

BULLETIN

**UNIVERSITY OF
WASHINGTON**

CATALOGUE

ISSUE

1952-1953

CHANGES IN UNIVERSITY REGULATIONS

The University and its colleges and schools reserve the right to change the rules regulating admission to, instruction in, and graduation from the University and its various divisions, and to change any other regulations affecting the student body. Such regulations shall go into force whenever the proper authorities so determine, and shall apply not only to prospective students but also to those who at such time are matriculated in the University. The University also reserves the right to withdraw courses or change fees at any time.

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THE UNIVERSITY ADMINISTRATION

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*Effective July 15, 1952. Mr. Everest will serve as Acting President until that date.

THE UNIVERSITY CALENDAR, 1952-1953

All fees must be paid at time of registration

SUMMER QUARTER, 1952

General registration (by appointment only) June 4 to June 6, 4:30 p.m.
 June 16 to June 20, 4:30 p.m.

Instruction begins:

University courses Monday, June 23, 8 a.m.
 Nursing: Hospital Division and Public Health Field Work only Monday, June 16, 8 a.m.

Independence Day (holiday) Friday, July 4

First term ends Wednesday, July 23

Second term begins Thursday, July 24

Last day to add a University course:

First term Tuesday, June 24, 4:30 p.m.
 Full Quarter Friday, June 27, 4:30 p.m.
 Second term Friday, July 25, 4:30 p.m.

Instruction ends:

University courses Friday, August 22, 6 p.m.
 Nursing: Public Health Field Work Friday, August 29, 6 p.m.
 Hospital Division Sunday, August 31, 6 p.m.
 School of Dentistry Friday, August 29, 6 p.m.

AUTUMN QUARTER, 1952

Registration dates:

For students in residence, Spring Quarter, 1952

September 10 to September 30, 4:30 p.m.
 Appointments may be obtained at Registrar's Office on presentation of ASUW card not later than September 19, 4:30 p.m.

For former students not in residence, Spring, 1952 September 15 to

September 30, 4:30 p.m.
 Appointments may be obtained by writing or calling the Registrar's Office not later than September 19, 4:30 p.m.

For new students September 16 to September 30, 4:30 p.m.

Appointments will be mailed with the Notification of Admission blank.

Last day for new students to submit applications with complete credentials, for admission to undergraduate or graduate standing in the Autumn Quarter Friday, August 29, 4:30 p.m.

Last day for former students to apply for registration appointments for Autumn Quarter Friday, September 19, 4:30 p.m.

Last registration day before beginning of instruction Tuesday, September 30

Instruction begins Wednesday, October 1, 8 a.m.

The President's Convocation Friday, October 3, 11 a.m.

Last day to add a course Tuesday, October 7, 4:30 p.m.

Armistice and Admission Day (holiday) Tuesday, November 11

Thanksgiving recess begins Wednesday, November 26, 6 p.m.

Thanksgiving recess ends Monday, December 1, 8 a.m.

Instruction ends Friday, December 19, 6 p.m.

WINTER QUARTER, 1953

Registration dates:

For students in residence, Autumn Quarter, 1952 November 24 to

December 12, 4:30 p.m.
 Appointments will be issued, by classes only, on presentation of ASUW card, beginning October 24, 8 a.m.

For former students not in residence, Autumn Quarter, 1952 December 29 to

December 31, 4:30 p.m.
 Appointments may be obtained by writing or calling the Registrar's Office beginning October 20.

For new students.....December 29 to December 31, 4:30 p.m.
 Appointments will be mailed with the Notification of Admission blank.
 Last registration day before beginning of instruction.....Wednesday, December 31,
 4:30 p.m.
 Instruction begins.....Monday, January 5, 8 a.m.
 Last day to add a course.....Friday, January 9, 4:30 p.m.
 Washington's Birthday and Founders' Day (holiday).....Monday, February 23
 Instruction ends.....Friday, March 20, 6 p.m.

SPRING QUARTER, 1953

Registration dates:

For students in residence, Winter Quarter, 1953.....February 24 to
 March 13, 4:30 p.m.
 Appointments will be issued, by classes only, on presentation of ASUW card, beginning
 January 23, 8 a.m.
 For former students not in residence, Winter Quarter, 1953.....March 25 to
 March 27, 4:30 p.m.
 Appointments may be obtained by writing or calling the Registrar's Office beginning
 January 19.
 For new students.....March 25 to March 27, 4:30 p.m.
 Appointments will be mailed with the Notification of Admission blank.
 Last registration day before beginning of instruction.....Friday, March 27, 4:30 p.m.
 Instruction begins.....Monday, March 30, 8 a.m.
 Last day to add a course.....Friday, April 3, 4:30 p.m.
 Memorial Day (holiday).....Saturday, May 30
 Honors Convocation.....Wednesday, June 3, 10 a.m.
 Governor's Day.....Thursday, June 4
 Baccalaureate Sunday.....Sunday, June 7
 Instruction ends.....Friday, June 12, 6 p.m.
 Commencement.....Saturday, June 13

THE UNIVERSITY SENATE CALENDAR, 1952-1953

AUTUMN, 1952

Executive Committee.....Monday, September 22
 Senate (Election of Executive Committee for 1952-1953).....Thursday, October 2
 Executive Committee.....Monday, October 20
 Senate.....Thursday, October 30
 Executive Committee.....Monday, November 24
 Senate.....Thursday, December 4

WINTER, 1953

Executive Committee.....Monday, January 12
 Senate.....Thursday, January 22
 Executive Committee.....Tuesday, February 24
 Senate.....Thursday, March 5

SPRING, 1953

Executive Committee.....Monday, April 6
 Senate.....Thursday, April 16
 Senate Elections begin.....Monday, April 20
 Executive Committee.....Monday, May 18
 Senate.....Thursday, May 28

SECTION ONE

THE UNIVERSITY

BACKGROUND

ORGANIZATION

FACILITIES

A NOTE TO THE NEW STUDENT

ON NOVEMBER 4, 1861, more than a quarter of a century before Washington became a state, twenty-two-year-old Asa Shinn Mercer began to offer instruction to thirty-one students who had gathered in a little Seattle school building. Mercer was the "principal" of the new University established on a ten-acre tract deeded to the Territory of Washington by Arthur A. Denny, Judge Edward Lander, and Charles C. Terry.

In 1861 the University was neither university nor college. It was a frontier school founded by pioneers who were determined that their children be educated even in the wilderness and it met, year after year, the difficulties of an institution dependent on a frontier economy. Until 1879 the Territory appropriated no money for maintenance. Four times, in its first two decades, the University was closed "on account of poverty."

By 1889, when Washington was admitted to the Union, the University had achieved a consistent program, an enrollment of more than a hundred students, and plans for development. In 1891, the Legislature authorized the purchase of 160 acres for a new campus and in 1893 amended the authorization to permit the purchase of the present 600-acre site. The cornerstone of the "Administration Building," now Denny Hall, was laid July 4, 1894, and in the autumn of 1895 the University began instruction on the new campus with an enrollment of 425 students.

The Alaska-Yukon-Pacific Exposition, held on the campus in 1909, opened a new period in University history. The Exposition not only brought new buildings (the State Museum Building and Architecture, Mechanical Engineering, and Meany Halls have served the University well) but, by focusing national attention on Alaska and the Northwest, speeded the development of the University's sense of mission.

The modern University, by all the measurements of staff, facilities, enrollment, and provisions for graduate training, ranks with the major universities of the nation. Its full-time faculty numbers about eight hundred persons, plus those of the Schools of Medicine and Dentistry. Physical facilities are valued at \$50,000,000. In teaching and research its staff is preeminent. The University is a member of the Association of American Universities, one of the four member institutions in the West.

ORGANIZATION

The University and the State College hold concurrent authority to offer instruction in chemical engineering, civil engineering, electrical engineering, home economics, liberal arts, mechanical engineering, mining, pharmacy, and pure science. Both are authorized to train elementary and high school teachers and school supervisors and superintendents. The University is given exclusive authority to provide instruction in aeronautical engineering, architecture, commerce, dentistry, fisheries, forestry, journalism, law, librarianship, marine engineering, and medicine.

The University organization, reflecting both the diversity of its training and the relationships between its divisions, consists of a number of colleges and professional schools and a Graduate School which confers advanced degrees. In general, the University organization thus includes:

The *colleges*, which are open to graduates of high schools and which grant bachelor's degrees to those who complete four-year programs.

The *professional schools*, which require one to four years of college work before admission and which offer three or four years of training in specific professions.

The *semi-professional schools*, within the colleges, which combine professional training with general college work in four- or five-year curricula.

The *departments*, within the colleges or professional schools, which give instruction in specific arts or sciences.

In specific outline, then, the University organization includes:

The College of Arts and Sciences, which incorporates:

a. The departments (such as Physics and History) offering courses in liberal arts and pure science.

b. The Schools of Architecture, Art, Communications, Drama, Fisheries, Home Economics, Music, and Physical Education.

c. The preprofessional curricula in dentistry, law, librarianship, medicine, nursing, and social work.

d. Special courses and programs, such as General Education, premajor, and General Studies.

e. The programs offered in conjunction with the School of Medicine: food technology, medical technology, microbiology, and public health and preventive medicine.

The College of Business Administration, which is composed of a number of departments and which also administers a preprofessional program in law.

The School of Dentistry

The College of Education

The College of Engineering, which includes departments in the major engineering fields and the School of Mineral Engineering.

The Far Eastern and Russian Institute, which offers courses for students in the College of Arts and Sciences.

The College of Forestry

The Graduate School, which supervises graduate study and confers advanced degrees.

The School of Law

The School of Librarianship, which is administered through the Graduate School.

The School of Medicine

The School of Nursing

The College of Pharmacy

The Reserve Officers Training Programs of the Army, Navy, and Air Force.

The Graduate School of Social Work, which is administered through the Graduate School.

FACILITIES

The character of the University is a product of its basic elements—students, campus, buildings, teaching and research programs—and the additional facilities, agencies, and interest areas to which it gives life. Some of its facilities actually are extensions of the campus. Others exist as special centers of study or as accommodations for community cultural advancement.

THE LIBRARIES. The University library system, built about a basic collection housed in the Henry Suzzallo Library Building, lists more than 750,000 volumes. Special collections are maintained for Architecture, Art, Business Administration, Chemistry, Drama, Education, Engineering, English and Speech, Far Eastern, Fisheries and Oceanography, Forestry, Health Sciences (dentistry, medicine, nursing, and pharmacy), Humanistic-Social Studies, the Institute of Labor Economics, Journalism, Law, Mathematics and Physics, Mineral Engineering, Music, Philosophy, and Political Science.

The Pacific Northwest Bibliographic Center, sponsored by the Pacific Northwest Library Association, facilitates interlibrary loans and other cooperative services. It maintains a Union Catalog of the holdings of libraries of the Northwest and of the Library of Congress.

EXTENSIONS OF THE CAMPUS. For many years the University, working with two of the Northwest's major resources—its waters and its forests—has had access to extensive field laboratories.

In Oceanography, studies are conducted both on campus and at a 480-acre research station at Friday Harbor, on San Juan Island, where a permanent installation (including library and research equipment) has enabled staff and students to work with the waters of Puget Sound, one of the finest natural laboratories in the world.

No less important has been the availability of two experimental forests—the 2,200-acre Charles Lathrop Pack Forest at LaGrande and the Lee Field Laboratory, a 120-acre tract at Maltby—where the College of Forestry carries on continuing demonstrations of scientific silviculture.

Nearer the campus, in the Montlake District, is the University Arboretum, a 267-acre park maintained by the University and the Arboretum Foundation for the propagation of plants and shrubs from all over the world.

POINTS OF CONTACT. The University has many other points of contact with the people of Washington. One is the Horace C. Henry Art Gallery, located on the campus, where a basic collection of nineteenth-century paintings is supplemented by changing exhibitions of contemporary work in all the fields of art and architecture. Another is the Washington State Museum, which is visited each year by thousands of school children and their parents, who come to see the collections of natural science and anthropological materials of the Northwest and of the Pacific.

The University theaters—the Showboat, the Penthouse, the Playhouse—represent a School of Drama program which has won national attention, especially for the theater-in-the-round experiments in the Penthouse. The theaters are operated throughout the year.

ADULT EDUCATION. Some thirteen thousand people are registered each year in extension classes in thirty communities of the state. Another four thousand are enrolled in correspondence courses. These activities, plus a community forum program, and the provision of University facilities and personnel through various lectures, concerts, institutes, conferences, short courses, and other services, extend the teaching and cultural program of the University to citizens throughout the state. The extension program is administered by the Division of Adult Education and Extension Services.

COMMUNICATION. An active program of Audio-Visual Activities is concerned with the production of radio programs, transcriptions, motion pictures, and photographs. The Instructional Materials Center is the distribution agency for these audio-visual devices. An FM radio station, KUOW, emphasizes public service programs. The University Press is the publishing agency for scholarly books and periodicals.

RESEARCH AND SERVICE

The Engineering Experiment Station administers engineering and industrial research at the University. It publishes reports on general and special engineering problems and provides research opportunities for graduate students. The United States Bureau of Mines Northwest Experiment Station, with offices on the University campus, works closely with the School of Mineral Engineering.

The Applied Fisheries Laboratory is a center for the study of aquatic radiobiology and its staff members have made repeated surveys of atom bomb test areas in the Pacific. The Fisheries Research Institute has been working since 1946 on a long-range study of Alaska salmon resources financed by Alaska Salmon Industries, Inc.

Within the Department of Political Science are five bureaus and institutes devoted to research in government and international relations—the Bureau of Governmental Research and Services, the Bureau of International Relations, the Institute of Public Affairs, the Institute of International Affairs, and the Institute of National Security.

The Institute of Child Development, a part of the Department of Psychology, provides clinical training for graduate students, conducts research on problems of child behavior, and offers clinical and consultative service to individuals and groups. The University Nursery School is maintained for teacher training, demonstration, and research.

The Speech and Hearing Clinic, in the Department of Speech, offers remedial service to students with disorders of speech or voice and educational rehabilitation for students with hearing defects.

A NOTE TO THE NEW STUDENT

This *Catalogue* is published for your use. In it you will find all of the courses offered by the University and the rules governing University attendance. You should examine the *Catalogue* carefully and keep a copy for reference throughout your college career.

When you enter the University an adviser helps you plan your college work. The adviser signs your registration slips and other official papers you may need. He helps you with your class schedule for each quarter, referring to the *Catalogue* and to the quarterly *Time Schedule and Room Assignments*, a bulletin announcing the time and place every course is to be given.

The adviser gives this help, but you yourself are expected to be familiar with the regulations given in the *Catalogue*—regulations concerning admission, payment of fees, scholarship, and so on. The University and its colleges and schools may change their rules at any time and changes may apply to both present and prospective students. The adviser will explain these rules, if necessary, but the responsibility for meeting them is yours.

ADMISSION. Every student must meet the admission requirements of the University (see Admission, pages 15-22) and the college or professional school he plans to enter. Some departments and schools within colleges have additional requirements or recommendations (see chart, page 16). (A student who intends to major in physics, for example, must meet the requirements of the University, of the College of Arts and Sciences, and of the Department of Physics.) The student must meet the requirements in effect during the year of his entrance to the college from which he expects to be graduated.

SCHOLARSHIP. The University requires that the student maintain a 2.0 grade-point average (see Scholarship, pages 31-35). Some colleges and professional schools, and a few departments, require higher averages for their programs or higher grades in specific courses.

TERMS AND DEFINITIONS. Certain terms used in this *Catalogue*, and common in discussion of college work, have specific meanings with which the student should be familiar. A *course*, for example, is a single unit of instruction. A *curriculum* is a program of courses leading to a degree or to entrance to a professional school. A *major* is the subject in which the student specializes. *Credit* is official certification of completion of a course. In most courses, one credit is given for each class hour per week throughout one quarter, although laboratory courses usually carry fewer credits than the number of hours of work required. *Lower-division* courses, numbered from 100 through 299, are given primarily for freshmen and sophomores; *upper-division* courses, for juniors and seniors, are numbered from 300 through 499.

GRADUATION. Every student must meet the graduation requirements of the University (see Requirements for Degrees, pages 28-31), of the college or professional school in which he is enrolled, and of the department offering the subject in which he is majoring. Every student has the privilege of graduating under requirements in effect the year he enters or those in effect the year he is a candidate for a degree.

ADDITIONAL INFORMATION. Some colleges, schools, and departments issue, from time to time, individual publications which supplement their *Catalogue* announcements. Prospective students may write directly to the departments to ask for such additional material. For new students, the University publishes a *General Information* booklet and pamphlets on loans and scholarships, housing, and similar subjects.

SECTION TWO

GENERAL INFORMATION

ADMISSION

EXPENSES

SCHOLASTIC REGULATIONS

STUDENT WELFARE

ADMISSION

THE UNIVERSITY wishes to make certain that all qualified Washington students are assured of admission. To this end, the Admissions Board extends first preference to legal residents of the state of Washington and the territory of Alaska and to sons and daughters of University of Washington alumni. Most academic divisions of the University are able to accommodate qualified out-of-state students. Those with better than average scholarship records are encouraged to apply for admission.

The importance of advance application for admission cannot be overstressed. *Applicants who come to the University before their credentials have been submitted, or before they have been officially notified of acceptance, do so at their own risk.*

Correspondence concerning requirements for admission to or graduation from any college or school should be addressed to the Registrar.

ADMISSION PROCEDURE

Before a new student may be admitted to the University, whether he seeks admission as an undergraduate or graduate student, he must place on file with the Registrar complete credentials covering all of his previous secondary and college education. These records are kept on permanent file by the University and cannot be returned to the student. *To be considered official, transcripts should be forwarded directly from the Registrar of the previous school to the Registrar of the University of Washington.*

The general deadline for filing credentials for admission to the Autumn Quarter is July 15. In the case of the high school student seeking admission to the Autumn Quarter, the credentials should be forwarded after high school graduation and before July 15. For admission to other quarters, the application and credentials should be submitted at least thirty days before the opening of the quarter.

In 1952, *the last day for new students to submit applications, with complete credentials, for admission to the Autumn Quarter, is August 29* (see Calendar, page 5). Students may be disappointed, however, if their Autumn Quarter applications and credentials are submitted later than July 15, *for those received by July 15 will have precedence over others.* It is imperative that students observe this deadline in order to assure prompt attention to credentials and replies to correspondence.

Before the new out-of-state student will be given a notice of admission, he must submit a medical report on a Medical Questionnaire form supplied by the Registrar and completed by a physician at the time of the application for admission.

ADMISSION REQUIREMENTS

ENTERING FRESHMEN. All entering freshmen are required to:

1. Submit from an *accredited* high school an official Application for Admission form (obtainable from the high school principal or from the Registrar) which includes all credits and grades and a statement that the student has completed his high school course with a diploma of graduation. A high school diploma may not be substituted for the official blank. Accredited high schools in Washington are those accredited by the State Department of Public Instruction; in Alaska, by the Northwest Association of Secondary and Higher Schools; in other states, by the state university of the state or a regional accrediting association.

2. Meet the minimum unit¹ admission requirements (16 units, or 15 units exclusive of activity credit in physical education, debate, etc.) with grades certifiable for college entrance and a 2.0 grade-point average. (A 2.0 grade point means a C average

¹To count as a unit, a subject must be taught five times a week, in periods of not less than forty-five minutes, for a high school year of thirty-six weeks. The maximum allowance toward University entrance for junior high school study is 4 units.

MINIMUM GRADE AVERAGES AND HIGH SCHOOL SUBJECTS REQUIRED FOR ADMISSION TO THE COLLEGES

NOTE: Subject requirements are expressed in units. One unit equals two semester credits or one full year of high school work. *Italics* indicate that the particular subject is highly recommended although not required. Whenever required, two units of one foreign language and one unit of one laboratory science should be taken in high school. Students who do not take these subjects

in high school will be asked to take them in the University during the freshman year, with credit toward graduation. Approved laboratory sciences are biology, botany, chemistry, geology, physics, and zoology. Other requirements of the colleges and departments are described in their separate statements in this *Catalogue* (see Section III, The Colleges and Schools).

