventive Medicine and Public Health.*
- 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.*
- Jean A. Shores, M.A., *Assistant Professor of Social Welfare.*
- Edith Shapiro, M.S.W., *Instructor in 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.*
- Rudolf Ekstein, Ph.D., *Lecturer in Social Welfare.*
- Mildred T. Faris, M.A., *Lecturer in Social Welfare.*
- Ralph L. Goff, M.S.W., *Lecturer in Social Welfare.*
- Eleanor Jaqua, M.S.S., *Lecturer in Social Welfare and Field Work Supervisor.*
- Martin B. Loeb, Ph.D., *Lecturer in Social Welfare.*
- Judd Marmor, M.D., *Lecturer in Social Welfare and Clinical Professor of Psychiatry.*
- Mary Alice Kahne, M.S.W., *Associate in Social Welfare and Field Work Supervisor.*
- Katherine M. Kolodziejcki, M.S.W., *Associate in Social Welfare.*
- Peter L. Sandi, M.S.W., Jur.D., *Associate in Social Welfare.*
- Eva Schindler, M.S.W., *Associate in Social Welfare and Coordinator, Social Welfare Extension.*



- Murray L. Schwartz, LL.B., *Visiting Associate Professor of Law.*
- Charles W. Wahl, M.D., *Assistant Professor of Psychiatry in Residence.*

For information concerning courses and curricula, see the ANNOUNCEMENT OF THE SCHOOL OF SOCIAL WELFARE, LOS ANGELES.

SOCIOLOGY

For courses in sociology, see under Department of Anthropology and Sociology, page 87.

SPANISH AND PORTUGUESE

(Department Office, 5303 Humanities Building)

William E. Bull, Ph.D., *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.*

Joseph H. Silverman, Ph.D., *Assistant Professor of Spanish.*

María 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 5.

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 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 Ph.D. Degree

For the general requirements see page 71. Course 256 is required of all candidates for the Ph.D. degree. Graduate work with concentration in Spanish is offered leading to the degrees of Ph.D. in Hispanic Languages and Literature and Ph.D. in Romance Languages and Literature. For specific requirements for these degrees, see the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION, or consult the departmental adviser.

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 because 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.

(No credit) I, II.

The Staff

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

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

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. Zeitlin

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

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. Barcia

106. Spanish Literature from 1700-1850. Neo-Classicism and Romanticism. (3) II.

Prerequisite: course 102B. May not be taken for credit by students who have completed course 106 or 103A prior to September, 1954.

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

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. Silverman

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. Englekirk
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. Barcia, _____
- 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.

- *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.

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 student teaching in Spanish.

PORTUGUESE

LOWER DIVISION COURSES

1. **Elementary Portuguese—Beginning.** (4) I. Mr. Zeitlin

2. **Elementary Portuguese—Continued.** (4) II. Mr. Zeitlin

Prerequisite: course 1 or the equivalent.

3. **Intermediate Portuguese.** (4) I. Mr. Zeitlin

Prerequisite: course 2 or the equivalent.

Grammar, composition, and reading of texts.

UPPER DIVISION COURSES

122. **Survey of Portuguese Literature.** (3) I. Mr. Zeitlin

Prerequisite: course 3 or the equivalent.

123. **Survey of Brazilian Literature.** (3) II. Mr. Zeitlin

Prerequisite: course 3 or the equivalent. It is advisable that students also offer course 122 as a prerequisite.

199. **Special Studies in Portuguese.** (1-3) I, II. Mr. Zeitlin

Prerequisite: senior standing and consent of the instructor.

RELATED COURSES (See page 221)

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, 302 Royce Hall)

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 20 C 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, 116 Building 3V)

- Walden Boyle, Ph.D., *Professor of Theater Arts.*
Ralph Freud, *Professor of Theater Arts.*
Walter Kingson, Ed.D., *Professor of Theater Arts.*
¹William Melnitz, Ph.D., *Professor of Theater Arts.*
Arthur Ripley, *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.*
Burdette Fitzgerald, M.A., *Associate Professor of Theater Arts.*
Arthur Friedman, Ph.D., *Associate Professor of Theater Arts.*
Edward Hearn, M.A., *Associate Professor of Theater Arts.*
John Jones, M.A., *Associate Professor of Theater Arts.*
John P. Driscoll, 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.*
†Ernest Rose, 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.*
Jack Clare Ellis, Ed.D., *Visiting Assistant Professor of Theater Arts.*
Francis W. Sturken, Ph.D., *Instructor in Theater Arts.*
Rudolf Bretz, *Lecturer in Theater Arts.*
Fred Gerber, M.S., *Lecturer in Theater Arts.*
Jack Morrison, M.A., *Lecturer in Theater Arts.*
Charlotte Motter, M.A., *Lecturer in Theater Arts.*
Ben Parker, *Lecturer in Theater Arts.*
William Robson, *Lecturer in Theater Arts.*
J. Palmer Schoppe, *Lecturer in Theater Arts.*
George Seaton, Ph.D., *Lecturer in Theater Arts.*
William Shull, B.S., *Lecturer in Theater Arts.*
L. S. Trimble, M.S., *Lecturer in Theater Arts.*
Raymond Fielding, M.A., *Associate in Theater Arts.*
Dorothy Foulger, B.A., *Associate in Theater Arts.*
———, *Associate in Theater Arts.*

College of Applied Arts

The Department of Theater Arts, unique among American universities both in its philosophy and location, bases its training for theater, television-radio, and motion pictures on a solid two-year preparation of general education and specific courses of theater fundamentals. The literature and disciplines of the theater provide the unifying link to the various divisions within the de

† Absent on leave, 1959-1960.

¹ In residence fall semester only, 1959-1960.

partment; through its body of written drama, theater also links the Department of Theater Arts with the humanities and the social sciences. Students majoring in theater arts may not minor in English. Following are the four specializations offered:

1. Theater.

Preparation for the Major.—Courses 2A, 24, 25, 26, 27, 28A, 28C, 28E; English 1A-1B, Humanities 1A-1B.

The Major.—Forty units of coordinated upper division courses, including English 114C-D-E, Classics 113, Theater Arts 105, 142, 149A, 149B, 149C, 149D, 154, 156A, 159A, 165A, 167A, 181A, and electives approved by the departmental adviser.

2. Motion Pictures.

Preparation for the Major.—Courses 2A, 24, 25, 26, 27, 28A, 28C, 28E; English 1A-1B, Humanities 1A-1B.

The Major.—Forty units of coordinated upper division courses, including Theater Arts 105, 149A, 149B, 149C, 149D, 156A, 164A, 164B, 164C, 165A-165B, 166A, 167A, 179A, 181A, Classics 113, English 114C-D-E, and electives approved by the departmental adviser.

3. Television and Radio.

Preparation for the Major.—Courses 2A, 24, 25, 26, 27, 28A, 28C, 28E; English 1A-1B, Humanities 1A-1B.

The Major.—Forty units of coordinated upper division courses, including English 114C-D-E, Classics 113, Theater Arts 105, 125B, 128A, 139A, 139B, 149A, 149B, 149C, 149D, 156A, 165A, 167A, 181A, and electives approved by the departmental adviser.

4. Language Arts.

Preparation for the Major.—Courses 2A-2B, 24, 28A, 28C, 28E; English 1A-1B, 46A-46B, Journalism 2.

The Major.—Thirty-nine units of upper division courses, including English 106L, 114C-D-E; 3 units from English 131, 132, 190A, 190B; Education 370; Theater Arts 103, 105, 123, 125B, 149A, 149B, 156A, 159A, 180, and electives approved by the departmental adviser.

College of Letters and Science

Letters and Science List.—Courses 24, 102, 104, 105, 106, and 169 are included in the Letters and Science List of Courses. For regulations governing this list, see page 5.

GRADUATE DIVISION

Admission to Regular Graduate Status

In addition to the 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, letters of reference, and a photograph. 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.
3. In the case of a motion picture major, provide the department with a plan for production or research project, which the candidate intends to

complete during his program for the master's degree. The candidate must secure approval for his project before being admitted to regular graduate status.

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 candidate 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 candidate's residency. Candidates 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.

LOWER DIVISION COURSES

2A-2B. Acting Fundamentals. (3-3) Yr. Beginning either semester.

Lecture, two hours; laboratory, three hours. Mr. Freud in charge

2A. The acting process. Exercises in characterization, interpretation, speech, diction, and movement.

2B. Elementary stage techniques based on the study of selected dramatic scenes.

24. The History of Theater Arts. (3) I, II.

Mr. Goodman

The history of the development of the theater and its relationship to the arts, sciences, and disciplines of society from Aristotle to the motion picture, radio, and television.

25. Introduction to Theater. (2) I, II.

Mr. Hearn

A survey of the theories, practices, and social responsibilities of the theater and its relationship to the other theater arts.

26. Introduction to Television and Radio. (2) I, II.

Mr. Kingson

A survey of the theories, practices, and social responsibilities of television and radio and their relationship to the other arts of the theater.

27. Introduction to Motion Pictures. (2) I, II.

Mr. Fielding

A survey of the theories, practices, and social responsibilities of the motion picture and its relationship to the other arts of the theater.

28A. Theater Arts Crafts. (2) I, II.

Lecture, two hours; laboratory, three hours; theater arts practice, by assignment.

Study of and laboratory practice in the construction and handling of scenery. The use of scenic materials and equipment for theater, motion pictures, and television.

28C. Theater Arts Crafts. (2) I, II.