COLLEGE	MINIMUM GRADE AVERAGE	ENGLISH	MATHEMATICS	FOREIGN LANGUAGE	LABORATORY SCIENCE	SOCIAL SCIENCE	OTHER ACADEMIC SUBJECTS	FREE ELECTIVES
Arts and Sciences	2.0	3	2 (Elem. Alg. & Plane Geom.) In addition, for majors in— Architecture, $\frac{1}{2}$ Adv. Alg. Chemistry, $\frac{1}{2}$ Adv. Alg. Fisheries, $\frac{1}{2}$ Adv. Alg. Geology, $\frac{1}{2}$ Adv. Alg. & $\frac{1}{2}$ Solid Geom. Mathematics, $\frac{1}{2}$ Adv. Alg. & $\frac{1}{2}$ Solid Geom. Physics, $\frac{1}{2}$ Adv. Alg. & $\frac{1}{2}$ Solid Geom.	2 of any one	1 of any one: Biology, Botany, Chemistry, Geology, Physics, or Zoology	1	0	7 Except for majors in— Arch. 6½ Math. 6
Business Administration	2.0	3	2 (Elem. Alg. & Plane Geom. or 2nd yr. Alg.)	0	0	1 (U. S. Hist. and/ or Civics)	Minimum of 3	7
Education	2.2	3	2 (Elem. Alg. & Plane Geom. or 2nd yr. Alg.) For Chem., Geol., Math., and Physics, see Arts and Sciences, above.	2 of any one or (15 Univ. Cr. For. Lang. or Engl. Lit.)	1 of any one: Biology, Botany, Chemistry, Geology, Physics, or Zoology	1	0	7
Engineering	2.0	3	3 (1½ yrs. Alg., 1 yr. Plane Geom., ½ yr. Solid Geom.) ½ Trig.	0	2 (Chemistry & Physics)	0	Minimum of 1	7
Forestry	2.0	3	2½ (1½ yrs. Alg. & 1 yr. Plane Geom.)	0	0 <i>1 Chemistry</i> <i>1 Physics</i>	0	Minimum of 3½	7
Pharmacy	2.0	3	2 (Elem. Alg. & Plane Geom. or 2nd yr. Alg.)	0	0 <i>1 Chemistry</i> <i>1 Physics</i>	0	Minimum of 4	7
Comprehensive (Admits to any college)	2.2	3	3 (1½ yrs. Alg., 1 yr. Plane Geom., ½ yr. Solid Geom.)	2 of any one	2 (Chemistry & Physics)	1 (U. S. Hist. and/ or Civics)	0	5

in terms of the standard grading system of the state of Washington. Students from other states who are recommended to their own state universities on different grading systems will find their scholarship averages adjusted to the four-point system.) In administering this requirement the following reservations and exceptions are made:

a. The 16 units cannot include any unit which received a grade lower than the minimum passing grade as defined by the high school itself.

b. Less than a unit in one foreign language will not be counted.

c. Students who are unable to meet the specific subject requirements of the college to which they seek entrance may petition the dean of the college concerned for permission to enter with *provisional standing*, provided that they offer at least 3 units in English and 6 additional units in academic fields. (Typical academic subjects are English, foreign languages, mathematics, science, history, and economics. Some non-academic courses are those in commerce, manual training, home economics, and band.) A student with an entrance deficiency must register for it each quarter until it is removed. Provisional standing continues until the student has satisfied the entrance requirements of the college in which he is enrolled. *A student in this classification will not be permitted to file an application for a degree.* Deficiencies may be made up with university credit if college courses covering the high school material are available; 10 college credits are considered the equivalent of 1 high school unit, except that for foreign languages (a) 15 quarter credits of college work are considered the equivalent of 2 units (4 semesters) of high school credit, and (b) no student may receive credit for repetition of work at the same or at a more elementary level, if credit has been granted in the earlier course. This rule applies whether the earlier course was taken in high school or in college, and whether, in the latter case, course numbers are duplicated or not. University credits earned by removing a deficiency cannot be used to satisfy college group requirements. First-year algebra and plane geometry are offered by the Division of Adult Education and Extension Services (fee, \$12 per course) and do not carry University credit. Students deficient in both first-year algebra and plane geometry are seldom admitted to provisional standing.

d. A graduate of an accredited high school in Washington or Alaska whose grade-point average is below 2.0 may petition the Board of Admissions for admission to the University *on probation*, provided he meets other requirements for regular admission to freshman standing. This petition must be accompanied by evidence that the applicant is able to do a higher grade of scholastic work than is indicated by his high school scholastic record. The student who is admitted on probation may continue his attendance at the University at the discretion of the dean of his college but may not (1) be pledged to or initiated into a fraternity or sorority, or engage in those other student activities in which his right to participate is restricted by the regulations of the Committee on Student Welfare; (2) engage in those athletic activities in which his right to participate is restricted by the regulations of the University Athletic Committee. He will be removed from probation when he has earned a minimum of 12 academic credits with a 2.0 grade average, except that if he carries less than 12 hours in one quarter, he may not be removed from probation unless he has earned at least a 2.0 average for the current quarter, as well as a minimum cumulative average of 2.0 for his total quarters in attendance. A student removed from probation under these provisions then is subject to the regular scholarship rules (see page 34).

e. A graduate of a *nonaccredited* high school in Washington or Alaska, if he has the recommendation of his principal, may petition the Board of Admissions for permission to enter; before granting such permission the Board may require the student to pass certain examinations.

f. *No student may be accepted for admission who would not be officially recommended to the university of his own state* (see page 15, paragraph 2).

g. Students who have *not graduated from high school* must pass College Entrance Board Examinations and meet entrance requirements without deficiency. An inquiry addressed to the Educational Testing Service, P.O. Box 592, Princeton, N.J., or Box 9896, Los Feliz Station, Los Angeles 27, California, will bring complete information.

ADVANCED UNDERGRADUATE STANDING. Students who present complete transcripts and letters of honorable dismissal from other colleges of recognized rank will be granted whatever credit is acceptable to the University. Definite advanced standing is not determined until the end of the student's first quarter in residence. No credit will be allowed in the senior year (see Senior-Year Residence, page 30).

The applicant must present a scholastic record equivalent to that required of resident students of the University. In general, the University will not accept a student who is in scholastic difficulty at his former school.

1. The admission of an applicant who has completed a year or more of college work is contingent upon the presentation of a minimum 2.0 grade-point average which is computed on the basis of his college work only. If the applicant has completed less than a year of college work, his admission is contingent upon presentation of a minimum 2.0 grade-point average in college work and the same minimum in high school work.

2. For work done in institutions whose standing is unknown, or for work with private teachers, advanced credit will be granted only upon examination. Application for advanced credit examinations to establish credit for such work must be made during the first quarter in residence (see page 19, paragraph 3).

3. Transfer of credit from institutions accredited for less than four years will not be accepted in excess of the accreditation of the school concerned. Transfer of junior college credit may be applied on University freshman and sophomore years only. A student who has completed a portion of his freshman and/or sophomore years in a four-year college may not transfer junior college credit in excess of that necessary for completion of the first two years in the University. In no case may the transfer of junior college credit to the University exceed 90 quarter hours of credit. (*Exception:* If a veteran has attended a recognized Armed Forces training school prior to September, 1946, and has then attended a junior college, he is allowed credit for such service training and, in addition, is allowed up to a maximum of 90 quarter credits from the junior college as stated above.)

4. No credit will be granted to a student for courses taken in another college while the student is in residence at the University, unless written permission to register for such courses is obtained by the student from the University department giving such instruction in the subject, from his major department, and from the dean of his college. This written permission is effective only if obtained before registration. Nothing in this rule makes mandatory the granting of any credit by the University.

Many colleges and schools of the University have additional requirements for admission to advanced standing. These requirements are described in Section III.

GRADUATE STANDING. A bachelor's degree from a college or university of recognized rank is required for admission to the Graduate School. A graduate student should submit two sets of official transcripts of all undergraduate and graduate work and should provide himself with a duplicate record for his own use. (*To be considered official, transcripts should be forwarded directly from the registrar of the previous school to the Registrar of the University of Washington.*) Details on admission to the School of Librarianship and the Graduate School of Social Work are given in Section III. To be recognized as a candidate for a graduate degree, the student must secure the approval of a committee appointed by the Dean of the Graduate School (see Graduate School, Section III).

FOREIGN STUDENTS. Foreign students must satisfy the same general requirements as those from American schools and must demonstrate a satisfactory command of the English language. The official record of Canadian students is the matriculation certificate or university admission certificate of their province. A student who is graduated from a school system which provides for less than twelve years of instruction may be held for additional high school work. Students who have been in university attendance are required to submit university transcripts (see Admission Procedure, page 15).

SPECIAL STUDENTS. Mature individuals (twenty-one years of age or over) not eligible for admission as regular students may apply to the Board of Admissions for special standing. They must (1) be classified as legal residents of the state of Washington or the territory of Alaska and (2) submit all available records of previous work in secondary schools and colleges.

A special student may take such regular courses as the dean of the college may determine. A special student may not participate in student activities, nor is he eligible for any degree, but by fulfilling the requirements for admission to the college or department in which he is enrolled, he may become a regular student.

AUDITORS. A mature person may register as an auditor in nonlaboratory courses or the lecture parts of laboratory courses by obtaining the consent of his dean and the

instructor of the course and then paying a fee of \$12. (During the Summer Quarter tuition is the same as for regular students.) He may not participate in class discussion or laboratory work. He may receive credit in audited courses only by enrolling in them as a regular student in a subsequent quarter.

REGULAR STUDENTS. A regular student is a student who fulfills the following requirements: (1) He has been granted regular admission to a school or college of the University. (2) His current schedule for credit is satisfactory to the dean of his school or college. (3) He has completed all the required steps for registration, including the payment of tuition and fees, the filing of his class cards, and the depositing of his registration book at Sections.

ADVANCED CREDIT

The student may be awarded advanced credit:

1. *By transfer* of credits earned in residence (see page 17).

2. *By transfer* of credits earned in extension courses. The University accepts, without validating examination, credit for extension or correspondence courses only from accredited institutions named in the membership lists of the National University Extension Association. Such credits from schools not in this association may be accepted upon passing of validation examinations similar to those required upon submission of credits from unaccredited schools offering special instruction (see page 18, paragraph 2). No more than 45 quarter credits gained in extension or correspondence courses offered by other institutions may be counted toward the bachelor's degree and none may be counted in the 45 credits of the senior year.

3. *By examination*:

a. Examinations for advanced credit in courses offered by the University may be taken by a currently registered regular student on work done in private study, or on class work for which no credit has been granted by an institution of either secondary or collegiate grade, provided that such examinations may be taken if credit has been granted for work covered after high school graduation in a regularly organized thirteenth-and-fourteenth-year program as authorized by the Washington State Board of Education. Application for advanced credit examination to establish credit for such work must be made during the first quarter in residence.

b. No duplication of credit will be permitted, and no student may take an advanced credit examination in a course in which he has been registered at any time either as an auditor or as a student.

c. The maximum number of credits obtainable by advanced credit examination is 30, not more than 15 of which may be obtained in one subject-matter field. All credits obtained by examination will be counted as extension credits and included in the maximum of 90 extension credits allowed.

d. After examination for advanced credit, no credit will be granted unless the applicant has earned a minimum of 45 residence credits with a minimum grade-point average of 2.5. In all other cases credit will be withheld until these requirements are met.

e. Within a given field of study no student may receive advanced credit in subject matter more elementary than that for which he has previously received credit.

f. No student will be permitted to repeat any examination for advanced credit.

g. Permission for advanced credit by examination, for which preparation has been made while in residence during the quarter in which the examination is given, is not granted for credits in excess of 20 hours minus the number of hours for which the applicant is currently registered but this does not apply to an applicant who has prepared for an examination while not in residence, provided that suspension of the restriction is approved by an instructor responsible for the course in which the examination is to be taken, the executive officer of the department concerned, and the dean of the college or school concerned.

h. No student may take examinations for more than 15 advanced credits in any one quarter.

i. No student may receive advanced credit by examination for lower-division foreign-language courses in his native language.

j. The procedure for authorizing, formulating, and conducting advanced credit examinations is as follows:

(1) A student who wishes to qualify for advanced credit must apply to the Registrar for a certificate of eligibility. After this certificate has been approved and signed by the Registrar, the student presents it for signed approval to an instructor responsible for the course in which the examination is to be taken, to the executive officer of the department concerned, and to the dean of the college or school concerned. If such approvals are granted, the student then pays a fee of \$2 for each credit to be gained by examination.

(2) The department or school must prepare appropriate examinations for advanced credit in duplicate and transmit them to the Registrar. The department or school submits with each examination any necessary list of authorized supplementary material. Each such list is issued to the examination proctors and to those taking the examination for which the list is prepared.

(3) The executive officer of the school or department giving the examination has the responsibility of approving it. In general, examinations must be of sufficient scope to occupy the qualified student a minimum of three hours in a test on a 3-, 4-, or 5-credit course, and a minimum of two hours in a test on a 1- or 2-credit course.

(4) The Registrar designates a time in each quarter during which all approved examinations will be given. Such examinations are supervised by the Graduation Committee or by an agency which it designates.

(5) No more than four hours are allowed for completion of an examination in a 3-, 4-, or 5-credit course; no more than three hours are allowed for completion of an examination in a 1- or 2-credit course.

(6) No student is permitted to take in one day more than two examinations in 3-, 4-, or 5-credit courses, or more than three examinations in 1- or 2-credit courses. An additional day will be permitted the student who takes more examinations. The student who requires this extra time must make arrangements for it with the Testing Bureau.

(7) Completed examinations are transmitted to the proper school or department for grading. Grade reports signed by the instructor and executive officer involved are then sent to the Registrar to be recorded.

4. *By extension or correspondence study at the University.* Credits earned in extension classes or correspondence study are applicable toward an undergraduate degree after the student has satisfactorily completed one year in residence at the University of Washington. A maximum of 90 extension class or correspondence credits may be counted toward the bachelor's degree but no more than 45 extension class or correspondence credits are accepted from other institutions (see page 19, paragraph 2). No more than 10 credits earned through University of Washington extension classes or correspondence courses and none from other institutions may be counted in the 45 credits of the senior year (see Senior-Year Residence, page 30). All credits obtained by examination for advanced credit are counted as extension credits and are included in the maximum of 90 credits.

A resident student may take an extension class or correspondence course with the consent of his dean. This permission, on forms furnished for the purpose, should be filed with the Department of Extension Classes or the Department of Correspondence Study, whichever is appropriate. Registration in extension courses at University level is open to high school graduates and to persons eighteen years of age or over who are not attending high school.

REGISTRATION

All students (except those in Dental, Medical, and Law Schools, and in the Graduate School of Social Work) *must* have a definite appointment each quarter for obtaining registration books and going through Sections (Administration Building). See page 5 for registration dates, application deadlines, and means of obtaining appointments.

Before the date of his appointment the student should arrange his schedule of studies with the advice and assistance of his faculty adviser. A regular program consists of 15 or 16 credits, exclusive of required physical education activity courses and lower-division R.O.T.C. courses. Candidates for the standard general certificate and all other teaching certificates must also consult an adviser and obtain course approval from the College of Education (221 Education Hall).

Registration is completed when fees are paid and the registration book checked through Sections and turned in before leaving that office.

No person may attend a University course in which he has not been registered as a student or enrolled as an auditor.

Students in elective curricula who want to register for more than 16 or less than 12 credits, exclusive of physical education activity and lower-division R.O.T.C. courses, must have their dean's consent. Students in prescribed curricula need their dean's consent to register for less than 12 credits or more than the exact number prescribed, exclusive of physical education activity and lower-division R.O.T.C. courses.

With the exception of students in the Schools of Medicine and Dentistry, no student may be registered for, nor receive credit for, more than 20 credits of work exclusive of required physical education activity courses and lower-division R.O.T.C. courses.

For students in the Graduate School, a work load of 12 credits per quarter is considered normal; a work load of 15 credits is ordinarily regarded as the maximum.

Work taken in noncredit courses or to remove entrance deficiencies is counted as part of the schedule allowed.

After a student's schedule of courses for any quarter has been accepted by the Registrar's Office he may not make changes therein except by permission of his dean.

No change of registration involving entrance into a new course will be permitted after the first seven calendar days following the beginning of instruction.

CHANGE OF COLLEGE

A student who plans to transfer from one college of the University to another must submit the proper forms, which are procurable from the Registrar's Office, and obtain approval from the deans of the two colleges.

APTITUDE AND ACHIEVEMENT TESTS

New undergraduates (including those with previous college work in any subject and those who have taken aptitude tests elsewhere) are required to take a general aptitude test and achievement tests covering English, social science, natural science, and mathematics. The results have no bearing on admission, but are used in advising and in assigning students to appropriate sections in English composition, mathematics, and other subjects. Special, exchange, and blind students, and auditors will be exempted.

MEDICAL EXAMINATIONS

Before receiving a notice of admission, a new out-of-state student must submit a Medical Questionnaire on a form supplied by the Registrar and completed by a doctor of medicine at the time of application for admission. This does not excuse a student from the medical examination required by the University of Washington upon entrance.

All students, regardless of classification and previous medical examination elsewhere, who are entering the University for the first time, and all former students who have not attended the University within the last calendar year, must pass a medical examination as a part of their registration requirements. A definite appointment is made at the time of registration. This appointment takes precedence over all others scheduled for that hour. Students failing to appear for the medical examination at the appointed time will be excluded from classes on notice to the Registrar. For a second appointment, to compensate the University for the additional expense thereby necessitated, a special fee of \$5 must be paid.

As an additional service to and protection of its students, the University's rules provide that, as a requirement for entrance to and/or continuance in the University, any student, resident or nonresident, must pass a medical examination which investigates both physical and mental conditions at any time that the director of the University Health Service deems it necessary. As a part of such examination, contributing evidence from the past history of any case may be considered.

WELCOME WEEK

The week in which Autumn Quarter instruction begins is designated as Welcome Week. During this period a program of orientation activities is provided by the Associated Students and the various colleges to help newcomers get acquainted with other students, the faculty, and the campus. Attendance at these events is optional.

EXPENSES

UNIVERSITY FEES

Schedules of fees for resident and nonresident students are presented on pages 23 and 24.

All fees are payable at the time of registration.

G. I. ENROLLMENT. A student desiring to enroll at the University under Public Law 16 or 346 presents his Veterans Administration certificate of eligibility to the Veterans Division, Comptroller's Office, at the time of registration in lieu of payment of fees and other charges (for establishment of G. I. eligibility, see page 40). A student so enrolled is subject to any charges not covered by the G. I. program. All fees are payable by the student at the time of registration if he is unable to present his certificate of eligibility. Payment will be refunded when full eligibility is established at the start of the quarter.

EXEMPTIONS. Graduate members of the University staff are exempt from the tuition and incidental fees; the ASUW fee is optional.

All honorably discharged service men and women who served in the military or naval services of the United States during World War I and those who served in World War II at any time after the sixth day of December, 1941, and prior to the first day of January, 1947, and who are no longer entitled to vocational rehabilitation under Public Law 16 or to education and training under Public Law 346, and who are classified as residents, are exempt from the tuition fee. Under this exemption a reduction of one-half of the nonresident tuition fee is granted nonresident students. This exemption also applies to U.S. citizens who were in the military or naval services of governments associated with the United States during World Wars I and II. *This exemption is not granted to Summer Quarter students.*

REFUND OF FEES (AUTUMN, WINTER, SPRING QUARTERS). All fees (except those indicated as not subject to refund) will be refunded in full if complete withdrawal is made during the first three calendar days; one-half of said fees will be refunded if withdrawal is made during the first thirty calendar days, except for Air or Army R.O.T.C. uniform deposit, the unexpended portion of which will be refunded upon approval of the Military or Air Science Department. Students registered for chemistry or pharmacy laboratory courses must secure a check-out clearance from the stockroom custodian. This clearance must be presented at the Registrar's Office when withdrawal is made, as no withdrawal will be honored until this requirement has been met. At least ten days must elapse between payment and refund of fees. Unless specific instructions are received by the Comptroller's Office regarding the fees refunded, all properly authorized refunds will be made to the student involved in the registration.

Students withdrawing under discipline forfeit all rights to the return of any portion of the fees.

Applications for refund may be refused unless they are made during the quarter in which the fees apply.

SUMMER QUARTER FEES. The schedule of fees for the Summer Quarter covers students regularly enrolled, either full or part time, resident or nonresident, and those enrolled as transient students, special students, or auditors. The total fees, including the ASUW fee of \$5, are:

Full quarter	\$57.50
First term only	40.00
Second term only	40.00

For addition of the second term after the first-term registration is completed, the fee is \$17.50. Law students have an additional library fee of \$10.