Mr. Sturcken

Lecture, two hours; laboratory, two hours; theater arts practice, by assignment.

Study of the physical aspects of lighting. Laboratory practice in the use of basic theater arts lighting equipment.

28E. Theater Arts Crafts. (2) I, II.

Mr. Sturcken

Lecture, two hours; laboratory, theater arts practice, by assignment.

The theory and practice of the use of sound-recording and amplifying equipment in theater arts.

29. Elementary Theater Laboratory. (1) Yr.

The Staff

Acting exercise under faculty instruction.

UPPER DIVISION COURSES

Theater arts major or minor or departmental consent is prerequisite to all upper division courses, except courses 103, 104, 105, 106, 111A, 112, 116A, 123, 125A-125B, 135A-135B, 148A-148B, 154, 169, 170, 180, 185.

102. Main Currents in Theater History. (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. Secondary School Dramatics. (3)

Miss Motter

Sec. 1. Limited to theater arts-English majors. I.

Sec. 2. Limited to majors other than theater arts-English. II.

Techniques of teaching acting. Choosing, mounting, and presenting plays on the secondary school level.

104. History of the American Theater. (2) II.

Mr. Freud

The history of the American theater from the Revolutionary War to the present.

105. Readings for the Contemporary Theater. (2) I, II.

Mr. Goodman

Study and discussion of modern theories and styles of production, direction, and acting, based on readings in definitive works on the modern theater.

106. Fundamental Problems of Writing for Theater Arts. (3) I, II.

Prerequisite: English 1A-1B.

Mr. Savage

Analysis of story structure, character, thematic approach, and author's point of view, in the creation of dramatic material meant for production in the mass media. Special problems of story synopsis with constructive critical commentary by instructor and class.

107A-107B. Marionettes and Puppetry. (2-2) Yr. Beginning either semester.

Mr. Helstien

Lecture, two hours; laboratory, four hours. Prerequisite: courses 28A-C, or two from 140, 141, 142, or consent of the instructor.

Study of the history and practice of the art of puppetry. An examination of the materials and methods of construction. Staging of puppet and marionette productions as laboratory practice.

†107C-D-E. Playwright's Production Workshop. (2 units each)

Prerequisite: departmental consent.

Mr. Hatch, Mr. Savage

Observation and study of the rehearsal and staging of original dramatic manuscripts, with particular emphasis upon problems of rewriting and the relationship of the playwright to the directional process.

108. Children's Creative Dramatics. (2) I, II.

Mr. Fitzgerald

Studies in the principles and methods of developing original dramatizations with children.

† When offered, the three parts of this course must be taken concurrently and constitute a full academic load for one session. Not to be given summer, 1959.

109. Children's Theater. (2) I, II.

Mr. Hebstien

Studies in the theory and practice of selection, direction, and production of plays for child audiences.

111A-111B. Television and Radio Acting. (2-2) Yr. Beginning either semester.

The Staff

The study of special problems in interpretation, characterization, dialect, and microphone technique, with opportunity for performance activity. 111B may be taken only with consent of the instructor.

112. Broadcast Speech. (2) I, II.

Mr. Kingson

Lecture, one hour; laboratory, two hours.

Study and practice of microphone technique for announcing, news commentation, and public service programs in television and radio.

116A. Problems in Television and Radio Writing. (2) I.

Mr. Parker

Theory and practice in script analysis and the writing of various types of radio programs. The course is designed primarily from the producer's and director's point of view as well as from that of the writer.

116B. Dramatic and Documentary Television and Radio Writing. (3) II.

Prerequisite: course 116A or consent of the instructor.

Mr. Gerber

Study and practice in the writing of original scripts in which the emphasis is on the use of dramatic and documentary material, combined with special uses of music and sound effects.

123. Workshop in Educational Television and Radio. (3) I.

Mr. Bretz

Script and production problems of school broadcasting. The use of radio in the classroom to stimulate student creative self-expression. Transcription demonstrations and production practice under studio conditions.

125A. Theory of Television and Radio Direction. (2) I, II.

A lecture course devoted to the theories of television and radio direction, with a comparative study of directional techniques employed in the production of various types of programs. Recommended to be taken concurrently with 125B.

125B. Radio Production. (2) I, II.

Mr. Gerber

A lecture and laboratory course devoted to the study of the techniques and tools at the disposal of the radio director. Problems of music, sound effects, casting, studio acoustics, transcriptions, and timing. Recommended to be taken concurrently with 125A.

126. Television and Radio News—Writing and Production Problems. (3) II.

Prerequisite: consent of the instructor.

Mr. Gerber

The preparation of news in the mediums of radio and television. The analysis of production problems relating to special events, news features, straight newscasts, etc., in radio and television.

128A. Television and Radio Programming. (2) I, II.

A study of the factors affecting programming for the standard broadcast station, the educational radio station, and the television station. Organization and theory of programming in relation to the broadcaster's role in the community.