FEES FOR RESIDENT STUDENTS

Examples of Autumn, Winter, and Spring Quarter Fees for Various Types of Registration

Type of Registration	Tui- tion Fee	Inc- iden- tal Fee	Misc. Fees	ASUW FEE*	TOTAL FEES
				Autumn, Winter, and Spring Quarters	Autumn, Winter, and Spring Quarters
Full-Time Students (Under- graduate and Graduate) except Medical, Dental, and Law Schools.....	\$25	\$21.50	†	\$8.50	\$55.00
Medical School:					
First, second years.....	100	21.50		8.50	130.00
Third, fourth years (per term).....	75	16.15		6.40	390.20 (Four terms)
Dental School.....	100	21.50	\$6.00‡	8.50	136.00
Law School.....	25	21.50	10.00§	8.50	65.00
Auditors||.....	12			¶	12.00
Ex-Service Personnel of World War I and World War II (Chapter 46, Laws 1947)**.....		21.50		8.50	30.00
Part Time (max. 6 credit hrs. excl. of ROTC)††....	25	7.00		¶	32.00
Persons Registered for Thesis and/or Research Only‡‡..		21.50		¶	21.50
Undergraduate Nurses in Approved Hospital‡‡....		5.00§§		¶	5.00
Graduate Nurses in Ap- proved Hospital‡‡.....		25	10	¶	35.00

* Athletic admission ticket, \$5, optional for ASUW members; good for entire year, but must be validated each quarter at time of payment of fees. ASUW fees were being reviewed in Spring Quarter 1952 and increases may be effected in the 1952-53 academic year.

† A \$25 uniform deposit for those who register for air, military, or naval science must be paid at time of payment of registration fees. See Military Training requirements, page 28, to determine applicability. Refund is given upon return of all U.S. Air Force or Army issued property.

‡ Dental engine rental, \$3.50; laboratory case rental, \$2.50.

§ Law library fee.

|| Special audit fee in the Nursery School for both residents and nonresidents is \$15.

¶ Optional; if membership in ASUW is desired, the ASUW fee should be added to the total fee as shown for this type of registration.

** See Exemptions, page 22, to determine eligibility.

†† Load-hour equivalents of noncredit courses must be counted in the 6 credits.

‡‡ Individuals in these classifications must be certified by the Graduate School or the School of Nursing.

§§ The student does not pay this fee; it is paid by the Nursing Education Fund.

NOTES

CHANGE OF FEES. The University reserves the right to change any or all fees without notice, for present or future students. Fee payment dates are indicated in the Calendar on page 5. Late registration fines are shown on page 25 and Summer Quarter fees on page 22.

RESIDENT STATUS. A resident student is one who has been domiciled in this state or in the territory of Alaska for a period of one year immediately prior to registration. To determine resident or nonresident status see note to table of nonresident fees. The domicile of a minor is that of his parents. A prospective student is classified as a nonresident when credentials are presented from institutions not located in the state of Washington. If the student believes himself domiciled within the state, he should file a petition with the Nonresident Office, 205A Administration Building, for change of classification to resident status.

ADDITIONAL FEES. The following courses require the payment of a fee in addition to tuition: cadet teaching, \$1 per credit hour; botany field trip, \$5; Pack Forest, \$10; ward clinic, \$10; Nursery School 320 and 330, \$5 (for lunches). Music, riding, golf, and locker fees should be added to the above when applicable.

FEES FOR NONRESIDENT STUDENTS

Examples of Autumn, Winter, and Spring Quarter Fees for Various Types of Registration

Type of Registration	Tuition Fee	Incidental Fee	Misc. Fees	ASUW FEE*	TOTAL FEES
				Autumn, Winter, and Spring Quarters	Autumn, Winter, and Spring Quarters
Full-Time Students (Undergraduate and Graduate) except Medical, Dental, and Law Schools.....	\$75	\$21.50	†	\$8.50	\$105.00
Medical School:					
First, second years.....	165	21.50		8.50	195.00
Third, fourth years (per term).....	123.75	16.15		6.40	\$85.20 (Four terms)
Dental School.....	165	21.50	\$6.00‡	8.50	201.00
Law School.....	75	21.50	10.00§	8.50	115.00
Auditors||.....	12			¢	12.00
Ex-Service Personnel of World War I and World War II (Chapter 46, Laws 1947)**.....	37.50	21.50		8.50	67.50
Part Time (max. 6 credit hrs. excl. of ROTC)††....	75	7.00		¢	82.00
Persons Registered for Thesis and/or Research Only‡‡..		21.50		¢	21.50
Undergraduate Nurses in Approved Hospital‡‡.....		5.00§§		¢	5.00
Graduate Nurses in Approved Hospital‡‡.....		25	10	¢	25.00

* Athletic admission ticket \$5, optional for ASUW members: good for entire year but must be validated each quarter at time of payment of fees. ASUW fees were being reviewed in Spring Quarter 1952 and increases may be effected in the 1952-53 academic year.

† A \$25 uniform deposit for those who register for air, military, or naval science must be paid at time of payment of registration fees. See Military Training requirements, page 28, to determine applicability. Refund is given upon return of all U.S. Air Force or Army issued property.

‡ Dental engine rental, \$3.50; laboratory case rental, \$2.50.

§ Law library fee.

|| Special audit fee in the Nursery School for both residents and nonresidents is \$15.

¶ Optional; if membership in ASUW is desired, the ASUW fee should be added to the total fee as shown for this type of registration.

** See Exemptions, page 22, to determine eligibility.

†† Load-hour equivalents of noncredit courses must be counted in the 6 credits.

‡‡ Individuals in these classifications must be certified by the Graduate School or the School of Nursing.

§§ The student does not pay this fee; it is paid by the Nursing Education Fund.

NOTES

CHANGE OF FEES. The University reserves the right to change any or all fees, without notice, for present or future students. Fee payment dates are indicated in the Calendar on page 5. Late registration fines are shown on page 25 and Summer Quarter fees on page 22.

RESIDENT STATUS. A nonresident student is one who has not been domiciled in this state or the territory of Alaska for a period of one year immediately prior to registration. The words domicile and residence are not legally equivalent terms. The following considerations govern the determination of the legal domicile of a student: (1) Domicile connotes a present intention of permanent residence. (2) A domicile is not acquired when residence in this state is merely for temporary or occasional purposes, such as attending school, being stationed in military or other governmental service or in the service of a business concern, or being present for reasons of health or pleasure. (3) Conversely, a domicile in this state is not lost by temporary or occasional absence from the state to attend school, to perform military or other governmental service, or to pursue health or pleasure. (4) The domicile of a minor is that of his parents.

ADDITIONAL FEES. The following courses require the payment of a fee in addition to tuition: cadet teaching, \$1 per credit hour; botany field trip, \$5; Pack Forest, \$10; ward clinic, \$10; Nursery School 320 and 330, \$5 (for lunches). Music, riding, golf, and locker fees should be added to the above when applicable.

The *Summer Quarter Bulletin* lists the special fees that are required of students in these categories:

- a. Nurses in residence at approved hospitals.
- b. Children attending the Nursery School.
- c. Persons employed in social agencies certified by the Graduate School of Social Work.
- d. Persons registering for thesis only.
- e. Persons registering for individual and group instruction in applied music.
- f. Persons registering for conferences, institutes, and workshops.
- g. Persons living in language houses.
- h. Persons registering for Home Economics 406A, Education 460J, 446A, 430A, 530A audit, and other special courses.
- i. Persons registering for instruction in golf: Physical Education 110a, b and 210a, b (for men); and 126a, b (for women).

MISCELLANEOUS CHARGES

Charges are made for certain services and, in special cases, for the use of University facilities. Unless payment has been made in error, *none of these charges is subject to refund except in the case of breakage tickets.*

LATE REGISTRATION FINE. Unless delay in registering is occasioned by officials of the University, *undergraduate students and graduate students in the Law School* registering late will be charged a fine of \$2 on the first day of instruction and a further cumulative fee of \$1 for each day thereafter up to a total of \$4. After the first week of instruction, no student will be permitted to register except with the consent of his dean and payment of a late registration fee of \$5. *Graduate students not in the Law School* may register without penalty during the first week of the quarter. Students who fail to keep appointments for physical education activity class assignments will be charged a late registration fine of \$2.

CHANGE OF REGISTRATION FEE. A fee of \$2 is charged for each change of registration or change of section or number of changes which are made simultaneously, except that there is no charge when the change is made on the initiative of the University.

ATHLETIC ADMISSION FEE. A ticket which admits its owner to all athletic events for the entire year is optional to ASUW members only. The cost is \$5.

BREAKAGE TICKET DEPOSIT. In certain laboratory courses a breakage ticket is required to pay for laboratory supplies and breakage of equipment. Tickets may be purchased at the Cashier's Office for \$3. Unused sections of breakage tickets may be returned to the Cashier for refunds.

MICROSCOPE RENTAL FEE. A microscope rental fee of \$7 per quarter must be paid by those students in the Division of Health Sciences who rent microscopes.

INCOMPLETE REMOVAL FEE. A fee of \$2 is charged for the removal of an incomplete, irrespective of whether by examination or by other means.

SPECIAL EXAMINATION FEE. A fee of \$1 is charged for each examination, exclusive of incomplete removals, outside the regular schedule. This also applies to the examination for foreign language reading required of certain students. In the case of examinations for *advanced credit*, a fee of \$2 per hour is charged.

A fee of \$2.50, payable to the Division of Adult Education and Extension Services, is charged for removal of incompletes *in absentia*.

A \$10 examination fee is charged for transfers from other dental schools. A \$25 examination fee is charged graduates of dental schools who are seeking additional training for purposes of qualifying to take dental board examinations.

PRACTICE ROOMS. Piano practice room: One hour a day each quarter, \$3; two hours a day, \$5; three hours a day, \$6. Organ practice: one hour a day each quarter, \$6; two hours a day, \$10; three hours a day, \$12. These facilities are available only to students registered in the School of Music.

PAVILION LOCKER FEE (MEN). A fee of \$1.50 per quarter during the regular academic year, and 75 cents per term during Summer Quarter, is charged students, faculty, and staff members who use the Pavilion or pool locker rooms. This fee is paid at 228 Edmundson Pavilion.

GENERAL LOCKER FEE. Lockers for wraps and books in the various classroom buildings may be obtained at a rental of 75 cents per quarter from the Buildings and Grounds Department.

GRADE SHEET FEE. One grade sheet is furnished each quarter without charge; a fee of 25 cents is charged for each additional sheet.

GRADUATION FEE. Each graduate receiving a baccalaureate degree or an M.D. or D.D.S. degree is required to pay a graduation fee of \$10. Each graduate receiving an advanced degree is required to pay a graduation fee of \$5. The fee for a certificate for postgraduate work in orthodontics, pedodontics, or restorative dentistry is \$10. The fee for a teaching certificate is \$2.50. The fee for other professional certificates is \$1. The teaching certificate fee does not include the legal registration fee of \$1 which must be paid to the county school superintendent who first registers the certificate.

PRINTING AND THESIS-BINDING FEES. Each recipient of a higher degree pays a fee of \$2 for the binding of one copy of his thesis. In addition, each recipient of a doctorate is assessed a fee of \$25 for the publishing fund.

TRANSCRIPT FEE. One transcript of a student's record is furnished without charge. Fifty cents is charged for each additional transcript.

SUPPLEMENTARY TRANSCRIPT FEE. A fee of 25 cents is charged for each supplementary transcript issued.

MEDICAL EXAMINATION AND X-RAY FEES. Students who *fail to keep* their medical or X-ray appointments must pay a fee of \$5 for a make-up medical examination and \$1 for an X-ray.

X-RAY PLATES. Applicants for a teaching certificate may secure from the University Health Center an X-ray plate to accompany health certificate. The fee is \$5.

COLLEGE OF EDUCATION BUREAU OF TEACHER SERVICE AND PLACEMENT. Candidates seeking teaching positions pay an initial registration fee of \$5. A replacement or maintenance charge of \$2.50 is charged each subsequent year for persons wishing to remain on the active list.

CERTIFICATION OF CREDITS FROM UNACCREDITED SCHOOLS. Credits earned after high school graduation and based on credentials from unaccredited schools offering specialized instruction, or from schools of unknown standing, are accepted only after certification by the department examiner, the executive officer of the department, the dean of the college or school concerned, and the Registrar. Students seeking such certification must secure the proper forms in the Registrar's Office and must pay a fee of \$5.

MILITARY UNIFORMS. (See page 23, footnote †.)

NURSERY SCHOOL FEE. The fee for children in the Nursery School is \$45 per child per quarter for the morning program, 9 a.m. to 11:30 a.m.; \$60 per child per quarter for the complete program (including hot dinner), 9 a.m. to 12:30 p.m.

MINIMUM BASIC EXPENSES

It is difficult to predict with reasonable accuracy the total cost of a year's attendance at the University.

There are certain fixed expenses, such as tuition and fees. Books and equipment must be purchased. There will be additional expenditures for clothing, laundry, dry cleaning, personal items, recreation, and entertainment. Major expenditures will be those for living accommodations and for food.

In all the calculations there are variables because the expenditures are subject to some degree of control by the student. Nevertheless, certain estimates of minimum costs can be made and (while the figures, of course, are subject to change) such estimates will be found in the accompanying table.

In examining the costs, these considerations should be noted:

HOUSING. The University provides housing facilities for single men and single women on campus (see Housing, page 39).

MEAL SERVICES. Meal service is available on campus in the Student Union Building and in the University Commons. At the Commons meals are available on an à la carte or on a meal ticket basis. At the Student Union, meals are available à la carte in the cafeteria. Breakfast, morning coffee, lunch, afternoon snacks, and dinner are served in both places at reasonable prices. Meal and scrip tickets for the Commons may be purchased from the University Cashier.

EXPENSES

**Estimate of Minimum Basic Expenses of a Full-Time Resident Student
for One School Year**

Minimum Expenses (Subject to Change)	TYPE OF LIVING ACCOMMODATION						Member of Fraternity or Sorority
	Women's Residence Halls	Men's Temporary Dorms.	Coop. Houses (Men and Women)	Living at Home	Boarding House	Living at Home	Living in House
Tuition ^{1,2}	\$75.00	\$75.00	\$75.00	\$75.00	\$75.00	\$75.00	\$75.00
Incidental Fee ¹	64.50	64.50	64.50	64.50	64.50	64.50	64.50
Special Fees ³ and Deposits ⁴							
ASUW Fee ¹	25.50	25.50	25.50	25.50	25.50	25.50	25.50
Athletic Admission ⁵ .. Ticket (optional)	5.00	5.00	5.00	5.00	5.00	5.00	5.00
Board and Room	525.00 ⁶	480.00 ⁷	390.00 ⁸	9	575.00	250.00 ¹⁰	600.00 ¹¹
Books ¹²	75.00	75.00	75.00	75.00	75.00	75.00	75.00
TOTAL MINIMUM FIRST YEAR EXPENSES	\$770.00	\$725.00	\$635.00	\$245.00	\$820.00	\$495.00	\$845.00
To the above should be added for mis- cellaneous mini- mum personal ex- penses	\$200.00	\$200.00	\$200.00	\$100.00	\$200.00	\$100.00	\$200.00

¹Students registered for 7 credit hours or more are considered *full-time* students for purposes of fee payment. *Part-time* students are those registered for 6 credit hours or less (exclusive of R.O.T.C., but including load hour equivalents of noncredit and audit courses). Tuition for part-time attendance is the same as for full-time, but the incidental fee is \$7 a quarter or \$21 for the school year. Membership in the ASUW is optional for part-time students. ASUW fees were being reviewed in Spring Quarter 1952 and increases may be effected in the 1952-53 academic year.

²Students entering from schools not located in the State of Washington or the territory of Alaska are classified as *nonresidents* and will be required to pay an additional quarterly fee of \$50 for nonresidents. The yearly tuition for nonresidents totals \$225. Students who believe they have been domiciled in the state of Washington or the territory of Alaska for a period of one year prior to registration, may file petitions for resident status with the Nonresident Office, Administration Building. For purposes of classification the domicile of a minor is the domicile of his parents.

³*Special fees* which most frequently apply are the following: *Private music lessons*—\$25 or \$37.50 per quarter, depending on whether the student is registered for one-half hour or one full hour of instruction each week. *Group voice or instrumental lessons*—\$5 per quarter. *Music Practice Rooms*—\$3 per quarter for one hour each day. The fee is reduced as the hours per day of use increase. *Locker fee*—\$1.50 per quarter for men taking physical education activities.

⁴*Deposits* required of some undergraduates include: *Uniform Deposit*—\$25 for men registered in Army or Air Force R.O.T.C. (Refunded when uniform is returned.) *Breakage Ticket* for laboratory courses—\$3 per quarter. (Unused part is refunded.)

⁵Optional. Admits to all Coast Conference sports events during the year.

⁶This figure includes room and meals which are served in the halls. There is also a social fee of approximately \$2 per quarter.

⁷This includes the \$35 per quarter for a double room as well as approximate cost of meals in the University dining hall nearby.

⁸A student who joins the Cooperative is required to buy a \$25 share, of which \$10 is refunded when he leaves the house.

⁹Many students bring their lunches and thus reduce their expenses. The cost of lunch taken in the ASUW cafeteria or elsewhere varies.

¹⁰This includes lunches and one dinner each week as well as social fees and dues. The initial cost of joining sororities and fraternities varies so greatly that it is impractical to give an estimate. Students may obtain this information from Panhellenic Association or Interfraternity Council.

¹¹This includes room, board, social fees, and dues. See also 10 above.

¹²The cost of books will depend upon the program of study selected, and whether or not second-hand books are used. Average cost of books and supplies for the freshman year would range from a minimum of \$50 up to \$110 for a student registered in a technical field such as engineering.

SCHOLASTIC REGULATIONS

REQUIREMENTS FOR DEGREES

MILITARY TRAINING. Since Summer Quarter 1948, all male students entering the University without advanced standing (except those granted exemptions as indicated below) have been required to complete six quarters of military training. This training is taken in one of the three University departments that offer R.O.T.C. programs: Air Science and Tactics, Military Science and Tactics, and Naval Science.

Since Summer Quarter 1949, all male students entering without advanced standing (except those granted exemptions as indicated below) have been held for the military training requirement, provided, however, that the student is subject only to a period of military training equivalent to the number of quarters he needs to achieve junior standing by a normal schedule. More specific regulations governing male students entering with advanced standing may be established by the Board of Deans.

No student in resident attendance at the University prior to Summer Quarter 1948 will be held for any part of the military training requirement.

Exemption from the military training requirement is granted:

a. Those who are twenty-three years of age or over at the time of original entry into the University.

b. Those who enter as juniors or seniors.

c. Special students.

d. Those registered for 6 credits or less.

e. Those who are not citizens of the United States.

f. Those regularly enrolled in the University naval science course.

g. Those who are active members of the Armed Forces or Coast Guard of the United States, or commissioned officers of the National Guard, or reserve officers of the Armed Forces or Coast Guard of the United States.

h. Those who are active enlisted members of the National Guard or of the Organized Reserve of the Armed Forces or Coast Guard of the United States; provided, however, that exemption is granted only to those holding such status prior to their original entry into the University. Students granted this exemption must earn equivalent extra credits in other University courses. For those entering with active reserve or National Guard status in the Summer, Autumn, Winter, or Spring Quarter, such membership must have existed prior to June 1, September 1, December 1, or March 1, respectively, of the current school year. A student who seeks initial exemption under the terms of this paragraph must present to the Registrar, not later than the first day of his first quarter in residence, a statement signed by his commanding officer which certifies that he is an active member in good standing of his reserve or National Guard unit.

If a student exempted under the terms of the preceding paragraph is dropped from active membership in his reserve or National Guard unit after less than one year of service he is subject to the entire University military training requirement. If he is dropped from active membership in his reserve or National Guard unit after one year or more of service he is subject to not more than three quarters of the University military training requirement. In such a case the minimum requirement is fixed by the dean of the college concerned in consultation with the appropriate R.O.T.C. commander.

i. Those who claim credit for military training taken elsewhere. Such students must make their claims upon registration; all credits allowed are recorded by the Military Registration Secretary and the evidence filed in the student's permanent record on file in the Military Registration Office.

j. Those with previous military service. Exemption from one year of military training is granted to honorably discharged men who have served not less than six months, but who have served less than one year, in the Armed Forces or Coast Guard. Complete exemption from military training is granted (1) to honorably discharged men who have served one year or more in the Armed Forces or Coast Guard and (2) to those who hold a Certificate of Disability Discharge. The Registrar processes exemptions specified in this paragraph.

k. Those who seek exemption on grounds other than those specified above, and whose petitions for exemption are first processed by the Office of the Dean of Students, and then approved by the dean of the college concerned after consultation with the appropriate R.O.T.C. commander.