128B. Television and Radio Station Operation. (2) II.

Lecture, one hour; laboratory, three hours. Prerequisite: course 128A or consent of the instructor.

A lecture and laboratory course devoted to the administrative elements of radio and television broadcast stations, providing the student with practical experience in broadcast management.

129. Intermediate Radio Workshop. (3) I, II. Mr. Gerber

Prerequisite: course 125B.

A basic laboratory course offering practice in the preparation of radio programs.

129B. Advanced Radio Workshop. (3) I, II. The Staff

Prerequisite: course 129A or consent of the instructor.

Practice in radio production for broadcast.

***135A-135B. Television Principles and Practices.** (2-2) Yr. _____

A lecture course interrelating television with theater, motion pictures, and radio. The evolution of television here and abroad; social and educational implications; audience-station-advertiser relationships; production problems; observation trips to stations.

139A. Television Workshop. (3) I, II. Mr. Bretz

Lecture, one hour; laboratory, six hours. Prerequisite: upper division standing and consent of the department.

Study of the techniques and tools of live television production. Practice in the use of cameras, microphones, lights, settings, graphics, film inserts and music under studio conditions.

139B. Television Workshop. (3) I, II. Mr. Friedman

Lecture, one hour; laboratory, six hours. Prerequisite: course 139A or consent of the department.

Practice in the preparation and production of television programs with emphasis on the remote.

139C. Television Workshop. (3) I, II. _____

Laboratory, eight hours. Prerequisite: course 139B or consent of the instructor.

Advanced practice in preparation and production of television programs for closed circuit or broadcast.

140. Advanced Technical Practice. (2) II. _____

Lecture, two hours; laboratory, four hours.

Study of materials and tools of stage production. Includes design analysis, rigging, shifting, and construction techniques.

141. Theater Lighting. (2) I. Mr. Hearn

A study of the principles of light, color, control, and lighting theory as applied to the stage.

142. Theater and Motion Picture Costume Construction. (2) I, II. Mrs. Hungerland

Lectures, demonstrations, and practice in the analysis of the costume sketch, in terms of fabric, pattern drafting, fitting, and construction.

143. Scene Painting in the Theater. (1) I. _____

Prerequisite: upper division standing.

A study of methods and materials in scenic painting in the theater.

* Not to be given, 1959-1960.

- 148A. Scenic Design.** (3) I, II. Mr. Jones
 Basic principles of design as applied to stage settings. Study of styles and techniques of stage design, past and present. Execution of designs for modern and period plays.
- 148B. Scenic Design.** (2) II. Mr. Jones
 Prerequisite: course 148A or consent of the instructor.
 Advanced study of the problems of stage design.
- 149A-B-C-D. Training in the Technical Operation of Theater, Motion Picture, or Television-Radio Production.** (1-1-1-1) I, II.
 Prerequisite: consent of the instructor. Mr. Ripley, ———, Mr. Bretz
 Supervised completion of assignments in scenery, property, and costume construction, lighting, sound recording, scene-changing, and management related to the production programs of the department.
- 151. Advanced Acting.** (3) I, II. Mr. Freud, Mrs. Foulger
 Lecture, two hours; laboratory, six hours. Prerequisite: course 2A and consent of the instructor. May be taken twice for credit.
- 154. Theater Arts Administration.** (2) I, II. Mr. Morrison
 Administrative and organizational techniques in the operation of theater-, film-, radio-, and television-producing units.
- 156A. Dramatic Direction.** (3) I, II. Mr. Selden
 Prerequisite: course 105.
 Studies in analysis of dramatic materials and techniques of directional restatement in theatrical terms.
- 156B. Dramatic Direction.** (3) I, II. Mr. Boyle
 Prerequisite: consent of the instructor.
 Practice in theater direction.
 Section 1—One-act play direction.
- 159A. Intermediate Theater Workshop.** (2) I, II. Mr. Jones
 Prerequisite: courses 28A-C-E.
 Practice in theater production for technical workers, designers, writers, dancers, and musicians.
- 159B. Advanced Theater Workshop.** (3) I, II. Mr. Freud, Mr. Boyle, Mr. Helstien, Mr. Jones, Mr. Goodman, Mr. Melnitz
 Prerequisite: consent of the instructor.
 Practice in theater production before a paying audience.
- †**159C-D-E. Summer Theater Workshop.** (2 units each) The Staff
 Prerequisite: departmental consent.
 Practice in and observation of the complete operation of a summer theater on a semiprofessional level.
- 162. Acting for the Motion Picture.** (2) I, II. The Staff
 Prerequisite: consent of the instructor.
 The training and development of acting style for the motion picture.
- 163. Theater Make-up.** (1) I, II. Mr. Sturcken
 The art and use of make-up for the theater and for motion pictures.

† This course is offered in alternate summer sessions only. The three parts must be taken concurrently and constitute a full academic load for one session.

- 164A. Motion Picture Direction.** (2) I, II. Mr. Ripley
Lecture, two hours.
Analysis of the relationship of the motion picture director to the problems of story and dramatic structure.
- 164B. Motion Picture Direction.** (2) I, II. Mr. Hawkins, Mr. C. Young
Lecture, two hours; laboratory, three hours. Prerequisite: course 164A or consent of instructor.
Study of the theories of motion picture direction emphasizing problems of actor and camera interpretation with demonstration during laboratory hours.
- 164C. Motion Picture Direction.** (2) I, II. Mr. Driscoll, Mr. Parker, Mr. J. Young
Prerequisite: course 164B or consent of instructor.
Advanced study of the techniques of motion picture direction with practical work during laboratory hours.
- 165A. Motion Picture Editing.** (2) I, II. Mr. Driscoll, Mr. C. Young
Lecture, two hours; laboratory, three hours, with additional hours to be arranged.
The mechanics of film cutting.
- 165B. Motion Picture Editing.** (2) I, II. Mr. Hawkins, Mr. J. Young, Mr. C. Young
Lecture, two hours; laboratory, three hours, with additional hours to be arranged.
Technical and creative aspects of film editing.
- 166A. Writing for the Screen.** (2) I, II. Mr. J. Young
Prerequisite: course 164A, or consent of the instructor. Recommended preparation: English 106D-106E or Theater Arts 106, and 180.
Theory and practice in the fundamentals of writing fictional and documentary film scripts.
- 166B. Writing for the Screen.** (3) I, II. Mr. Gray
Prerequisite: course 166A, or consent of the instructor.
Advanced practice and writing of original film scripts under supervision.
- 167A. Production Designing for the Theater Arts.** (2) I, II. Mr. Schoppe
Theory and practice of designing productions for the motion pictures in terms of the relationship of setting, problems in working from motion picture scripts.
- 167B. Production Designing for the Theater Arts.** (3) I, II. Mr. Schoppe
Prerequisite: course 167A or consent of the instructor.
Advanced practice in designing motion picture productions.
- 169. History of Motion Pictures.** (2) I, II. Mr. Gray
Lecture, two hours; laboratory, three hours.
The history and development of the motion picture until today.
- 170. Motion Picture Animation.** (3) I, II. Mr. Shull
Lecture, three hours; laboratory, three hours.
Theory and practice of graphic film expressions and the use of appropriate equipment.

- 171. **Advanced Motion Picture Animation.** (3) I. Mr. Shull
Lecture, three hours; laboratory, three hours. Prerequisite: course 170 and consent of the instructor.
- 172. **Motion Picture Animation Workshop.** (3) II. Mr. Shull
Lecture, three hours; laboratory, three hours. Prerequisite: course 170, and consent of the instructor.
- 179A. **Elementary Motion Picture Workshop.** (2) I, II. Mr. Driscoll, Mr. Fielding, Mr. Rose
Prerequisite: courses 164A, 165A, 181A.
Laboratory practice in the fundamentals of film-making.
- 179B. **Intermediate Motion Picture Workshop.** (3) I, II. Mr. Ripley in charge
Prerequisite: consent of the staff.
Laboratory practice in film-making.
- †179C-D-E. **Summer Motion Picture Workshop.** (2 units each) The Staff
Prerequisite: course 179A or departmental consent.
Intensive practice in and observation of the production of motion pictures.
- †180. **Educational and Documentary Film Techniques.** (2) I, II. Mr. Rose
A course of lectures surveying the basic techniques and practices employed in the documentary and educational fields; comparative study and analysis of existent films.
- 181A. **Motion Picture Photography.** (2) I, II. ———
Lecture, two hours; laboratory, three hours.
An elementary course in optics, photographic chemistry, sensitometry, lighting, and operation of all major 16mm cameras, with practical work during laboratory hours.
- 181B. **Motion Picture Photography.** (2) I, II. Mr. Fielding
Lecture, two hours; laboratory, three hours. Prerequisite: course 181A.
An advanced course in exterior and interior lighting, composition, use of filters, creative camera movement, and special problems of motion picture photography. Practical work during laboratory hours.
- 182A. **Color Cinematography Laboratory.** (2) I, II. Mr. Trimble
Lecture, two hours. Prerequisite: course 181A.
History and theories of color photography, with particular emphasis on present-day methods in motion picture production. A comparative study of additive and subtractive systems as employed by Dufay, Thomas, Gaspar, Anseo, Kodachrome, Technicolor, and others.
- 182B. **Color Cinematography.** (2) II. Mr. Fielding
Laboratory, six hours.
Prerequisite: course 182A or consent of the instructor.
Practice in the application of modern theories of color photography with special emphasis on motion picture production.