1. Those who because of physical condition are exempted by the University Health Officer.

Male students other than those listed under paragraphs a to g, inclusive, must register for the proper course and attend classes until their requests for exemption have been granted.

The military training requirement normally must be satisfied during the first six quarters of residence. Deferment of the requirement becomes effective only upon recommendation by the Office of the Dean of Students and upon personal authorization by the dean of the college concerned. Deferment of the military training requirement is not construed as exemption.

Students exempted under paragraphs e, h, and k are required to earn equivalent extra credit in other University courses. This must be done in accordance with the rules governing excess hours.

PHYSICAL EDUCATION FOR MEN. Six quarters of physical education activity courses are required of all male undergraduate students except those who have attained the age of twenty-five, those entering with junior or senior standing, those registered for 6 credits or less, and special students.¹ A student who attains the age of twenty-five during a quarter in which he is registered for a required physical education activity course is held for the completion of that course. This rule is not retroactive in its application to students who entered prior to Spring Quarter 1951 and were exempted from required physical education courses under previous rules. (No student may register for more than one physical education activity course in a single quarter; provided, however, that during the Summer Quarter a student may register for not more than one such course in each of the two halves of the Summer Quarter.)

a. This requirement must be completed during the first six quarters of University residence.

b. Freshmen who pass the medical examination must register for the Autumn Quarter in Basic Physical Education (Physical Education 104) and Winter or Spring Quarter in Swimming (Physical Education 119). For the remaining four quarters they may elect any activity, with the provision that they shall not receive credit for more than two quarters in any one activity. Freshman courses are listed in the 100-199 series and sophomore courses in the 200-299 series. Freshman or varsity sports may be substituted for these courses.

c. Naval science physical education requirements are the same as the University's requirements except that naval science students are required to pass the First Class Swimmer's Test once each year.

A 2-credit course in personal health (Physical Education 175) is required of all male students who have not satisfied this requirement in an accredited university or college.

a. All men for whom the health education course is prescribed are required to complete it within the first three quarters of residence.

b. A student may be exempted from the health education course by passing a health knowledge test given the first week of each quarter.

PHYSICAL EDUCATION FOR WOMEN. Six quarters of physical education activity courses are required of all women undergraduate students except those who have attained the age of twenty-five, those entering with junior or senior standing, those registered for 6 credits or less, and special students.¹ This must be completed during the first six quarters of University residence. A student who attains the age of twenty-five during a quarter in which she is registered for a required physical education activity course will be held for the completion of that course. This rule is not retroactive in its application to students who entered prior to Spring Quarter 1951 and were exempted from required physical education courses under previous rules. (No student may register for more than one physical education activity course in a single quarter; provided, however, that during the Summer Quarter a student may register for not more than one such course in each of the two halves of the Summer Quarter.)

¹ Special programs adapted to the individual's need will be devised by the Executive Officer of the School of Physical Education for those students who are reported by the University Health Officer as unfitted to join regular classes. A student may not be exempted from this requirement unless the Executive Officer of the School of Physical Education and the University Health Officer join in recommending such exemption to the dean of the college in which the student is registered. The dean of the college will then recommend to the Graduation Committee that the exemption be allowed.

In the six quarters of physical education activity, all women students are required to: (1) pass the swimming test, (2) complete at least one quarter of an individual or dual activity, and (3) complete at least one quarter of a rhythmic activity.

A 2-credit course in health education (Physical Education 110) is required of all entering women but is waived for any woman student who entered the University before July, 1944, and who had not fulfilled this requirement before that date. It also is waived for all women transfer students beyond freshman standing. For women transfer students with less than a normal year's credit (45 academic quarter credits, exclusive of physical education activity courses), the question of imposing this requirement is referred to the School of Physical Education. All women for whom the health education course is prescribed are required to complete it within the first three quarters of residence.

SENIOR-YEAR RESIDENCE. Senior standing is attained when 135 credits and the required credits in R.O.T.C. courses and in physical education have been earned. Of the work of the senior year (45 credits) at least 35 credits must be earned in a minimum of three quarters in residence. The remaining 10 credits must be earned either in residence at the University of Washington or through the University of Washington Division of Adult Education and Extension Services. Nothing in this rule is construed as requiring more than the 42 credits which constitute the fourth year of Law School.

FINANCIAL OBLIGATIONS. In determining the fitness of a candidate for a degree, his attitude toward his financial obligations is taken into consideration. The Comptroller and the Registrar are instructed to attach credits and withhold delivery of a student's diploma pending final payment of financial obligations to the University. Participation in Commencement exercises is in no way affected by this rule and certification of graduation will be furnished where the need exists.

THESIS. If a thesis is required for the degree sought, the candidate must deposit two typewritten copies thereof in the Library at least three weeks before the end of the quarter in which he expects to take the degree. The thesis must meet the approval of the librarian as to form. Printed "Instructions for the Preparation of Theses" are available at the thesis desk in the Library.

Some colleges and departments require the candidate to file a third copy with the head of his department.

GRADE POINTS AND CREDITS. To be eligible for graduation from the University with a bachelor's degree, the student must satisfy all other specific requirements and must offer a minimum of 180 academic credits. Unless he is excused from physical education, the candidate for graduation also must offer the required academic credits in physical education activity courses. No more than the required number of such credits may be counted for graduation. Unless he is excused from military training, the male candidate must also offer the required lower-division R.O.T.C. credits, and no more than the required number may be counted for graduation. The candidate who is excused from military training may be required to earn equivalent extra credit in other University courses.

To be eligible for the bachelor's degree:

- a. A student (except a student in the School of Law) must have earned at least a 2.0 grade-point average in the subjects required as academic credit for graduation.
- b. A student, to be eligible for a degree awarded by the School of Law, must achieve a cumulative numerical average of 68 in law courses.

Grades earned at other institutions may not be used to raise the grade-point average at the University of Washington. Any college may make additional requirements for graduation.

A candidate for the bachelor's degree whose grade average is below 2.0 (or, in the School of Law, a cumulative numerical average of 68) and who has more than the required number of academic credits on his permanent record, may attain the minimum required grade average by presenting for graduation the required minimum of academic credits in which he received his highest grades, including the required academic credits in physical education activity and R.O.T.C. courses. In such a case the procedure is as follows:

1. The student, with the advice of his major department and college dean, must notify the Graduation Committee of the courses he intends to present for graduation. He accomplishes this by filing with the Registrar a written statement, signed by the head of his major department and the dean of his college, listing the registered hours he wishes not counted toward his degree.

2. If the courses to be counted produce a 2.0 average or above (or, in the case of the student in the School of Law, a cumulative numerical average of 68) and meet all other college and University requirements, the student is eligible for graduation.

UPPER-DIVISION CREDITS. A minimum of 60 credits in upper-division courses, exclusive of those earned in R.O.T.C. courses, is an all-University requirement for graduation.

GENERAL RULES. The following general rules apply:

GRADUATION REQUIREMENTS. A student may choose to graduate under the requirements of the *Catalogue* in force at the date of his entry into the college in which he is to graduate, provided that not more than ten years have elapsed since that date. As an alternative he may choose to fulfill the graduation requirements of the *Catalogue* current at the time he is to be graduated. All responsibility for fulfilling graduation requirements rests with the student concerned.

The ten-year limitation applies to all students graduating after December 31, 1950.

TWO DEGREES AT SAME TIME. Bachelor's degrees with different majors may be granted at the same time, but a minimum of fifteen quarters must have been occupied in the work for the two degrees, and the total number of academic credits must reach a minimum of 45 credits in excess of the number required for one bachelor's degree.

SECOND BACHELOR'S DEGREE. A second bachelor's degree may be granted, but the University requires a minimum of three additional quarters in residence. The minimum number of additional credits required for the second bachelor's degree is 45, and the minimum number of additional grade points is 90. Not more than 10 University of Washington extension credits and no credits gained by advanced credit examinations may constitute any part of the added program. The program for the second bachelor's degree must meet the requirements of the *Catalogue* current at the time of application for the second degree.

DEGREES WITH HONORS. Degrees with honors may be conferred upon recommendation of the Honors Committee.

COMMENCEMENT EXERCISES. Formal Commencement exercises are held only at the close of the Spring Quarter, but diplomas are issued at the end of each quarter to candidates who have completed requirements at that time.

HONORARY DEGREES. It is not the policy of the University to grant honorary degrees.

APPLICATION FOR DEGREE. During the first quarter of his senior year the student must file with the Registrar a written application for his degree. Each application is checked by the Graduation Committee at least six months before the date at which the student expects to be graduated, and notice of the acceptance or rejection of his application is sent to the student by the Registrar. The accepted list for each quarter is submitted at the regular meeting of the University Senate and, if approved by the Senate, with or without modification, constitutes the list of candidates to be recommended for graduation. No change may be made in this list unless ordered by a two-thirds vote of the members present. No student may receive a bachelor's degree, teaching certificate, or other certificate unless his name appears upon the list approved by the Senate during the quarter in which the degree or certificate is to be granted.

NOTE: A student with *provisional standing* is not permitted to file an application for a degree (see page 17, paragraph c).

For details concerning issuance of teaching certificates, see College of Education, Section III.

SCHOLARSHIP

GRADING SYSTEM. Except in the Schools of Medicine, Dentistry, and Law, where individual patterns have been established, the University's grading system is as follows:

A—Honor.

B—Good.

C—Medium.

D—Poor (low pass).

E—Failed or was doing failing work at the time of official withdrawal from the course after the first thirty calendar days of the quarter.

I—Incomplete.

N—Satisfactory, without grade.

S—Passing grade for courses numbered 500 or above.

W—Official withdrawal during first thirty calendar days.

PW—Official withdrawal after first thirty calendar days with passing grade (D or better).

EW—Unofficial withdrawal at any time during quarter, to be computed as an E in calculation of grade-point averages.

GENERAL RULES. General rules affecting the award of grades are:

1. For students in the Graduate School who are working for advanced degrees, no grade lower than B is acceptable in the major field; a lower grade may occasionally be accepted in related fields, but only if the student's record is of generally high quality.

2. The grade of E is final. A student receiving the grade of E in a course may obtain credit only by reregistering for the course and repeating it.

3. *I*: An *incomplete* is given only in case the student has been in attendance at class, has done satisfactory work to within two weeks of the end of the quarter, and has given satisfactory proof to his instructor that he cannot complete his work because of illness or other circumstances beyond his control.

A written statement of the reason for the award of the incomplete, listing the work which the student will need to do to remove it, must be filed by the instructor with the head of the department or the dean of the college in which the course is given.

An incomplete is counted neither in registered hours nor in grade points.

To obtain credit, the student must convert an incomplete into a passing grade by the last day of his next quarter in residence. This rule may be waived by the dean of the college in which the course was offered only if the nature of the uncompleted work is such as to make fulfillment of this requirement impossible. In no case can an incomplete be converted to a passing grade after a lapse of two years. A fee of \$2 per course is assessed for the removal of each incomplete.

4. *N*: The grade of N may be given in thesis, research, and hyphenated courses in which the grade is dependent on the work of a final quarter. When the grade of N is given in a course it may indicate that the work has been completed to the end of the quarter in which the N is given. It carries with it no credit or grade until the regular grade is assigned. The use of the N grade is optional.

5. *W* and *PW*: Students making a formal withdrawal *within* the first thirty calendar days of the quarter will be given a W. Students who withdraw *after* the first thirty calendar days, and who are doing passing work (D or better), will be given the grade of P, which will be placed on the permanent record as PW but will not be counted in calculations of registered hours or of grade points. When the student is doing failing work at the time of withdrawal (after the first thirty calendar days), the letter grade of E, without W designation, will be recorded.

6. *EW*: Students leaving a class without formal withdrawal at any time during the quarter will be given a grade of EW, which is interpreted as E in computing grade-point averages.

7. Grade points are assigned to each credit hour of letter grades as follows:

GRADE	POINTS	GRADE	POINTS
A—Honor	4	D—Poor	1
B—Good	3	E—Failed	0
C—Medium	2		

SCHOOLS OF MEDICINE AND DENTISTRY. The system of grades used in the Schools of Medicine and Dentistry follows the general pattern, with certain exceptions.

1. Grades of medical students are filed in the office of the Dean of Medicine and are made available as follows: Grades of A, B, and C are reported to the Registrar, and to the student, as P. Grades of D and E are reported to the Registrar, and to the student, as D and E.

2. The University rule that the grade of E is final, and that to obtain credit the student must repeat the course (see page 32, paragraph 2), does not apply.

3. A student in the School of Medicine or Dentistry who receives a grade of D in a course may not change this grade for purposes of graduation by repeating the course or taking a re-examination. A student who receives a grade of E may, with the permission of his dean, his instructor, and the executive committee of the school, be permitted to perform further work and take such exercises and examinations, including a final examination, as the department may prescribe. If the student completes these exercises and examinations successfully, and satisfies the department and the executive committee that he has a reasonable knowledge of the subject in question, the grade of D may be substituted for the E originally given and promotion may be allowed. A student in one of these schools who receives a grade of E in two or more major courses in a given year will be denied the opportunity to change the grades of E to D. Lists of major courses in the Schools of Dentistry and Medicine are on file in the offices of the deans.

SCHOOL OF LAW. The system of grades used in the School of Law follows the general University pattern except in these instances:

1. For the letters A, B, C, D, and E the School substitutes a numerical scale wherein the values are: A, 85-100; B, 77-84; C, 68-76; D, 60-67; and E, 0-59.

2. As in the Schools of Medicine and Dentistry, the general University rule on the grade of E (see page 32, paragraph 2) does not apply, and the general rules on point values (see page 32, paragraph 7) do not apply.

3. A student who receives a grade of D or E, or its numerical equivalent, in a course may, with the permission of the Dean of the Law School, take another final examination under terms prescribed by the Dean. The grade received upon the re-examination will replace the prior grade for all purposes except that of determining eligibility for scholastic honors.

4. A student who achieves a numerical average of 70 or better for the work of a particular academic year will receive credit toward graduation in those courses in which he earned, during that year, grades of 55 to 59, inclusive.

CHANGE OF GRADE. Except in cases of error, no instructor may change a grade which he has reported to the Registrar.

REPETITION OF COURSE. Except in the Medical, Dental, and Law Schools, students who have received grades of D or E may repeat the courses in which these grades were obtained, or may with the approval of the deans of their colleges substitute other courses in their places, and in such cases the grade received the second time, in either the repeated or the substituted course, will be the one counted in computing the average required for graduation. A substituted course must be one in the same department as the original course, and must be closely related to its subject matter. The provision for substituting courses does not apply to prescribed curricula. For the purpose of determining University honors, only the grade received the first time is counted. (For rules in the Schools of Medicine, Dentistry, and Law, see Grading System, page 32.)

If a transfer student repeats a course taken at another college, the University of Washington credit is honored and the transfer credit canceled.

If a course has been repeated with grades of C or better in two or more colleges, the University gives precedence to credit earned at an "A" or "B" college. An "A" college is one with an organized graduate school. Its transcripts are given full value through five or more years of college study and its graduate work is accepted for advanced degrees subject only to limitations on transfer credits allowed for advanced degrees and to departmental standards. A "B" college is one whose transcripts are given full value through four years of college study. Its bachelor's degrees are accepted for admission to graduate study. If two or more of the colleges at which the course has been repeated were "A" or "B" colleges, the University honors the credit of the "A" or "B" college last attended by the student. *A grade of D or E received at the University may be superseded only by a grade received at an "A" college.*

FINAL EXAMINATIONS. All students in undergraduate courses are required to take final examinations, except that in a course for which an examination is not an appropriate test of the work covered, the instructor, with the consent of the dean of the school or college concerned, may dispense with the final examination.

An examination schedule of two- or three-hour examination periods is prepared by the Schedule and Registration Committee. This schedule does not replace any special schedule such as that of the Law School.

The regular class exercises end at 4 p.m. on the fourth, fifth, or sixth day before the end of the quarter. The Schedule and Registration Committee determines whether three, four, or five days are necessary for scheduling the final examinations and publishes the examination schedule in or before the seventh week of each quarter.

The scheduled examination period is the last meeting of the class. If, during the regular class periods, an instructor gives a test or tests which he wishes to credit as the final examination, he must meet his class during the regularly scheduled examination time, take the roll, and hold the class for the full examination period.

A student absent from a scheduled final examination, either by permission of his dean or through sickness or other unavoidable causes, will be given a grade of Incomplete if his work in that course has been satisfactory until the time of his absence. He may remove this incomplete in the manner provided for removing incomplete grades. In all other cases of absence from the scheduled final examination a student will be given a grade of EW.

Special early examinations, given to individual students or groups of students as substitutes for final examinations, are prohibited. *There are no early examinations for graduating seniors.*

Each instructor is responsible for the supervision of his tests and examinations in accordance with the rules of good conduct and fairness.

CHEATING. Cheating, as defined in University rules, is conduct designed to secure favorable grades for one or more students in any University course given for credit, through violation of established examination or other accrediting procedures, regardless of whether any paper or other exercise has actually been submitted by, or on behalf of, the intended beneficiary.

A student who is guilty of such conduct, either as intended beneficiary or otherwise, may be formally cited before the University Committee on Student Discipline for such action as the Committee may direct. So far as academic grades are concerned, however, the instructor in charge of the course concerned remains the sole judge of the consequences.

To cite a student for cheating, the instructor or fellow student must report the student to the Registrar, who informs the Office of the Dean of Students, the dean of the college concerned, and the chairman of the Student Discipline Committee of the facts of the case. The offender automatically is placed on disciplinary probation pending action of the Student Discipline Committee.

TUTORING. Students seeking the services of a tutor may obtain assistance in the University Placement Office, in the Office of the Dean of Students, or in the office of the proper major department.

No person may tutor for compensation in a course with which he has any connection as part of the teaching staff.

The tutor must secure the approval of the head of the department for all tutoring for compensation, on a form provided for the purpose, giving the names of the student or students and the tutor. In cases where the tutor is in the rank of instructor or higher, the approval of the college dean must also be secured. Faculty members may obtain forms at the Registrar's Office. When proper signatures have been obtained by the tutor, the form should be filed in the office of the dean of the college concerned.

GENERAL SCHOLARSHIP RULES. University scholarship rules provide that:

1. For students in the Graduate School who are working for advanced degrees, no grade lower than B is acceptable in the major field; a lower grade may occasionally be accepted in related fields, but only if the student's record is of generally high quality.
2. A student who at any time in a quarter is reported to the Registrar as doing work below passing grade shall be so advised.
3. At the end of any quarter in residence a student who has not made satisfactory progress toward meeting graduation standards shall be reported to the dean of his college. The dean shall take appropriate action, which may be to place him on probation or to require him to withdraw from the college. Satisfactory progress shall normally be interpreted as a cumulative grade-point average of 1.8 for freshman students in their first three quarters (and for transfer students in their first quarter) and a 2.0 average thereafter. (For Law School scholarship rules, inquire at the Office of the Dean of the Law School.)
4. When a student has been placed on *probation* because of low scholarship, the dean of the college concerned shall have complete authority over his academic and activity program. The dean of the

college concerned shall decide when a student on probation because of continued low scholarship shall be dropped from the college, or when, because of an improvement in his work, he shall be removed from probation.

5. *Reinstatement* of a student disqualified under the provisions of paragraph 4 above shall be allowed only by the dean of the college concerned. In general, a student who has been required to withdraw is not permitted to re-enter the same college until one or more quarters have elapsed, during which time he shall have successfully engaged in work or study justifying the belief that he is now prepared to make a satisfactory showing.
6. Colleges and schools may require higher standards of scholarship than those stated above.
7. *Senior Scholarship Rule for the Last Quarter in Residence.* Any senior who has completed the required number of credits for graduation but who has been dropped for low scholarship at the end of his last quarter in residence, or who is on probation, shall not receive his degree until restored to good standing. In general, he will not receive his degree until one or more quarters have elapsed.

HONOR AWARDS. The President's Medal is awarded, at the Commencement exercises each June, to the member of the graduating class who has the highest scholastic standing for his entire course.

At the annual President's Assembly in the Autumn Quarter the following awards are presented by the President in the name of the faculty:

- a. The Junior Medal, which is awarded to the senior having the highest scholastic standing for the first three years of his course.
- b. The Sophomore Medal, which is awarded to the junior having the highest scholastic standing for the first two years of his course.
- c. Certificates of High Scholarship, which are awarded to seniors, juniors, and sophomores for excellence in scholarship in their junior, sophomore, and freshman years respectively.

DISMISSAL, WITHDRAWAL, AND ABSENCE

HONORABLE DISMISSAL. To be entitled to honorable dismissal, a student must have satisfied all financial obligations to the University and must have a satisfactory record of conduct. Application for honorable dismissal must be made at the Registrar's Office.

WITHDRAWAL. Withdrawal *from the University* is voluntary severance by a student of his connection with the University. Except in the case of military withdrawal, it must be approved by the dean of his college.

Withdrawal *from a course* is voluntary severance by a student of his connection with the course. During the first thirty days of instruction the withdrawal is *official* if it is approved by the dean of the college and if the Registrar's Office is properly informed by the student, who must file a Change of Registration form at Sections (Administration Building); after the first thirty days of instruction it must also be approved by the instructor of the course. Otherwise the withdrawal is *unofficial*. A student may withdraw from a course at any time up to the end of a quarter, provided that he does so before the scheduled final examination in the course. For the grades which may be given, see page 32, paragraph 5.

NOTE: Students are not permitted to withdraw from required courses in freshman English, R.O.T.C., or physical education activity, or from Physical Education 110 or 175.

MILITARY WITHDRAWALS. Military withdrawals are governed by the following regulations:

1. Upon presentation of orders to report for active duty with the Armed Forces, a student in residence who withdraws from the University at a time consistent with such orders shall be granted certain credits for work completed in any course during the quarter of withdrawal with a grade of C or better. Granting of such credits shall be subject to the following conditions:
 - a. If the student withdraws at a date prior to completion of the first third of the general class schedule for a quarter, he shall receive no credit.
 - b. If the student has met all requirements stated in the first sentence of paragraph 1, and withdraws at a date subsequent to completion of the first third, but prior to completion of two-thirds, of the general class schedule for the quarter, he shall receive one-half unspecified credit without letter grade.
 - c. If the student has met all requirements stated in the first sentence of paragraph 1, and withdraws at a date subsequent to completion of the first two-thirds of the general class schedule for a quarter, he shall receive full specified credit without letter grade. If the student withdraws during the last five class days of the general class schedule for a quarter, he may be given a letter grade at the discretion of his instructor.
 - d. Unspecified credit granted under paragraph b, above, may later be converted to credit and grade in a specific course by advanced credit examination, whereupon the unspecified credit

shall be canceled. A letter grade for full credit granted under c, above, may later be earned by advanced credit examination.

2. The provisions of paragraph 1 shall apply to Summer Quarter courses provided (1) that the student has registered for both halves of a summer course, and (2) that approval of the department head concerned is obtained. All other provisions in these rules shall govern equally the summer sessions and the regular sessions.
3. Dates marking the completion, under paragraph 1, of one-third and two-thirds of the class schedule for a quarter shall be set in advance by the Registrar with approval of the Senate Executive Committee, and published. These dates shall control administration of paragraph 1.
4. Upon presentation of orders to report for active duty with the Armed Forces, a student in residence who withdraws from the University at a time consistent with such orders shall, under certain circumstances, be granted a bachelor's degree. Awarding of this degree shall be subject to the following conditions. If the student withdraws at any time during the quarter in which his course of study would normally have completed his requirements for the bachelor's degree, he shall be granted that degree, provided (1) that at the beginning of his quarter of withdrawal he has attained all cumulative grade-point averages which would be required for his graduation; (2) that the awarding of his degree has been approved by his major professor, department head, and dean; and (3) that his grade for the completed portion of his quarter of withdrawal, in each case necessary for graduation, is C or better. This third proviso may be waived if the student's withdrawal occurs so soon after the beginning of his final quarter that computation of a grade is impossible.
5. Should the foregoing provisions run counter to standards imposed upon a professional college or school by national or regional accrediting or licensing agencies, the application of these rules to such college or school shall be subject to approval or limited approval by the dean or director thereof.
6. The foregoing rules shall be considered in effect as of July 1, 1950.
7. Refunding of fees in cases covered by these rules shall be governed by the schedule established by the Board of Regents on July 28, 1950.
8. When relevant, the foregoing provisions shall apply to students in extension classes, and in such cases refunding of fees shall be proportionate to the credit allowed.
9. The foregoing provisions shall not apply to students in home study courses, except that upon approval of the department executive officer such students who withdraw to join the Armed Forces shall be allowed the difference between the fee paid for the course and the cost incurred to the date of withdrawal.

LEAVES OF ABSENCE. The dean may grant permission to be absent from classes to a student who foresees that such absence will be necessary, except that the Office of the Dean of Students must issue such permits to students absent because of recognized student activities.

A student absent because of sickness or for personal reasons, who has not made previous arrangements for excuse, must explain the cause of his absence to his instructor. His instructor then decides whether the verbal explanation constitutes a legitimate excuse.

STUDENT ACTIVITIES

Student activities are defined, interpreted, and governed by the Faculty Committee on Student Welfare. Student organizations are under the supervision of the Committee on Student Organizations.

GENERAL ELIGIBILITY RULES. In order to participate in any student activity or to seek election to any student office classified as a major activity, a student must comply with the rules and regulations of the committee governing the activity. For students who wish to participate in intercollegiate athletics, this is the University Athletic Committee; for students who wish to participate in student affairs, this is the Committee on Student Welfare.

Students are responsible for acting in accordance with the specific rules of these committees. Information regarding them may be secured from either the Office of the Dean of Students or the Office of ASUW Activities.

To be eligible to participate in any major activity a student must:

- a. Have earned a grade-point average of 2.0 (or, in the School of Law, a numerical average of 68) in his last quarter in college attendance and over his entire college record.
- b. Be registered as a full-time student, i.e., be enrolled for a minimum of 7 credits.
- c. Have complied with any additional requirements of the particular activity.
- d. Not have been declared ineligible (1) by the dean of his college on the grounds that participation in the activity is detrimental to his scholarship, or (2) by the Committee on Student Discipline.

To be eligible for any minor activity a student must not have been declared ineligible (1) by the dean of his college on the grounds that participation in the activity is detrimental to his scholarship, or (2) by the Committee on Student Discipline.

MEETINGS, ASSEMBLIES, SPEAKERS. University rules concerning the use of facilities specify that:

1. The buildings and campus of the University shall be primarily devoted to education; they may also be used for cultural and recreational purposes incidental to the work of the University.
2. The University buildings and grounds shall not be available for commercial or other outside uses except that assembly halls may be used for graduation exercises and other special assemblages of the public schools by arrangement with the President's Office.
3. Meetings of student organizations upon the campus may be permitted for educational, cultural, and recreational purposes connected with the work of the colleges or departments of the University.
4. All student groups desiring to make use of the facilities of the campus for meeting places shall apply to the Office of the Dean of Students in accordance with the *Code for Student Organizations*. Application shall be made at the beginning of each school year except that such student groups organized during the school year shall make application before arranging for any meeting on the campus.
5. Arrangements and programs for meetings held under the sponsorship of a college or department of the University and open to the public shall first be approved by the President of the University. Departments or groups of departments desiring to have speakers for their students only shall apply to the President's Office. If the application is granted, any necessary arrangements for rooms should be made through the Registrar's Office. Special lectures should be held in the afternoon in order not to disrupt regular morning classes.
6. Only all-University functions for which classes are generally dismissed may be designated as assemblies.

STUDENT PUBLICATIONS. The following University rules govern student publications:

1. Only those publications approved by a committee appointed by the President of the University may use the good will of the University in soliciting advertising.
2. Permission to issue student publications shall be obtained from the President's Office.
3. The editor of any student publication shall be held responsible for all matter which appears in that publication. A correspondent of any other publication shall be held similarly responsible for all items contributed by him to that publication.
4. No edition of the University of Washington *Daily* by special editors shall be permitted except by express permission of the Publications Committee of the Board of Control.

STUDENT WELFARE

THE OFFICE OF HIGH SCHOOL STUDENT RELATIONS

The Office of High School Student Relations and Orientation has two purposes. The first is to offer detailed information to prospective college students who are in high school; the second is to assist the colleges, schools, and departments of the University to develop coordinated orientation programs for students already on the campus. Precollege guidance is offered through detailed bulletins, lectures, interviews, audio-visual materials, and personal, independent contacts by interested individuals.

THE OFFICE OF THE DEAN OF STUDENTS

The Office of the Dean of Students is concerned with the general welfare of the students of the University and welcomes correspondence and conferences with both parents and students. Many students avail themselves of the opportunity for consultation about social and personal problems. This office, which works closely with the advisory system of the colleges and schools of the University, is in a position not only to counsel students individually, but to direct them to faculty advisers, the facilities of the Counseling Center, and other sources of information and assistance. Obstacles to successful work in college may often be removed through their friendly advice and the available professional services. This office will be glad to discuss with students any problems concerning the military services and is responsible for maintaining current information on military opportunities and policies.

Participation in social and special-interest groups is an educational experience available to every college student. The Office of the Dean of Students and members of

the faculty provide counsel and assistance to a wide variety of organized groups. Students are encouraged to call on these counselors for information and assistance in the area of out-of-class group experience.

A large number of religious activity groups, maintained off campus by the various religious denominations and foundations, share in the total student activity program of the University. The student may obtain detailed information about these groups from the Office of the Dean of Students or consult the church of his choice directly.

THE COUNSELING CENTER

The Counseling Center is a University facility which offers vocational and personal counseling to the student wishing help with his adjustment to college living.

The Center's services are available to students and veterans and, for a fee, to non-students and non-veterans. The staff of the Center, professionally trained, includes vocational counselors, psychiatric social workers, and clinical psychologists. It works closely with other student facilities on campus and serves as a supplement to, rather than as a substitute for, academic advisers.

The student seeking assistance at the Center is interviewed by members of the staff and takes psychological tests when these are indicated. The Center is particularly interested in students who wish to discuss their performance on the freshman entrance tests, who wish to assure themselves that they have selected appropriate vocational goals, who are uncertain about their college majors, who feel that they are unable to function at their optimum levels, or who feel uncomfortable with themselves and who need help with personal or social problems.

THE BUREAU OF TESTING

The purpose of the Bureau of Testing is to devise tests for predicting academic achievement and also to devise measures for determining the extent of achievement in various specific and general areas. The Bureau of Testing is responsible for the tests given at the time of admission as well as for special tests administered to premedical, preidental, and engineering students and to other groups. In addition, the Bureau of Testing provides the Counseling Center with testing services for individual students.

PLACEMENT

Part-time and full-time off-campus work for both men and women may be obtained through the University Placement Office. Applications are accepted from students or graduates of the University, from graduates of other colleges or universities, and from the wives or husbands of University students. Personal application for work may be made after residence is established in Seattle. No application by mail can be considered.

Part-time work consists of jobs requiring a specific number of hours of work each month with a monthly or hourly wage. The work usually is routine in nature, such as half-time office work, evening janitor work, clerking, operating an elevator, baby-sitting, or domestic work. Occasionally the work is related to the student's field of study. Part-time jobs may be available in morning, afternoon, or evening, or from midnight to morning.

Full-time work, such as selling, office work, engineering, accounting, stenography, is best performed during regular daytime working hours and usually requires immediate placement. Employers normally require college graduation or, at least, two or three years of college training.

Graduating seniors and recent graduates are particularly interested in the training programs offered by major national industrial, manufacturing, and retail organizations. Industry representatives visit the campus annually to select qualified seniors and graduates to train for positions as junior executives.

Additional information may be obtained by writing directly to the Placement Office, Chelan Hall.

Campus positions are filled through the Nonacademic Personnel Department, 206D Administration Building.

Teacher placement is handled by the College of Education Bureau of Teacher Service and Placement, 113 Education Hall.

UNIVERSITY HOUSING

The Women's Residence Halls provide comfortable living in beautiful Tudor-Gothic buildings. Each of the four halls has its own student government, which sets the pattern of living and sponsors a program of cultural, social, and recreational events. Further information may be obtained from the Director, Women's Residence Halls.

Single and double rooms are available in the men's temporary dormitories on the campus. Meals are obtained separately at the nearby Commons or in the Student Union Building. Requests for further information should be addressed to the Office of Student Residences, 23 Administration Building.

Married veterans of World War II may apply to the Office of Student Residences for accommodations in Union Bay Village, the University's family housing project. Since many names are on the waiting lists, new students should not rely on this possibility for immediate housing.

Rooms, room and board, housekeeping rooms, and a few apartments and houses are listed at the Office of Student Residences. These listings must be consulted in person. It is expected that all women students under twenty-one years of age who are not living in their own homes will live in a recognized group house for University women. The recognized houses are the Women's Residence Halls, the nurses' residences, the student cooperative houses for women, Wesley House, Friends' Center, and sorority houses. Any additions to this list, and any exceptions to the residence rules, must be approved by the Office of the Dean of Students by the beginning of the quarter.

A limited inspection service of off-campus housing is provided jointly by the University Health Service and the Office of the Dean of Students.

THE UNIVERSITY HEALTH CENTER

The University maintains a health service which functions primarily in guarding against infectious diseases and incipient ill health due to remediable causes. The work is carried on in two main divisions, a dispensary and an infirmary.

The service is housed in a modern building, with offices for the doctors and nurses, seventy-five beds with essential accessories, and diet kitchens. A corps of physicians, nurses, and laboratory technicians, all full time, constitutes the permanent staff. This is augmented temporarily whenever an increased number of patients makes added assistance necessary. Seriously ill students are not retained in the infirmary but are sent to a general hospital of their own choice at their own expense. Ambulance service, when necessary, is at the expense of the student.

The dispensary is available to all students during the span of class hours. The infirmary is available for the reception of bed patients at all hours.

Students are classified according to the results of their entrance physical examinations. Those found to be below standard are re-examined later for evidences of incipient tuberculosis, heart disease, or other chronic disabilities. Ordinary medicines are dispensed in small quantities without cost to the student. Close cooperation is maintained with the family physician when one is retained; in no way is the idea of supplanting the family physician contemplated. Outside calls are not made by University physicians.

The infirmary cares for all cases of illness for a period of one week each quarter free of charge; this includes the attendance of a physician, nursing, and medicines. For a period longer than one week a charge of two dollars per day is made. Students confined in the infirmary are permitted to ask for the services of any licensed regular medical practitioner in good standing. These services will be at the students' own expense.

Students are not permitted to remain where proper care cannot be taken of them or where they may be a source of danger to other students.

SERVICES TO FOREIGN STUDENTS

The Adviser to Foreign Students offers guidance on all nonacademic problems to students from other lands. Questions regarding immigration regulations, housing, social relationships, personal problems, finances, minimum course requirements, employment, and home hospitality should be referred to this counselor in the Office of the Dean of Students. Inquiries concerning admissions should be made at the Admissions

Office; those concerning Foreign Exchange Scholarships are made directly to the Executive Secretary, Foreign Exchange Scholarship Committee, 204 Smith Hall. Accepted foreign students are sent by the Admissions Office to the English Department, 115 Parrington Hall, to determine the need for special instruction in English.

U. S. students contemplating foreign study may obtain current information on institutions abroad and on Fulbright and other scholarships available from the Adviser to Foreign Students.

Any foreign student traveling to Canada while in attendance at the University of Washington must have in his possession, in addition to other credentials, a statement from the Registrar that he is currently registered at the University. This will assure him clearance through Immigration when he attempts to return to the United States.

INFORMATION FOR WORLD WAR II VETERANS

NOTE: Veterans of World Wars I and II, see Exemptions, page 22.

ADMISSION. The University welcomes veterans under the G.I. Bill and the Vocational Rehabilitation Act, provided they can meet the University of Washington entrance requirements (see pages 15-19). Students who are not high school graduates should make every effort to complete the requirements for a high school diploma before entrance. It must be borne in mind that many professional degrees, certificates, and the like presuppose possession of a high school diploma. Certain students who are not high school graduates may be able to enter under the "special student" category (see page 18). Equivalency certificates and/or General Educational Development tests may be submitted for consideration by veterans who were in the armed services prior to V-J Day. Students entering the armed services subsequent to V-J Day are required to submit full high school subject matter records. Members of the armed forces who are not high school graduates should consult their educational officers regarding the possibility of completing high school courses through the United States Armed Forces Institute and through approved extension divisions of accredited universities.

Counselors in the Office of the Dean of Students will be glad to discuss with any veteran his problems concerning admission.

GOVERNMENT AID. All applications for, and questions about, aid under the G. I. Bill should be addressed to a Veterans Administration Regional Office.

Because of Veterans Administration regulations, particularly those restricting changes of course, it is suggested that before applying to the Veterans Administration the student confirm his eligibility for the course for which he desires Veterans Administration authorization. New students will confirm this by designation on the Notification of Admission Blank. Returning former students will check with the Registrar's Office at 109 Administration Building to verify their present college (and major if Arts and Sciences or Graduate School), then apply at the Veterans Eligibility and Fees Office, 1B Administration Building, to determine whether a new Veterans Administration Certificate is required. Thus the veteran can be advised to request from the Veterans Administration a certificate for that school or college of the University to which his academic standing makes him eligible.

VETERANS ADMINISTRATION CERTIFICATE OF ELIGIBILITY. Application for this certificate should be made *at least ten weeks prior to the beginning of University instruction*. If the veteran is eligible, the Veterans Administration will issue him a Certificate of Eligibility, which should be filed in the Veterans Division during registration in lieu of payment of fees. A student so enrolled is subject to payment of any charges not covered under the G. I. program. All fees are payable by the student at time of registration if he is unable to present his Certificate of Eligibility. Payment will be refunded if full eligibility is established as of the start of the quarter. Subject to Veterans Administration regulations, a veteran fully qualified under the G. I. program is issued a credit card entitling him to books and supplies required for his course. Subsistence payments are made directly to the veteran by the Veterans Administration.

TERMINATION OF G. I. BILL TRAINING. The deadline for most veterans for starting a course of education under the G. I. Bill was July 25, 1951. This training must be completed by July 25, 1956. There are two exceptions to these restrictions:

a. Veterans discharged after July 25, 1947, have four years from the date of discharge to begin their G. I. Bill training, but such training terminates on July 25, 1956.

b. Veterans who enlisted or re-enlisted under the Armed Forces Voluntary Recruitment Act (between October 6, 1945, and October 5, 1946) are allowed four years from completion of that service in which to start, and nine years from the same date in which to complete, their G. I. Bill training.

Veterans Administration regulations provide that, beginning with his cut-off date for starting courses, a veteran must pursue his training *continuously* until completion, although temporary interruption for the summer vacation is permitted. Other interruptions for reasons beyond the control of the veteran must be approved by the Veterans Administration.

The nearest Veterans Administration office should be consulted for further clarification of regulations and for details of special provisions affecting teachers, medical students, prospective graduate students, students re-entering the armed services, and others.

CREDIT FOR ARMED SERVICES TRAINING COURSES. The American Council on Education has provided colleges and universities of the United States with recommended credit values for armed services training courses offered on college campuses as well as at Army, Navy, and Air Force installations. In accordance with these recommendations, such study (if entered before September, 1946, and if equivalent to degree courses at standard universities) will be given proportionate credit, which will be applied as far as possible on requirements of the University of Washington. Basic military training provides up to 12 quarter credits which will be applied on lower-division physical education and military training requirements (see page 28). Specialized training courses for enlisted men, such as those which qualify a man to be an airplane engine mechanic or an airplane instrument and electrical specialist, carry from 6 to 18 quarter credits. Credits allowed for such training are applied, if possible, on University requirements, but they are not readily applicable to the requirements of the set curricula of the College of Engineering, of premedicine, or elsewhere. No credit is allowed for work entered upon in armed services training schools after September, 1946, except by Advanced Credit Examination if the study taken covers the content of courses appearing in the *University Catalogue*.

Credits earned in *approved* extension departments of accredited universities through the United States Armed Forces Institute will be applied as far as possible on University requirements (see page 19, paragraph 2).

The Admissions Office of the University should be consulted for exact evaluations of such credits.