* For admission to this course candidates must submit original designs six weeks in advance of the semester opening.

† This course is offered in alternate summer sessions only. The three parts must be taken concurrently and constitute a full academic load for one session.

‡ Open to motion picture majors only in fall semester and to non-motion picture majors in spring semester.

185. Photographic Aids to Instruction. (3) I, II.

Theory and practice in the preparation of photographic aids to instruction and to research, including still photographs, slides, slidefilms, and 16mm motion pictures, emphasizing application to the student's own field of study.

190A-190B. Manuscript Evaluation for Production. (2-2) Yr.

Mr. Hatch, Mr. Savage

Prerequisite: course 156A or consent of the instructor.

The principles and practices of evaluating manuscripts for production.

199. Special Studies in Theater Arts. (1-4) I, II. Mr. Melnitz and 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. Friedman, Mr. Goodman, Mr. Gray

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 165A, 165B.

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. Melnitz, Mr. Freud

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.
 Section 3. In Television or Radio.
- 291. Production Planning in Theater Arts.** (1) I, II. Mr. Hearn and Staff
 Section 1. In Theater.
 Section 2. In Motion Pictures.
 Section 3. In Television or Radio.
- 292. Advanced Problems in Nondramatic Television and Radio.** (3-5) I, II.
 Mr. Gerber
 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.

RELATED COURSES IN OTHER DEPARTMENTS

- Education 147. Audio-Visual Education.** (2) I, II. _____
- Education 247A-247B. Audio-Visual Education. Advanced Course.** _____
 (2-2) Yr.
- Education 257A-257B. Audio-Visual Education. Seminar.** (2-2) Yr. _____
- English 106D-106E. Fundamentals of Dramatic Writing.** (3-3) Yr.
 Mr. Savage
- English 118. Children's Literature.** (3) I, II. Mrs. Sayers
- English 262A-262B. Shakespeare.** (3-3) Mr. Phillips, Mr. Smith
- English 262D. Studies in Elizabethan Drama.** (3) Mr. Smith
- English 263C. Studies in Drama, 1660-1790.** (3) Mr. Smith
- Integrated Arts 1A-1B. Man's Creative Experience in the Arts.** (3-3) Yr.
 Mr. With
- Psychology 267. Mass Communication as a Social Force.** (2) I. Mr. Fearing

TURKISH

For courses in Turkish, see under Department of Near Eastern Languages.

ZOOLOGY

(Department Office, 2203 Life Sciences Building)

- Gordon H. Ball, Ph.D., *Professor of Zoology.*
 †Theodore H. Bullock, Ph.D., *Professor of Zoology.*
 Raymond B. Cowles, Ph.D., *Professor of Zoology.*

† Absent on leave, 1959-1960.

- † Frederick Crescitelli, Ph.D., *Professor of Zoology*.
 Waldo H. Furgason, Ph.D., *Professor of Zoology (Life Sciences)*.
 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, Ph.D., *Visiting 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*.
 George A. Bartholomew, Ph.D., *Associate Professor of Zoology (Chairman of the Department)*.
 ‡ Taylor Hinton, Ph.D., *Associate Professor of Zoology*.
 Thomas B. Howell, Ph.D., *Associate Professor of Zoology and Curator of the Dickey Ornithological Collection*.
 Blaine H. Levedahl, Ph.D., *Associate Professor of Zoology*.
 Clara M. Szego (Clara Szego Roberts), Ph.D., *Associate Professor of Zoology*.
 Boyd W. Walker, Ph.D., *Associate Professor of Zoology*.
 Dietrich Schneider, Ph.D., *Visiting Associate Professor of Zoology*.
 Sarah Rogers Atsatt, Ph.D., *Associate Professor of Zoology, Emeritus*.
 David P. Bloch, Ph.D., *Assistant Professor of Zoology*.
 Richard A. Boolootian, Ph.D., *Assistant Professor of Zoology*.
 Nicholas E. Collias, Ph.D., *Assistant Professor of Zoology*.
 Donald Heyneman, Ph.D., *Assistant Professor of Zoology*.
 Thomas W. James, Ph.D., *Assistant Professor of Zoology*.
 J. Lee Kavanau, Ph.D., *Assistant Professor of Zoology*.
 Otto H. Scherbaum, Ph.D., *Assistant Professor of Zoology*.
 Richard W. Siegel, Ph.D., *Assistant Professor of Zoology*.
 Henry J. Thompson, Ph.D., *Assistant Professor of Botany (Life Sciences)*.
 Peter Vaughn, Ph.D., *Assistant Professor of Zoology*.
 Albert A. Barber, Ph.D., *Instructor in Zoology*.
 Malcolm S. Gordon, Ph.D., *Instructor in Zoology*



- Jowett C. Chao, Ph.D., *Assistant 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 136, and 370 are included in the Letters and Science List of Courses. For regulations governing this list, see page 5.