PHYSICAL EDUCATION. Veterans who have had one year's active service are excused from physical education courses according to the following schedule:

a. An ex-service man who has had his entire period of training prior to August 15, 1945, will be exempt from physical education activity and Physical Education 175 requirements.

b. An ex-service man who had part or all of his training after August 15, 1945, should consult the School of Physical Education concerning his allowance of credit.

VOCATIONAL GUIDANCE. Vocational counselors in the Counseling Center are prepared to assist veterans who desire vocational guidance.

LOANS

The University administers several loan funds available to students who have successfully completed at least one quarter in the University. Students desiring term loans should file applications prior to the beginning of instruction in the quarter during which the loan is required. The Office of the Dean of Students has complete information on the availability of loan funds within and without the University. Loans from funds administered off campus should be applied for approximately six weeks in advance of need. Funds for temporary emergency needs may be requested from the Office of the Dean of Students, which can help determine the best manner to meet the emergency.

SCHOLASTIC HONORS

HONOR AWARDS. (For honor awards given by the University, see page 35.)

HONOR SOCIETIES. Honor societies are Phi Beta Kappa, Sigma Xi, Tau Beta Pi, and the Order of the Coif.

FELLOWSHIPS, SCHOLARSHIPS, PRIZES, AWARDS. The University offers many awards for outstanding academic achievement. Some are given by the University, but many are available through the generosity of friends and alumni of the University. Some bear the names of those in whose memory the funds were given. These awards take varying forms.

Fellowships are awarded to graduate students who show promise of success in research in both theoretical and applied studies. These are granted by the Dean of the Graduate School and by individual departments. Teaching fellowships are those which require duty as a teaching assistant.

Scholarships are granted on application and on a competitive basis. Usual requirements include scholarly achievement and promise, excellence of character, and financial need. Awards are made principally to upper-class and graduate students. The University has a few scholarships available to entering freshmen and invites inquiry concerning them.

Prizes are financial awards which total less than tuition and are generally awarded for some specific competition, such as an essay contest on an assigned subject.

Awards consist of recognition other than by financial reward and are generally given for a combination of scholarly achievement and participation in activities.

Application for scholarship information should be made to the University Scholarship Committee, Office of the Dean of Students. A handbook listing available scholarships will be mailed upon request.

ASSOCIATED STUDENTS

The Associated Students of the University of Washington (ASUW) is the central organization which conducts the activities of the student body. Through the ASUW Board of Control and its various committees and boards, students assume major responsibility in the government of student life with authority delegated by the University. Membership is required of all regularly enrolled students. For fees, see pages 23-24. The fee gives each student a membership in the corporation, and helps to finance the program of athletics, debates, concerts, lectures, the University of Washington *Daily*, the Student Union Building, and all other activities of the ASUW. A portion of the fee is set aside to amortize the bond issue used to construct two new units of the ASUW Building and the addition to the football stadium. Completion of these projects will make it possible for the ASUW to present a greatly expanded program of recreational and athletic activities to its members. Any member of the ASUW has the privilege of purchasing an athletic ticket for \$5. This ticket, when properly validated, will admit its owner to all regularly scheduled Pacific Coast Conference intercollegiate athletic events during the school year.

ALUMNI ASSOCIATION

All graduates of the University of Washington, as well as all persons who have satisfactorily completed one year of its college work, are eligible for membership in the association. The membership fee is \$5 for one year (twelve months from date of payment). Members receive a one-year subscription to the *Washington Alumnus*, with library, football, swimming, voting, and other privileges. A dual membership for man and wife is \$6 per year; this includes one annual subscription to the *Washington Alumnus* and all other privileges of a single membership. A Board of Trustees, consisting of twenty-three members, is the governing body of the association.

SECTION THREE

THE COLLEGES AND SCHOOLS

ARTS AND SCIENCES

BUSINESS ADMINISTRATION

DENTISTRY

EDUCATION

ENGINEERING

FORESTRY

GRADUATE SCHOOL

LAW

LIBRARIANSHIP

MEDICINE

NURSING

PHARMACY

RESERVE OFFICERS TRAINING PROGRAM

SOCIAL WORK

COLLEGE OF ARTS AND SCIENCES .....	45

Dean: LLOYD S. WOODBURN, 122 Thomson Hall

THE College of Arts and Sciences, through its departments, schools, and interdepartmental programs, offers four-year curricula leading to the degrees of Bachelor of Arts and Bachelor of Science, as well as advanced study leading to master's and Doctor of Philosophy degrees.

The undergraduate curricula of the College are classified according to the number of elective courses permitted.

Prescribed departmental curricula are courses of study offered by some departments and schools which definitely prescribe the work the student must complete for the bachelor's degree. Students within these curricula need not fulfill the College group requirements unless they are included in the prescribed program.

Elective departmental curricula are more flexible than prescribed curricula. Students in these curricula must complete 36 credits in their major subject (or more, if required by the major department) and, during their first two years, complete the College group requirements.

Interdepartmental curricula are given by the Division of General Studies for students who desire more flexible programs than elective departmental curricula provide. These curricula meet the needs of students whose major field of interest extends beyond the limits of a single department or college.

Nondepartmental curricula are for Premajor and General Education students. Those who have not selected a major field of interest may enter the Premajor program, which helps them to choose a variety of subjects prior to selection of a major field and to meet the general University and College requirements. Students in this program usually select a major field before their third year.

The General Education program provides a broad range of learning without specialization, which may be used as a basis for the subsequent choice of a major. A two-year sequence of introductory courses in the humanities, the social sciences, and the physical and biological sciences is given.

The College of Arts and Sciences also offers preprofessional work for students planning to enter such professional fields as law, medicine, librarianship, dentistry, teaching, and nursing.

The subject material available to students in the College of Arts and Sciences is divided into three broad fields of knowledge. The College group requirements are based on these fields.

HUMANITIES

Architecture
Art
Classical languages
Drama
English
Far Eastern languages
General literature
Germanic languages
Humanities 101, 102, 103,
201, 202, 203
Journalism
Liberal arts
Librarianship
Music
Radio
Romance languages
Scandinavian languages
Slavic languages
Speech

SOCIAL SCIENCES

Anthropology
Economics
Far Eastern Institute
courses
Geography
History
Home economics
Philosophy
Physical education
Political science
Psychology
Social Science 101, 102, 103,
201, 202, 203
Sociology

SCIENCES

Anatomy 301
Astronomy
Biochemistry
Biological Science 101J-102J
Biology
Botany
Chemistry
Fisheries
Geology
Mathematics
Meteorology
Microbiology
Oceanography
Pharmacy 115
Physical Science 101-102, 104
Physics
Zoology

ADMISSION

The University requirement for entrance is 16 high school units with a minimum 2.0 grade-point average (see page 15 for other admission regulations). The College of Arts and Sciences requires that the 16 units include 2 units of one foreign language, 1 unit of laboratory science, and 1 unit of social science. Students who enter with deficiencies should plan to remove them during their first year. Deficiency credits are not acceptable in the satisfaction of group requirements. University credit is not allowed for courses taken to make up deficiencies in elementary algebra and plane geometry, or for English 50, but credit is allowed for courses taken to satisfy deficiencies in laboratory science and foreign language.

SCHOLARSHIP

The University scholarship rules require that all freshman students in their first three quarters, and all transfer students in their first quarter, maintain a grade-point average of 1.8 or above. All other students must maintain a 2.0 average.

GRADUATION

The graduation requirements of the University are 180 academic credits (including Physical Education 110 or 175); the required quarters of physical education activity and/or military training; the senior year spent in residence; 60 upper-division credits; and a cumulative grade-point average of 2.0 (see page 28 for more detailed information about these requirements). The College of Arts and Sciences has three additional requirements:

ENGLISH 101, 102, 103 (Composition). After passing the preliminary Freshman English Test, all students must obtain 9 credits or the equivalent in English composition. For English 103, students in the School of Communications substitute Journalism 200 (Preliminary News Writing).

GROUP REQUIREMENTS. These requirements are fulfilled by selection of courses from the three broad fields of knowledge into which the subject material of the College is divided. Students in all elective curricula must have a minimum of 10 credits in one group, 20 credits in a second group, and 30 credits in the remaining group. Neither courses that are requirements (English 101, 102, 103, and Physical Education 110 or 175) nor courses that remove entrance deficiencies may be used to satisfy group requirements.

MAJOR REQUIREMENTS. Every student must choose a major field in which to specialize and must meet the departmental requirements for that field. Some departments provide a choice of elective and prescribed curricula.

GRADUATE STUDY

Students who intend to work toward advanced degrees must fulfill the requirements of the Graduate School (see page 261) and of the departments in which they intend to study.

Graduate study leading to the master's degree is available in the fields of anthropology, art, botany, chemistry, Chinese, classical languages, drama, economics, English, fisheries, general literature, geography, geology, Germanic languages, history, home economics, mathematics, meteorology, music, philosophy, physical education, physics, political science, psychology, public administration, regional planning, Romance languages, Scandinavian languages, sociology, speech, and zoology.

Graduate study leading to the degree of Doctor of Philosophy is available in the fields of anthropology, botany, Chinese, chemistry, economics, English, fisheries, geography, general and comparative literature, geology, Germanic languages, history, mathematics, philosophy, physics, political science, psychology, Romance languages, sociology, and zoology.

ANTHROPOLOGY

Executive Officer: ERNA GUNTHER, 211 Museum

Professors: D. S. Davidson, E. Gunther.

Associate Professors: F. S. Hulse, M. Jacobs, P. Kirchhoff.

Assistant Professors: W. W. Elmendorf, V. E. Garfield, R. L. Roys.

Instructors: C. A. Burroughs, W. C. Massey, H. D. Osborne.

The Department of Anthropology offers courses leading to the degrees of Bachelor of Arts, Master of Arts, and Doctor of Philosophy. An undergraduate curriculum in the anthropology of Latin America is given through the Division of General Studies (see page 96).

BACHELOR OF ARTS

In this elective curriculum, 50 credits in anthropology are required. Courses must include: Anthropology 101, 102, 103; 270 or 371; 380; 450J; 460; one course from 212, 213, 214; one course from 310, 312, 313, 314, 315; one course from 411, 413, 417, 419J; and three courses from 432, 433, 436, 437, 441J, 442.

A 2.5 grade-point average in anthropology courses is required.

If graduate work is contemplated, electives should include two foreign languages chosen from among French, German, and Spanish.

ADVANCED DEGREES

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School (see page 261). When graduate students in anthropology are completing their first year's study, they are given a preliminary written examination to determine whether they may apply for candidacy for one or both advanced degrees.

All candidates for degrees are required to submit either a master's thesis or a research report.

It is recommended that part of the graduate work be devoted to a minor in a related field, such as psychology, sociology, geography, history, or Far Eastern studies.

MASTER OF ARTS. Candidates are given an oral examination on basic anthropological knowledge, general theoretical points of view, the application of the general principles of anthropology to a particular ethnographic area, a limited knowledge of the books on the reading list, and their theses or research reports. For the foreign language requirement, German is recommended.

DOCTOR OF PHILOSOPHY. Candidates should have a general knowledge of ethnology, prehistory, linguistics, and physical anthropology. They are expected to be able to present an upper-division course in one of these areas and to be able to present introductory courses in two others. The language requirements should be satisfied at least three quarters before the general examination. Field work is required of all candidates for this degree. The doctor's thesis may be based on field work or devoted to any topic of anthropological interest.

COURSES FOR UNDERGRADUATES

- | | |
|--|-----------|
| 101 Principles of Anthropology: Race (5; AWS) | Staff |
| Evolution and heredity as applied to man; racial classification and its significance. | |
| 102 Principles of Anthropology: Social Customs (5; AWS) | Staff |
| Man's social customs, political institutions, religion, art, literature, and language. | |
| 103 Principles of Anthropology: Prehistory (5; AWS) | Burroughs |
| Man's cultural development as revealed by archaeology and carried to the beginning of history. | |
| 212, 213, 214 World Ethnography (5,5,5; A,W,S) | |
| Basic descriptive surveys of primitive cultures designed as prerequisites to advanced work in specific areas. | |
| 212 The Americas | Davidson |
| Indian cultures of North and South America. | |
| 213 Africa and Oceania | Elmendorf |
| The cultures of Africa and the islands of the Pacific. | |
| 214 Eurasia | Hulse |
| The cultures of peoples in Europe and Asia. | |
| 270 Field Course in Archaeology (12; Summer) | Burroughs |
| Archaeological methods and techniques as demonstrated through field experience. Prerequisite, 5 credits in anthropology. | |

219J Australia

- 442 Anthro. Tech in Study of Complex Societies*
470 Archaeology of No. Amer(3)
- 280 Theories of Race (2; AWS)** **Massey, Burroughs, Elmendorf**
Survey of human heredity: racial history; race differences. Not open to students who have had 101, 380, or 390.
- 310 North American Indians (3; W)** **Gunther**
A descriptive and analytical study of American Indian cultures north of the Rio Grande. Prerequisite, 212.
- 312 Peoples of Oceania (3; S)** **Elmendorf**
Ethnographic analysis of the islands of the Pacific, including the effects of modern contacts. Prerequisite, 213.
- 313 Peoples of Africa (3; W)** **Staff**
- 314 Peoples of Central and Northern Asia (3; A)** **Kirchhoff**
- 315 Native Peoples of Latin America (3; S)** **Massey**
Indigenous cultures of Mexico and Central and South America. Indian elements in modern Latin America. Prerequisite, 212.
- 320 Primitive Technology (5; W)** **Osborne**
Study of the material culture of primitive peoples with analysis of techniques of manufacture. Museum material is used for laboratory work.
- 350 Basis of Civilization (3; A)** **Davidson**
Basic inventions, discoveries, and technological achievements of the ancient and primitive worlds; the beginnings of science.
- 370 Methods and Problems of Archaeology (5; S)** **Burroughs**
Field experience in this locality is included. Prerequisite, 103.
- 371 Analysis of Archaeological Data (5; offered alternate years, not offered 1952-53)**
- 380 Primate and Human Evolution (3; W)** **Hulse**
Development and relationships of primates, including man, traced from comparative and paleontological data.
- 390 Introduction to Anthropology (5; AWS)** **Gunther, Davidson**
A survey of anthropology. For nonmajors. Not open to students who have taken 101, 102, or 103.
- 411 Indian Cultures of the Pacific Northwest (3; A)** **Garfield**
Comparative analysis of material culture and social, religious, and political institutions. Prerequisite, 310.
- 413 Aboriginal Peoples of Australia (3; W)** **Davidson**
The dynamics of a contemporaneous stone-age culture. Prerequisite, 213.
- 417 Middle American Civilization (2; W)** **Kirchhoff**
The high cultures of Mexico, Guatemala, and Northern Central America. Prerequisite, 315.
- 419J Australia: Its Peoples, Environment, and Institutions (5; A)** **Davidson, Dobie, Earle**
Geographic and cultural patterns; economic and political development; relations with the British Commonwealth of Nations. Offered jointly with the Departments of Geography and History. Prerequisite, 15 credits in anthropology, geography, or history.
- 431 Primitive Literature (3; A)** **Garfield**
Mythology and folk tales of nonliterate peoples. Theories of interpretation of oral literature as they apply to theories of culture growth and diffusion.
- 432 Magic, Religion, and Philosophy (3; W)** **Elmendorf**
Comparative religious systems, magical beliefs, and philosophical concepts of nonliterate peoples.
- 433 Primitive Art (3; S)** **Gunther**
Aesthetic theories and artistic achievements of preliterate peoples. Museum material is used for illustration. Prerequisite, 10 credits in anthropology or art.
- 435, 436 Early Economic Systems (3,3; A,W)** **Burroughs, Massey**
435: a world survey of nonagricultural economies; 436: a study of agricultural societies.
- 437 Primitive Social and Political Institutions (3; S)** **Davidson**
Comparative analysis of selected nonliterate societies.
- 441 Culture and Personality (5; S)** **Jacobs**
The structure of personality; processes and factors in its development in differing types of culture. Prerequisites, 101, 102, 103, Psychology 100, and junior standing.
- 442 Socialization of the Child in Primitive Cultures (3; W)** **Davidson**
How the child is molded in cultural patterns and prepared for adult life in various primitive societies; comparative data from tribes in North and South America, Africa, Asia, Australia, and Oceania. Prerequisite, 102, or 15 credits in social sciences.
- 450J Introduction to General Linguistics (5; A)** **Jacobs, Reed**
Descriptive and historical techniques in the analysis of languages. Offered jointly with the Department of Germanic Languages and Literature.
- 451 American Indian Languages (3; W)** **Jacobs**
Methods of field research and training in phonetic recording. Prerequisite, 450J.
- 460 History of Anthropological Theory (2; A)** **Jacobs**
Systematic discussion of the development of the science and the personalities behind its theoretical structure. Prerequisite, 15 credits in anthropology.
- 480, 481, 482 Physical Anthropology (3,3,3; not offered 1952-53)**
- 499 Undergraduate Research (*, maximum 12; AWS)** **Staff**
Prerequisite, permission.

COURSES FOR GRADUATES ONLY

505	Field Techniques in Ethnography (3; W)	Gunther
511	Cultural Problems of the Northwest Coast (3; W)	Garfield
519J	Seminar on Asia (3; S)	Wilhelm, Kirchhoff, Staff
	The large cultural regions of the continent are studied in succession with special reference to anthropological problems. Offered jointly with the Far Eastern and Russian Institute.	
521	Native American Culture History (4; W)	Kirchhoff
	A historical interpretation of the geographical distribution of critical aspects of North and South American Indian cultures.	
522	Cultural Problems of Western America (3; A)	Elmendorf
525	Seminar in Culture Processes (3; A)	Davidson
531	Analysis of Oral Literature (3; S)	Garfield
542	Personality Patterns in Japanese Culture (3; not offered 1952-53)	
551	Field Techniques in Linguistics (3; not offered 1952-53)	
553J	Analysis of Linguistic Structures (3; S)	Jacobs, Li
	Offered jointly with the Far Eastern and Russian Institute.	
560	Seminar in the History of Anthropology (3; not offered 1952-53)	
561	Seminar in Methods and Theories (3; A)	Gunther
570	Seminar in Archaeology (3; S)	Osborne
600	Research (*; AWS)	Staff
	Thesis (*; AWS)	Staff

ARCHITECTURE

Director: ARTHUR P. HERRMAN, 204 Architecture Hall

Professors: L. E. Gowen, A. P. Herrman, R. L. Hill, L. H. Pries.

Associate Professor: A. Jensen.

Assistant Professors: L. J. Brightbill, R. H. Dietz, R. E. Hugus, W. H. Lovett, O. L. Mithun, D. G. Radcliffe, J. R. Sproule, V. Steinbrueck, R. E. Wilson, M. R. Wolfe.

Lecturer: M. J. Hauan.

Instructors: J. A. Rohrer, G. Tsutakawa, L. G. Waldron, W. C. Wherrette.

The School of Architecture, a member of the Association of Collegiate Schools of Architecture, offers prescribed five-year curricula in architecture and city planning, both of which lead to bachelor's degrees. A total of 225 academic credits is required for graduation.

Deviation from a curriculum and substitution of courses are permitted only with the consent of the Director of the School. In the courses in design, Architecture 224, 225, 226, 324, 325, 326, 424, 425, and 426, a student may sometimes advance by excellence of work, without technical registration for all quarters.

The School of Architecture reserves the right to retain student work for temporary or permanent record.

The work of the first three years is the same in both curricula.

Prearchitecture Requirements

FIRST YEAR		SECOND YEAR	
	CREDITS		CREDITS
Arch. 100, 101	4	Arch. 124, 125, 126	18
Arch. 105	2	Econ. 200 Introduction	5
Engl. 101, 102, 103 Composition	9	Physics 101 or 104 General	5
Math. 154, 155, 156 Arch. Math.	9	Physics 112, 113 Arch. Physics	10
Soc. 110 Survey	5	Electives	8
Soc. 255 American Housing	5	P.E. Activity	3
Electives	8	R.O.T.C.	6 or 9
P.E. 110 or 175 Health	2		
P.E. Activity	3		
R.O.T.C.	6 or 9		

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BACHELOR OF ARCHITECTURE

THIRD YEAR		FOURTH YEAR	
	CREDITS		CREDITS
Arch. 224, 225, 226.....	21	Arch. 300, 301, 400.....	6
Arch. 230, 231, 232.....	6	Arch. 324, 325, 326.....	21
Arch. 240, 241, 242.....	9	Arch. 360, 361.....	4
Arch. 276, 277, 278.....	9	Arch. 376, 377, 378.....	12
	<hr/> 45	Arch. 380.....	3
			<hr/> 46

FIFTH YEAR

	CREDITS
Arch. 401, 402, 403.....	6
Arch. 424, 425, 426.....	21
Arch. 430, 431, 432.....	10
Arch. 435, 436, 437.....	6
Arch. 469.....	3
	<hr/> 46

BACHELOR OF ARCHITECTURE IN CITY PLANNING

THIRD YEAR		FOURTH YEAR	
	CREDITS		CREDITS
Arch. 224, 225, 226.....	21	Arch. 324, 325.....	14
Arch. 230, 231, 232.....	6	Arch. 360, 361.....	4
Arch. 240, 241, 242.....	9	Arch. 380.....	3
Arch. 276, 277, 278.....	9	Arch. 480.....	3
	<hr/> 45	Arch. 490.....	7
		Econ. 350 Public Finance and Taxation I.....	5
		Gen. Engr. 121 Plane Surveying.....	3
		Geog. 477 Urban.....	5
		Electives.....	3
			<hr/> 47

FIFTH YEAR

	CREDITS
Arch. 491, 492, 493.....	21
Bus. Law 307 Bus. Law.....	3
Civil Engr. 350 Introduction to Sanitary Engr.....	3
Civil Engr. 403 Principles of Regional Planning.....	3
Civil Engr. 429 Traffic Engr.....	3
Pol. Sci. 475 Problems of Municipal Govt. and Admin.....	5
Real Est. 301 Urban.....	5
Electives.....	5
	<hr/> 48

Recommended electives for the fifth year include: Civil Engineering 595 (Advanced Professional Design); Geography 370 (Conservation of Natural Resources) and 448 (Geography of Transportation); and Political Science 581 (Public Policy in Planning).

COURSES FOR UNDERGRADUATES

100, 101 Architectural Appreciation (2,2; A,W)	Herrman
Survey of architectural design from a historical viewpoint.	
105 The House (2; S)	Herrman
Analysis of domestic architecture.	
124, 125, 126 Basic Design (6,6,6; A,W,S)	Hugus, Mithun, Rohrer, Smith, Tsutakawa, Whorrette, Wilson
Design and drawing fundamentals to provide a working knowledge, language, and tools for the architect.	
224, 225, 226 Architectural Design, Grade I (7,7,7; AWS,AWS,AWS)	Hugus, Lovett, Sproule, Steinbrueck, Pries
Prerequisite, 126.	
230, 231, 232 Materials and Their Uses (2,2,2; A,W,S)	Waldron
Prerequisite, Physics 113.	
240, 241, 242 Water Color (3,3,3; AS, AW, WS)	Hill, Mason
Still-life and outdoor sketching. Prerequisite, architecture major.	

- 276 **Statics (3; A)** Jenson, Staff
Basic analysis of forces and force systems by analytical and graphic methods. Stress analysis of trusses. Prerequisite, Mathematics 156.
- 277 **Strength of Materials (3; W)** Jenson, Staff
Stress and strain. Strength and elastic properties of structural materials. Riveted and welded joints. Design of simple timber and steel beams, girders, and columns. Prerequisite, 276.
- 278 **Analysis and Design of Trusses (3; S)** Jenson, Staff
Determination of roof loads. Complete design of various types of roof trusses in timber and steel. Prerequisite, 277.
- 300, 301 **History of Architecture (2,2; A,W)** Pries
Byzantine, Romanesque, and Gothic periods. Prerequisite, 101.
- 314, 315, 316 **Architectural Drawing (4,4,4; A,W,S)** Mithun, Rohrer, Tsutakawa, Wilson
Orthographic projection, shades and shadows, perspective, drafting and rendering techniques.
- 324, 325, 326 **Architectural Design, Grade II (7,7,7; AWS,AWS,AWS)** Dietz, Gowen, Lovett, Sproule, Wherrette
Prerequisite, Architectural Design, Grade I.
- 360, 361 **Theory and Analysis (2,2; A,W)** Gowen
Design theory, planning, analysis of and reports on building types. Prerequisite, Architectural Design, Grade I.
- 376 **Structural Design: Timber and Steel (4; A)** Brightbill, Radcliffe
Analysis and design of complete building frames. Laminated wood frames. Uses of arches and rigid frames in building construction. Earthquake resistance in design. Prerequisite, 278.
- 377, 378 **Structural Design: Reinforced Concrete (4,4; W,S)** Brightbill, Radcliffe
377: introduction to the analysis of continuous structures. Development of basic design equations. Design of reinforced concrete beams, girders, and one-way and two-way floor slabs. Prerequisite, 376. 378: design of flat slabs, columns, stairways, footings, foundation walls, and retaining walls. Prerequisite, 377.
- 380 **Introduction to City Planning (3; AS)** Wolfe
Circulation, recreation, open areas, public buildings, private development, new towns, and garden cities. Prerequisite, regional planning or architecture major.
- 400, 401, 402, 403 **History of Architecture (2,2,2,2; S,A,W,S)** Gowen, Herrman
400, 401, 402: comparative study of the Renaissance in Europe. Prerequisite, 301. 403: from the middle of the eighteenth century to the present. Prerequisite, 402.
- 424, 425, 426 **Architectural Design, Grade III (7,7,7; AWS,AWS,AWS)** Dietz, Gowen, Herrman, Mithun, Pries, Steinbrueck, Wilson
Prerequisite, Architectural Design, Grade II.
- 427, 428, 429 **Architectural Problems (3-7,3-7,3-7; AWS,AWS,AWS)** Herrman, Staff
Prerequisite, 426.
- 430, 431, 432 **Contract Drawings (2,4,4; A,W,S)** Dietz
Lectures and drafting-room practice. Prerequisites, 378 and Architectural Design, Grade II.
- 435, 436, 437 **Mechanical Equipment of Buildings (2,2,2; A,W,S)** Havan
Analysis and methods of air conditioning, lighting, sanitation, heating, etc.
- 469 **Specifications and Contracts (3; A)** Waldron
Contract forms, office organization and methods, and ethics.
- 480 **City Planning Practice (3; S)** Wolfe
Principles, object, and scope. Planning techniques, development of comprehensive plan, and analysis of plan components. Prerequisite, 380 or permission.
- 490, 491, 492, 493, 494 **City Planning Design (7,7,7,7,7; AWS,AWS,AWS,AWS,AWS)** Wolfe
Multi-building, large-scale projects. Cities, neighborhoods, housing groups, shopping centers, and recreation areas as part of the community pattern. 494 includes a thesis. Prerequisite, 325 or permission.

ART

Director: WALTER F. ISAACS, 102 Art Building

Professors: H. L. Foote, R. L. Hill, W. F. Isaacs, R. E. Penington.

Associate Professors: E. G. Benson, P. A. Bonifas, B. P. Johnson.

Assistant Professors: G. E. Alps, W. P. Brazeau, E. L. Curtis, E. G. Du Pen, M. Hensley.

Lecturers: F. Del Giudice, S. E. Lee.

Instructors: F. N. Anderson, S. D. Fuller, M. M. Heiberg, W. J. Hixson, S. M. Lowry, A. C. Mason, S. Moseley, V. H. Patterson, C. W. Smith, G. Tsutakawa.

Acting Instructor: G. McAninch.

The School of Art offers courses leading to the degrees of Bachelor of Arts, Bachelor of Arts in Ceramic Art, and Master of Fine Arts.

For undergraduate students, the School provides four-year curricula in general art, art education, commercial art, industrial design, interior design, painting, sculpture, and ceramic art, which lead to bachelor's degrees. As an optional part of the ceramic art curriculum, a fifth year of work leading to a second bachelor's degree is available. The School also offers a basic academic field for students in the College of Education (see page 202).

Advanced standing in the School of Art is granted only on presentation of credentials from and/or samples of work done in art schools or university art departments whose standards are recognized by this school.

The School reserves the right to retain student work for temporary or permanent exhibition.

In all curricula, the laboratory science requirement may be satisfied with botany, zoology, chemistry, geology, or physics (except photography).

BACHELOR OF ARTS

The work of the first year is the same in all curricula except art education, industrial design, and ceramic art. Students may substitute courses in the humanities (except art) or the social sciences for the modern foreign language.

FIRST YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 105	3	Art 106	3	Art 107	3
Art 109	3	Art 110	3	Art 111	3
Engl. 101 Composition	3	Engl. 102 Composition	3	Engl. 103 Composition	3
Modern foreign language	5	Modern foreign language	5	Modern foreign language	5
P.E. 110 or 175 Health	2	P.E. Activity	1	Electives	2
P.E. Activity	1	R.O.T.C. 2 or 3		P.E. Activity	1
R.O.T.C. 2 or 3			15-18	R.O.T.C. 2 or 3	
	17-20				17-20

CURRICULUM FOR THE GENERAL MAJOR. Students who are interested in costume design should elect as many as possible of the following courses: Art 369, 370, 371, 479, 480, and 481; and Home Economics 120 (Textiles), 134 (Clothing Construction and Selection), 234 (Costume Design and Construction), 321, 322 (Needlecraft), 332 (Costume Design by Draping), 334 (Costume Design and Construction), and 433 (History of Costume).

SECOND YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 112	5	Art 254	3	Art 255	3
Art 253	3	Art 257	3	Art 258	3
Art 256	3	Art 272	3	Electives	9
Electives	4	Electives	6	P.E. Activity	1
P.E. Activity	1	P.E. Activity	1	R.O.T.C. 2 or 3	
R.O.T.C. 2 or 3		R.O.T.C. 2 or 3			16-19
	16-19		16-19		

THIRD YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 303 or 357	3	Art 304 or 358	3	Art 362	3
Art 360	3	Art 326	3	Approved design	3
Arch. 100 Appreciation	2	Art 361	2	Lab. science	5
Econ., pol. sci., or social	5	Arch. 101 Appreciation	2	Electives	4
Electives	2	Lab. science	5		15
	15		15		

FOURTH YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 301	2	Art 450 or 451	5	Art 320	2
Art 463	3	Art 464	3	Art 497	1
Art 495	1	Art 496	1	Electives	12
Electives	9	Electives	6		15
	15		15		

CURRICULUM IN ART EDUCATION. Students who wish to emphasize high school teaching will follow the curriculum prescribed below. This curriculum includes the

courses required for the provisional general certificate, which is granted by the College of Education (see page 204 for other certification requirements).

FIRST YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 105	3	Art 106	3	Art 107	3
Art 109	3	Art 110	3	Art 111	3
Arch. 100 Appreciation	2	Arch. 101 Appreciation	2	Engl. 103 Composition	3
Engl. 101 Composition	3	Engl. 102 Composition	3	Psychol. 100 General	5
Electives	2	Speech 100 Basic Speech	5	P.E. Activity	1
P.E. 110 or 175 Health	2	P.E. Activity	1	R.O.T.C.	2 or 3
P.E. Activity	1	R.O.T.C.	2 or 3		
R.O.T.C.	2 or 3				15-18
	16-19		17-20		

SECOND YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 253	3	Art 254	3	Art 255	3
Art 256	3	Art 272	3	Art 258	3
Art 112	5	Educ. 230 State Manual	2	Educ. 209 Educ. Psychol.	5
Electives	4	Lab. science	5	Lab. science	5
P.E. Activity	1	Electives	2	Music 117 Appreciation	2
R.O.T.C.	2 or 3	P.E. Activity	1	P.E. Activity	1
	16-19	R.O.T.C.	2 or 3	R.O.T.C.	2 or 3
			16-19		17-20

THIRD YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 301	2	Art 300	2	Art 302	2
Art 303	3	Art 304	3	Art 362	3
Art 305	3	Educ. 370E Elem.	5	Educ. 374 Reading In-struction	5
Educ. 370 Teaching Procedures	5	School Methods	5	Nursery Sch. 305 Personal-ity Growth of the Pre-school Child or Educ. 402	
Electives	2	Hist. 102 Modern Euro-pean, 241 Hist. of the U.S., or equivalent	5	Child Study & Develop-ment or Psychol. 306	
	15		15	Child Psychol.	3-5
				Electives	2
					15-17

FOURTH YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 463	3	Art 496	1	Art 497	1
Art 466	5	Educ. 371S Directed Teaching, Senior High	8	Educ. 372E Professional Lab. Experiences	3
Art 495	1	Educ. 390 Evaluation of Educ.	3	Educ. 360 Principles	3
Educ. 320 Art	2	Pub. Health 461 School & Community Health Programs	5	Hist. 464 Wash. & the Pacific Northwest	5
Philos. 445 Philos. of Art or Lib. Arts 111 Fine Arts	5		5	Electives	3
	16		17		15

The following courses are suggested for the thirteenth quarter; they may be taken either before or after teaching experience: Art 320, 326, 369, 450 (or 451), and 464.

CURRICULUM IN COMMERCIAL ART. Students in this curriculum may substitute Art 371 for either 369 or 370.

SECOND YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 112	5	Art 151	1	Art 255	3
Art 253	3	Art 254	3	Art 258	3
Art 256	3	Art 257	3	Art 320	2
Arch. 100 Appreciation	2	Psychol. 100 General	5	Econ. 200 Introduction	5
Electives	3	Electives	2	Electives	2
P.E. Activity	1	P.E. Activity	1	P.E. Activity	1
R.O.T.C.	2 or 3	R.O.T.C.	2 or 3	R.O.T.C.	2 or 3
	17-20		15-18		16-19

THIRD YEAR

FIRST QUARTER	CREDITS
Art 305	3
Journ. 220 Fundamentals of Advertising	3
Lab. science	5
Electives	4
	<hr/> 15

SECOND QUARTER	CREDITS
Art 306	3
Art 326	2
Journ. 370 Display Advertising	3
Lab. science	5
Electives	2
	<hr/> 15

THIRD QUARTER	CREDITS
Art 329	2
Art 362	3
Journ. 371 Typography	3
Pol. Sci. 100 Survey or Sociol. 310 General	5
Electives	2
	<hr/> 15

FOURTH YEAR

FIRST QUARTER	CREDITS
Art 369	2
Art 463	3
Art 495	1
Electives	9
	<hr/> 15

SECOND QUARTER	CREDITS
Art 370	2
Art 451	5
Art 466	5
Art 496	1
	<hr/> 13

THIRD QUARTER	CREDITS
Art 467	5
Art 497	1
Electives	9
	<hr/> 15

CURRICULUM IN INDUSTRIAL DESIGN. In the third year, electives may be substituted for the chemistry requirement if the student has had one year of high school chemistry; Art 280 or 281 may be substituted for Art 282 in that year.

FIRST YEAR

FIRST QUARTER	CREDITS
Art 105	3
Art 109	3
Arch. 100 Appreciation	2
Engl. 101 Composition	3
P.E. 110 or 175 Health	2
P.E. Activity	1
R.O.T.C. 2 or 3	
	<hr/> 14-17

SECOND QUARTER	CREDITS
Art 106	3
Art 110	3
Arch. 101. Appreciation	2
Engl. 102 Composition	3
Gen. Engr. 107 Engr. Drawing	3
P.E. Activity	1
R.O.T.C. 2 or 3	
	<hr/> 15-18

THIRD QUARTER	CREDITS
Art 107	3
Art 111	3
Art 272	3
Engl. 103 Composition	3
Math. 122 Alg. & Plane Trig.	5
P.E. Activity	1
R.O.T.C. 2 or 3	
	<hr/> 18-21

SECOND YEAR

FIRST QUARTER	CREDITS
Art 253	3
Arch. 314 Drawings	4
Mech. Engr. 201 Metal Castings	1
Physics 101 or 104 General	5
P.E. Activity	1
R.O.T.C. 2 or 3	
	<hr/> 14-17

SECOND QUARTER	CREDITS
Art 254	3
Arch. 315 Drawing	4
Mech. Engr. 202 Welding	1
Physics 112 For Architects	5
P.E. Activity	1
R.O.T.C. 2 or 3	
	<hr/> 14-17

THIRD QUARTER	CREDITS
Art 255	3
Arch. 316 Drawing	4
Mech. Engr. 203 Metal Machining	1
Physics 113 For Architects	5
P.E. Activity	1
R.O.T.C. 2 or 3	
	<hr/> 14-17

THIRD YEAR

FIRST QUARTER	CREDITS
Art 112	5
Art 329	2
Art 316	3
Chem.	5
	<hr/> 15

SECOND QUARTER	CREDITS
Art 317	3
Chem.	5
Econ. 200 Introduction	5
Mech. Engr. 411 Prod. Cost Analysis	3
	<hr/> 16

THIRD QUARTER	CREDITS
Art 282	3
Art 305	3
Art 318	3
Mktg. 301 Principles	5
Mech. Engr. 342 Industrial Materials & Processes	3
	<hr/> 17

FOURTH YEAR

FIRST QUARTER	CREDITS
Art 301	2
Art 303	3
Art 445	5
Art 495	1
Psychol. 236 Industrial	3
Journ. 220 Fundamentals of Advertising	3
	<hr/> 17

SECOND QUARTER	CREDITS
Art 326	2
Art 357	3
Art 446	5
Art 496	1
Bus. Law 307 Bus. Law	3
Journ. 370 Display Advertising	3
	<hr/> 17

THIRD QUARTER	CREDITS
Art 320	2
Art 447	5
Art 497	1
Gen. Engr. 351 Inventions and Patents	1
Speech 327 Extemp. Speaking	3
Journ. 371 Advertising Typography	3
	<hr/> 15

CURRICULUM IN INTERIOR DESIGN.

SECOND YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 280	3	Art 281	3	Art 262	2
Art 283	2	Arch. 101 Appreciation	2	Art 282	3
Arch. 100 Appreciation	2	Arch. 125 Design	6	Arch. 105 The House	2
Arch. 124 Design	6	Electives	6	Arch. 126 Design	6
Electives	4	P.E. Activity	1	Electives	2
P.E. Activity	1	R.O.T.C.	2 or 3	P.E. Activity	1
R.O.T.C.	2 or 3			R.O.T.C.	2 or 3
	18-21		18-21		16-19

THIRD YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 112	5	Art 311	5	Art 312	5
Art 310	5	Art 326	2	Econ., pol. sci., or social	5
Lab. science	5	Lab. science	5	Electives	5
	15	Electives	3		15
			15		

FOURTH YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 472	5	Art 473	5	Art 320	2
Art 495	1	Art 496	1	Art 474	5
Electives	9	Home Ec. 347 Home	5	Art 497	1
	15	Furnishing	5	Electives	7
		Electives	4		15
			15		

CURRICULUM IN PAINTING.

SECOND YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 112	5	Art 257	3	Art 258	3
Art 256	3	Art 266	3	Art 276	3
Art 265	3	Art 272	3	Art 320	2
Arch. 100 Appreciation	2	Arch. 101 Appreciation	2	Lab. science	5
Electives	2	Electives	4	Electives	2
P.E. Activity	1	P.E. Activity	1	P.E. Activity	1
R.O.T.C.	2 or 3	R.O.T.C.	2 or 3	R.O.T.C.	2 or 3
	16-19		16-19		16-19

THIRD YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 360	3	Art 326	2	Art 362	3
Art 375	3	Art 361	3	Art 377	3
Lab. science	5	Art 376	3	Approved design	6
Electives	4	Econ., pol. sci., or social	5	Advanced sculpture	3
	15	Electives	2		15
			15		

FOURTH YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 307	3	Art 308	3	Art 309	3
Art 463	3	Art 464	3	Art 465	3
Art 495	1	Art 496	1	Art 497	1
Electives	8	Electives	8	Electives	8
	15		15		15

CURRICULUM IN SCULPTURE.

SECOND YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 112	5	Art 257	3	Art 253	3
Art 256	3	Art 273	3	Art 274	3
Art 272	3	Arch. 101 Appreciation	2	Art 320	2
Arch. 100 Appreciation	2	Lab. science	5	Lab. science	5
Electives	2	Electives	2	Electives	2
P.E. Activity	1	P.E. Activity	1	P.E. Activity	1
R.O.T.C.	2 or 3	R.O.T.C.	2 or 3	R.O.T.C.	2 or 3
	16-19		16-19		16-19

THIRD YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 303	3	Art 304	3	Art 324	3
Art 322	3	Art 323	3	Art 334	3
Art 332	3	Art 326	2	Art 362	3
Art 360	3	Art 333	3	Econ., pol. sci., or sociol.	5
Electives	3	Art 361	3	Elective	1
	15	Electives	1		15
			15		

FOURTH YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 436	5	Art 437	5	Art 438	5
Art 495	1	Art 496	1	Art 497	1
Advanced sculpture	3	Electives	9	Electives	9
Electives	6		15		15
	15				

CURRICULUM IN CERAMIC ART.