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, 109, 142.
- Group 2: Courses 100A, 106.
- Group 3: Courses 112, 134.
- Group 4: Course 130A.

Curriculum for Medical Technologists. For details, see pages 17 and 109.

† Absent on leave, 1959–1960.

‡ Sabbatical in residence, 1959–1960.

- 1A. General Zoology.** (4) I, II. Mr. Heyneman, 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. Howell, Mr. Gordon
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. Mr. Levedahl, Mr. Barber
Lecture, three hours; laboratory, six hours. Not open to premedical, pre dental, or zoology majors.
- 25. General Human Anatomy.** (3) I, II. Mr. Walker, Mr. Vaughn
(Former number, 35.)
Lecture, two hours; laboratory, three hours. Prerequisite: course 15 and sophomore standing.

UPPER DIVISION COURSES

- 100A. Vertebrate Embryology.** (4) I. Mr. Schechtman
(Formerly numbered 100.)
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. Advanced 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) II. 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

* Not to be given, 1959-1960.

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; recommended: course 100A.

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.

***104. Advanced Histological Technique. (2) II.** _____

Lecture and laboratory, six hours. Prerequisite: course 4 or the equivalent, and consent of the instructor.

Laboratory training in the special techniques required by major students in their fields of interest.

106. Comparative Anatomy of the Vertebrates. (4) II. Mr. Vaughn

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.

***108. Comparative Histology of Vertebrates. (2) II.** _____

Lecture, one hour; laboratory, three hours. Prerequisite: course 107.

Comparative study of microanatomy of organ systems of fishes, amphibians, reptiles, birds with mammals.

109. Comparative Vertebrate Physiology. (4) I, II. Mr. Abbott, Mr. Gordon

Prerequisite: course 1B, or equivalent. Chemistry 8, Physics 2A, 2B are recommended.

A survey of the physiology of organ systems of the vertebrates.

110. Protozoology. (4) II. Mr. Ball

Lecture, two hours; laboratory, six hours. Prerequisite: course 1A.

111. Parasitology. (2) I. Mr. Ball

Prerequisite: course 1A.

111C. Parasitology Laboratory. (2) I. Mr. Ball

Prerequisite or concurrent: course 111.

111H. Laboratory Aide Training in Parasitology. (2) I. Mr. Ball

Prerequisite or concurrent: course 111C.

For persons intending to become laboratory technologists.

112. Invertebrate Zoology. (4) I. Mr. Boolootian

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.

* Not to be given, 1959-1960.

- 115. Helminthology. (4) II.** Mr. Heyneman
Lecture, two hours; laboratory, six hours. Prerequisite: upper division standing and general zoology.
A general course in the helminth parasites of animals.
- 118A. Introductory Endocrinology. (3) I.** Miss Szego
Prerequisite: course 1B or the equivalent. Chemistry 8 recommended.
A survey of the influences of hormonal mechanisms on body structure and function.
- 118B. Advanced Endocrinology. (3) II.** Miss Szego
Lecture, two hours; discussion and conference, one hour. Prerequisite: course 118A, Chemistry 8.
Continuation of course 118A. Detailed analysis of selected endocrine inter-relationships and discussion of current research in the field.
- 118C. Endocrinology Laboratory. (3) II.** Miss Szego
Laboratory, six hours; discussion, one hour. Prerequisite or concurrent: course 118B and consent of the instructor.
- 119. Isotopic Tracers in Biology. (3) I.** Mr. Barber
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 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 general biological phenomena.
- †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
Lecture, two hours. 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. (2) I.** Mr. Kavanau
Lecture, two hours. Prerequisite: course 103.
Study of various experiments concerned with biochemical aspects of growth and differentiation.
- 127. Immunobiology. (3) II.** Mr. Schechtman
Lecture, three hours. Prerequisite: one year of biological sciences, or consent of the instructor.
Antibody production in the vertebrates, including the blood groups of man and animals; their use in the study of various problems of biology, including systematics and genetics.

* Not to be given, 1959-1960.

† Given in alternate years, beginning 1959-1960.

‡ Given in alternate years, beginning 1960-1961.

129. Application of Optical Instruments to Biological Problems. (2) I.

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.

Mr. Siegel

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. Hinton

Laboratory, six hours. Prerequisite or concurrent: course 130A.

Breeding experiments to illustrate the principles of genetics.

***131A. Developmental Genetics. (2) I.**

Mr. Hinton

Lecture, two hours. 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.**

Mr. Hinton

Lecture, two hours. Prerequisite: course 130A or Botany 140.

The roles of genes in the regulation of physiological processes, particularly at the molecular level.

131C. Advanced Genetics Laboratory. (2) II.

Mr. Hinton

Laboratory, six hours. Prerequisite or concurrent: course 130C or Botany 140 or the equivalent, 131A or 131B or Botany 142, and consent of the instructor.

Experiments to familiarize the student with the materials and methods of modern genetical research.

132A. General Cytology. (2) I.

Mr. Bloch

Lecture, two hours. Prerequisite: course 1B.

The structure and function of cytoplasm and nucleus of animal cells.

132B. Nuclear Cytology. (2) II.

Mr. Bloch

Lecture, two hours. Prerequisite: course 130A.

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. Bartholomew, Mr. Collias

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.

* Not to be given, 1959-1960.

- 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.
- ***136. Fisheries Biology. (4) II.** Mr. Walker
Lecture, two hours; laboratory, six hours. Prerequisite: course 134.
Review of commercial and sport fisheries; methods of study and management.
- 138. Biology and Human Welfare. (3) I.** Mr. Cowles
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. Furgason
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. Schneider
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.
- 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 of animals.
- 195A-195B. Reading in Zoology. (2-2) Yr.** The Staff
Prerequisite: senior standing.
Library problems.
- 199. Special Studies. (1-5) 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.

* Not to be given, 1959-1960.

- *202A-202B-202C. Advanced General Physiology. (2-2-2) I.**
 Prerequisite: courses 101A, 101B. Mr. Crescitelli
 Among topics discussed are respiration, enzymes, nerve physiology, vitamins, tracer techniques, and physiology of growth.
- 204. Kinetics of Biological Systems. (2) I.** Mr. Levedahl
 Prerequisite: courses 101A-101B or Biochemistry 108A-108B. Recommended: calculus and physical chemistry.
 A consideration of the basis and practice of modern enzyme kinetics.
- 205. Experimental Cell Biology. (3) I.** 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.
- 206. Advanced Vertebrate Morphology. (3) I.** Mr. Vaughn
 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.
- *209. Physiology of the Peripheral Nervous System. (2) II.** Mr. Crescitelli
 Lecture, two hours.
 Excitation and conduction in peripheral nerves, transmission in ganglia, and properties of neurone chains and reflexes.
- 210. Physiology of Protozoa. (2) I.** Mr. Jahn
 Lecture, two hours. Recommended: course 110.
 Protoplasmic structure, locomotion, motor responses, respiration, excretion, metabolism, growth and nutrition of protozoa, especially as compared with other groups of organisms.
- 210C. Physiology of Protozoa Laboratory. (2) I.** Mr. Jahn
 Prerequisite or concurrent: course 210.
 The use of phase, polarizing and darkfield microscopes, microdissecting apparatus, microrespirometers, and bacteria-free culture techniques applied to study of the protozoa.
- 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.

* Not to be given, 1959-1960.

- 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.** Mr. Hinton
Lecture, two hours. 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. Advanced Cytology. (2) II.** _____
Prerequisite: course 132A, Chemistry 8, Physics 2A-2B.
A discussion of classical problems in cytology and the attempts at their solution using the modern techniques of electron microscopy, cell fractionation and cytochemistry.
- 237. The Behavior of Animals. (3) II.** Mr. Collias
Lecture, two hours; laboratory, three hours. Prerequisite: course 134.
Principles of ethology, including ecological significance, underlying mechanisms, and evolution of behavior, with special reference to natural conditions.
- *242. Comparative Neurology. (2) I.** Mr. Bullock
Lecture, two hours.
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
- 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. Siegel, Mr. Hinton
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, Mr. Heyneman
- 256. Seminar in Genetics of Protozoa. (2) II.** Mr. Siegel
Prerequisite: course 131A or 131B.

- *257. Seminar in Comparative Physiology. (2) II. Mr. Bullock
258. Seminar in Physiology of Sense Organs. (2) I. ———
- 260A. Seminar in Ichthyology. (2) I. Mr. Walker
- 260B. Seminar in Fisheries Biology. (2) II. Mr. Walker
263. Seminar in Physiology of Microorganisms. (2) II. Mr. Jahn
264. Seminar in Kinetics of Biological Systems. (2) Yr. Mr. Levedahl
- 265A. Seminar in Contractile Tissues and Physiology of Muscle. (2) I.
Mr. Abbott
- 265B. Seminar in Comparative Circulatory Systems. (2) II. Mr. Abbott
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
- 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 229).

LIFE SCIENCES

- 1A-1B. Fundamentals of the Life Sciences. (3-3) Yr.
Mr. Furgason, Mr. Thompson

Lecture, demonstration, discussion, three hours.

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. Cowles, 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.

* Not to be given, 1959-1960.

BIOLOGY:

12. Natural History. (3) I, II.

Mr. Cowles, Mr. Collias

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 our environment, the common animals and some plants of southern California; their interrelationships, and their relationship to climate.

‡ The attention of nonscience majors is called to Zoology 188, Biology and Human Welfare (see page 405). This course is designed for students not majoring in zoology.

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