FIRST YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 105	3	Art 106	3	Art 107	3
Art 109	3	Art 110	3	Art 111	3
Chem. 115 General	5	Chem. 116 General	5	Chem. 221 General	5
Engl. 101 Composition	3	Engl. 102 Composition	3	Engl. 103 Composition	3
P.E. 110 or 175 Health	2	Electives	2	P.E. Activity	1
P.E. Activity	1	P.E. Activity	1	R.O.T.C.	2 or 3
R.O.T.C.	2 or 3	R.O.T.C.	2 or 3		15-18
	17-20		17-20		

SECOND YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 253	3	Art 254	3	Art 255	3
Art 256	3	Art 257	3	Art 258	3
Physics 100 Survey	5	Cer. Engr. 201 Introduction	2	Math. 122 Advanced Alg. & Plane Trig.	5
Electives	5	Electives	5	Electives	5
P.E. Activity	1	P.E. Activity	1	P.E. Activity	1
R.O.T.C.	2 or 3	R.O.T.C.	2 or 3	R.O.T.C.	2 or 3
	17-20		14-17		17-20

THIRD YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 112	5	Art 273	3	Art 274	3
Art 272	3	Art 304	3	Art 301	2
Art 303	3	Art 326	2	Art 320	2
Cer. Engr. 202 Raw Materials	3	Cer. Engr. 203 Preparation	3	Art 330	3
	14	Econ., pol. sci., or sociol.	5	Cer. Engr. 302 Forming	3
			16	Electives	2
					15

FOURTH YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 357	3	Art 358	3	Art 362	3
Art 360	3	Art 361	3	Art 455	3
Art 453	3	Art 454	3	Art 497	1
Art 495	1	Art 496	1	Cer. Engr. 308 Pyrometry	2
Cer. Engr. 303 Coatings	3	Cer. Engr. 304 Drying & Firing	3	Electives	6
	13	Soc. science	5		15
			18		

BACHELOR OF ARTS IN CERAMIC ART

A fifth year of work in ceramic art leads to a second bachelor's degree.

FIFTH YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Art 463	3	Art 464	3	Art 465	3
Art 485	5	Art 486	5	Art 487	5
Cer. Engr. 311 Structure & Reactions	3	Cer. Engr. 312 Colloids & Rheology	3	Electives	7
Electives	4	Electives	4		15
	15		15		

MASTER OF FINE ARTS

Students who intend to work toward this degree must meet the requirements of the Graduate School (see page 261). The School of Art requires that applicants for candidacy have a grade average of B in the undergraduate art major. Only courses given in the School may be applied toward this degree. In lieu of a thesis, candidates may undertake a problem in painting, sculpture, or design.

COURSES FOR UNDERGRADUATES

100 Introduction to Art (5; AWS)	Moseley
Lectures and studio work. For nonmajors.	
105, 106, 107 Drawing (3,3,3; AWS,AWS,AWS)	Staff
Perspective, light and shade, composition, pencil and charcoal.	
109, 110, 111 Design (3,3,3; AWS,AWS,AWS)	Staff
Art structure as the basis for creative work. Problems in organization of line, space, and color. Lectures, discussion, and supplementary reading.	
112 History of Art Through the Renaissance (5; A)	Johnson
Survey of the main developments in painting and sculpture from prehistoric times through the Renaissance, illustrated with slides and colored reproductions. Not open to freshmen.	
115, 116 Laboratory Drawing (3,3; WS,WS)	Curtis
Exact representation of objects such as bones, shells, and plants, with emphasis on three-dimensional form. Pencil, pen and ink, carbon pencil, and colored crayon techniques are taught for use in scientific and other work requiring accuracy and detail.	
151 Figure Sketching (1; AWS)	Curtis
Sketching from the posed model. Prerequisite, 3 credits in drawing.	
253, 254, 255 Two- and Three-Dimensional Design (3,3,3; AWS,AWS,AWS)	Staff
Materials as a factor in design. Class experimentation and research.	
256, 257 Painting (3,3; AWS,AWS)	Staff
Oil painting: still life and landscape. Prerequisites, 105, 106, and 107.	
258 Painting (3; AWS)	Hill, Mason, Patterson
Water color. Prerequisites, 256 and 257.	
262 Essentials of Interior Design (2; S)	Footo
Illustrated lectures.	
265, 266, 267 Drawing and Painting (3,3,3; A,W,S)	Hill
Continuation of 256, 257, 258; outdoor sketching in oil and water color.	
272, 273, 274 Sculpture (3,3,3; AWS,AWS,AWS)	Du Pen, Tsutakawa
Fundamentals of composition in the round and in relief. Creative work is stressed.	
280, 281, 282 Furniture Design (3,3,3; A,W,S)	Footo
Study of materials and construction; execution of working drawings, color plates, and scale models. 280 is taken concurrently with 283. Prerequisites, 105, 106, 107, 109, 110, and 111.	
283 History of Furniture and Interior Styles (2; A)	Footo
Illustrated lectures on historical development of furniture and its architectural backgrounds from the Renaissance to the present.	
300 Elementary Crafts (2; W)	Johnson
Papier-mâché, leather, weaving, and other media and processes used in secondary schools, service organizations, and recreation groups. Open to nonmajors with sophomore standing.	
301 Elementary Interior Design (2; AWS)	Heiberg
Fundamental problems in interior design, including floor and wall plans at scale, furnishings, and color schemes. For nonmajors.	
302 Bookmaking and Bookbinding (2; S)	Johnson
Prerequisite, art major or permission.	
303 Ceramic Art (2-3; AWS)	Bonifas
Processes of pottery making, coil and slab. Studies of profile and dimensions. Prerequisite, sophomore standing in art.	
304 Ceramic Art (2-3; AWS)	Bonifas
Glazing and decoration. Contact with clay; glaze composition; packing and firing the kiln. Prerequisite, 303.	

- 305 Lettering (3; AWS)** Benson
Design in letters and the composition of letters. Prerequisites, 107, 111, and, for nonmajors, permission.
- 306 Advanced Lettering (3; AWS)** Anderson, Benson
Composition of letter forms, with emphasis on the variants of basic types which are most used now. Brief review of the history of letters and their uses, including page design and the format of books.
- 307, 308, 309 Portrait Painting (3,3,3; A,W,S)** Isaacs
Prerequisites, 256, 257, and 258.
- 310, 311, 312 Interior Design (5,5,5; A,W,S)** Footo
Fundamentals of interior design. Scale drawings of floor and wall plans, perspective, study of color and texture. For interior design students; others by permission. 312 is taken concurrently with 262. Prerequisites, 105, 106, 107, 109, 110, and 111.
- 316, 317, 318 Design for Industry (3,3,3; A,W,S)** Del Giudice
For industrial design students; others by permission.
- 320 History of Modern Sculpture (2; S)** Du Pen
Sculpture since the Renaissance; lectures and slides. Prerequisite, sophomore standing.
- 322, 323, 324 Sculpture (3,3,3; A,W,S)** Du Pen
Prerequisites, 272, 273, and 274, or permission.
- 326 History of Painting Since the Renaissance (2; W)** Isaacs
Illustrated lectures. Prerequisite, sophomore standing.
- 329 Appreciation of Design (2; A)** Benson
Lectures on design fundamentals, illustrated with slides and with paintings, pottery, textiles, and other actual objects. Reading and reference work.
- 330 Advanced Ceramic Art (3; S)** Bonifas
Design, glazing, decoration, throwing, and plaster mold. Prerequisite, 304.
- 332, 333, 334 Advanced Sculpture (3,3,3; A,W,S)** Du Pen
Prerequisites, 322, 323, and 324.
- 340 Design for Printed Fabrics (3; W)** Penington
Hand-block and silk-screen printing; mass-production design. Prerequisite, 265, or permission.
- 357, 358, 359 Design in Metal (3,3,3; WS,WS,WS)** Penington
Design and construction of objects in copper, pewter, brass, silver, and gold; raising, forging, etching, enameling, stone setting, and other processes. Prerequisite, art major or permission.
- 360, 361, 362 Life (3,3,3; A,W,S)** Staff
Drawing and painting from the model. Prerequisites, 256, 257, and 258.
- 369, 370, 371 Costume Design and Illustration (2,2,2; A,W,S)** Benson
Prerequisites, 106 and 111.
- 375, 376, 377 Advanced Painting (3,3,3; A,W,S)** Staff
Prerequisites, 256, 257, and 258.
- 382, 383, 384 Eastern Art (3,3,3; A,W,S)** Lee
Survey of Eastern art from its beginning to the present. Illustrated. Not open to those who have had Asiatic art.
- 413, 414, 415 Oriental Ceramic Art (1,1,1; A,W,S)** Staff
Chinese, Korean, and Japanese ceramics from neolithic times to the present.
- 423, 424, 425 Art History and Criticism (1,1,1; A,W,S)** Lee
A critical discussion of significant art criticism and art history beginning with the Renaissance and continuing through the most recent publications, with emphasis on the direct understanding of specific periods and works of art.
- 436, 437, 438 Sculpture Composition (5,5,5; A,W,S)** Du Pen
Imaginative design; problems met in professional practice. Prerequisites, 332, 333, and 334.
- 445, 446, 447 Advanced Industrial Design (5,5,5; A,W,S)** Del Giudice
Market analysis and selected professional problems in industrial design. Consultation techniques; psychological, sociological, and economic factors involved in designing for consumer acceptance.
- 450 Illustration (5; AW)** Staff
Prerequisites, 360, 361, and 362.
- 451, 452 Printmaking (5,5; AW,WS)** Alps
Lithography, etching, serigraph, linoleum block, wood-cut, wood-engraving. Prerequisite, art major or permission.
- 453, 454, 455 Advanced Ceramic Art (3,3,3; A,W,S)** Bonifas
Plaster work, and throwing, firing, decoration, and glazing. Prerequisite, 330.
- 463, 464, 465 Composition (3,3,3; A,W,S)** Brazeau, Isaacs
Development of individuality in painting through creative exercises. Prerequisite, 3 credits from 360, 361, or 362.
- 466, 467 Commercial Design (5,5; W,S)** Benson
Composition in advertising art. Brief review of styles of advertising art; the idea of its expression in terms of design. Practice in using a variety of mediums, with special consideration for methods by which the work is to be reproduced. Prerequisites, 255 and 305.
- 472, 473, 474 Advanced Interior Design (5,5,5; A,W,S)** Footo
Problems related to contemporary needs. Research in period styles. For interior design students. Prerequisite, 312.

- 479, 480, 481 Advanced Costume Design and Illustration (2,2,2; A,W,S) Benson
 485, 486, 487 Advanced Ceramic Art (5,5,5; A,W,S) Bonifas
 Continued use of the processes with emphasis on design for industry. Prerequisites, 453, 454, and 455.
 495, 496, 497 Senior Seminar (1,1,1; A,W,S) Staff
 Required of all seniors in art. Prerequisite, art major.
 498 Individual Projects (3-5, maximum 15; AWS) Staff

COURSES FOR GRADUATES ONLY

- 507, 508, 509 Advanced Portrait Painting (3,3,3; A,W,S) Staff
 522, 523, 524 Advanced Sculpture (3 or 5, 3 or 5, 3 or 5; A,W,S) Staff
 550 Advanced Illustration (3 or 5; AW) Staff
 551, 552 Advanced Printmaking (3 or 5, 3 or 5; AW, S) Staff
 553, 554, 555 Advanced Ceramic Art (3 or 5, 3 or 5, 3 or 5; A,W,S) Staff
 560, 561, 562 Advanced Life Painting (3 or 5, 3 or 5, 3 or 5; A,W,S) Staff
 563, 564, 565 Composition (3 or 5, 3 or 5, 3 or 5; A,W,S) Staff
 600 Research (*, AWS) Staff
 Thesis (*, AWS) Staff

ASTRONOMY

Associate Professor: THEODOR S. JACOBSEN, Observatory

There is no curriculum leading to a degree in astronomy. However, astronomy courses are given as general interest courses for students in other fields.

COURSES FOR UNDERGRADUATES

- 101 Astronomy (5; AWS) Jacobsen
 Star finding, solar system, sidereal universe.
 303 Spherical Astronomy (3; AWS) Jacobsen
 Spherical triangles, celestial sphere, planetary motions, Prerequisites, 101 and calculus.
 305 Practical Astronomy (4; AWS) Jacobsen
 Determination of latitude, longitude, time, azimuth. Sextant work. Prerequisites, 101, trigonometry, and permission.
 401 Astrophysics and Stellar Astronomy (3; AS) Jacobsen
 Interpretation of stellar spectra; motions, types of stars. Prerequisites, 101, and Physics 321 and 322.
 404 Advanced Spherical Astronomy (3; AWS) Jacobsen
 Aberration, parallax, precession, nutation, special subjects. Prerequisite, 303 or permission.
 499 Undergraduate Research (*, maximum 15; AWS) Jacobsen
 Current or special astronomical problems.

BACTERIOLOGY

(See Microbiology, page 124)

BASIC MEDICAL SCIENCE

Adviser: VICTORIAN SIVERTZ, 121 Education Hall

This program is designed to provide the bachelor's degree for students who enter medical or dental school after three years of preprofessional work and wish to apply their first year's work in the professional school toward a degree from the College of Arts and Sciences.

BACHELOR OF SCIENCE IN BASIC MEDICAL SCIENCE

To qualify for this degree, the student must either (1) take at least the third year of his preprofessional course and the first year of his professional course at the University of Washington, or (2) take at least the second and third years of his preprofessional course at the University. In either case, he must present a grade-point average of 2.5 or above, including the work in the professional school.

Applicants for the degree must have completed the following undergraduate requirements: 12 credits in general chemistry (or Chemistry 115 and 116); 10 credits in a complete sequence of organic chemistry; Zoology 111, 112, and 456; 12 credits in a complete sequence of physics; 5 credits in mathematics, including trigonometry and college algebra; 15 credits in one foreign language; 30 credits in upper-division courses, of which at least 15 must be in one of the major fields offered in the College of Arts and Sciences; and the required quarters of physical education activity and/or military training. In addition, students must fulfill the group requirements of the College.

For the fourth-year requirements, credit in subjects taught in the first-year curriculum in any medical or dental school approved by the American Medical Association or the American Dental Association may be applied toward the degree. Some upper-division courses in anatomy, physiology, microbiology, and biochemistry may be duplicated in first-year professional study, and in such a case, credit toward the degree is granted only for the course taken in medical or dental school. Students should work closely with their advisers on this matter.

The following curriculum is suggested for premedical and predental students:

FIRST YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Chem. 111 or 115 General	5	Chem. 112 or 116 General	5	Chem. 113 Elem. Qual.	5
Engl. 101 Composition	3	Engl. 102 Composition	3	Engl. 103 Composition	3
Physics 101, 104, or 121		Physics 102, 105, or 122		Physics 103, 106, or 123	
General	5	General	5	General	5
P.E. 110 or 175 Health	2	Elective	2-3	Math. 104 Plane Trig.	3
P.E. Activity	1	P.E. Activity	1	P.E. Activity	1
R.O.T.C.	2 or 3	R.O.T.C.	2 or 3	R.O.T.C.	2 or 3
	16-19		16-19		17-21

SECOND YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Chem. 231 or 335 Organic	3	Chem. 232 or 336 Organic	3	Chem. 337 Organic	3
Chem. 241 or 345 Organic		Chem. 241 or 346 Organic		Zool. 456 Vert. Embryol.	5
Lab.	2	Lab.	2	Electives	7-10
Zool. 111 General	5	Zool. 112 General	5	P.E. Activity	1
Electives	5	Electives	5	R.O.T.C.	2 or 3
P.E. Activity	1	P.E. Activity	1		16-22
R.O.T.C.	2 or 3	R.O.T.C.	2 or 3		
	16-19		16-19		

All electives should be chosen while considering the major, which is to be selected at the end of the second year. If the student takes Chemistry 231, 232, 241, and 242, he may choose an elective during the third quarter of the second year in place of Chemistry 337.

BIOCHEMISTRY

(See School of Medicine, page 274)

BIOLOGY

Courses in biology are administered jointly by the Departments of Botany and Zoology (see pages 61 and 170). There is no biology curriculum leading to a degree in the College of Arts and Sciences, but students may use biology courses to satisfy some of the requirements for a major in either botany or zoology. The Departments of Botany and Zoology jointly offer a first teaching area in biology for students in the College of Education (see page 202).

BOTANY

Executive Officer: C. L. HITCHCOCK, 342 Johnson Hall

Professor: C. L. Hitchcock.

Associate Professors: H. W. Blaser, H. L. Roman, D. E. Stuntz.

Assistant Professors: M. T. Dyar, R. B. Walker.

Instructors: A. R. Kruckeberg, C. V. Muhlick.

The Department of Botany offers courses leading to the degrees of Bachelor of Science, Master of Science, and Doctor of Philosophy. In conjunction with the Department of Zoology a first teaching area in biology is offered for students in the College of Education, in addition to a second teaching area in botany (see page 202).

For students who do not expect to take more than 5 credits in this subject, Botany 111 or 113 is recommended. For those who expect to take 10 credits, one of these sequences is recommended: Botany 111 and 112, or 111 and 113, or 111, 201 (or 202 or 203), and 331. Since Botany 111 and 114 are beginning courses that cover some of the same materials, only one of them may be taken for credit.

All biology courses may be used for botany credit.

BACHELOR OF SCIENCE

In this elective curriculum, 40 credits in botany are required. Courses must include Botany 111, 112, 113; 371 or 472; Biology 451 (Genetics); and a minimum of two quarters of college chemistry. Organic chemistry is recommended but not required.

ADVANCED DEGREES

Students who intend to work toward the degree of Master of Science or Doctor of Philosophy must meet the requirements of the Graduate School (see page 261). The Department of Botany requires that all candidates for advanced degrees have organic chemistry.

COURSES FOR UNDERGRADUATES

Biology

- 101J-102J General Biology (5-5; A-W)** **Staff**
Principles of biology applying to all living forms, illustrated by representatives of major plant and animal groups and introducing man's place in nature. Offered jointly with the Department of Zoology. Recommended for education students and for those not majoring in the biological sciences.
- 351 Human Genetics (3; W)** **Roman**
For premedical students and those majoring in anthropology, psychology, and related fields dealing with human variation. Prerequisite, Botany 111, Zoology 111, or equivalent, and junior standing.
- 401 Cytology (3; W)** **Hsu**
Structure and function of the cell. Prerequisite, permission.
- 401L Cytology Laboratory (2; W)** **Hsu**
Must be accompanied by 401.
- 408 Cellular Physiology (3; A)** **Whitoley**
Functional aspects of protoplasmic structures. Prerequisite, Zoology 400 or permission.
- 408L Cellular Physiology Laboratory (2; A)** **Staff**
Must be accompanied by 408. Prerequisite, permission.
- 451 Genetics (3 or 5; S)** **Roman**
Prerequisite, 10 credits in biological science.
- 452 Cytogenetics (3 or 5; A)** **Roman**
Chromosomal behavior in relation to genetics. Prerequisites, 451 and permission.
- 453 Topics in Genetics (2, maximum 6; S)** **Roman**
Current problems and research methods. Prerequisites, 451, organic chemistry, and permission.
- 454 Evolutionary Mechanisms (3; S)** **Kruckeberg**
Mutation, isolation, and natural selection as determinants of evolutionary change; emphasis on plants. Prerequisites, 451 and permission.
- 457, 457L Biochemical Genetics (2, 1; not offered 1952-53)**
- 472 Principles of Ecology (3; S)** **Edmondson**
Population biology, competition, predation, symbiosis, sociality, and relationship of community to environment. Prerequisite, 10 credits in upper-division zoology or botany, or permission.
- 472L Ecology Laboratory (2; S)** **Edmondson**
Must be accompanied by 472.
- 473 Limnology (5; A)** **Edmondson**
Biological, physical, and chemical features of lakes. Prerequisites, Botany or Zoology 111 and 112, and one year of college chemistry.
- 573 Topics in Limnology (2)*
Botany
- 111, 112 Elementary Botany (5,5; AW,S)** **Dyar, Walker, Blaser**
111: structure, physiology, and reproduction of seed plants. 112: structure and relationships of the major plant groups. Prerequisites, 111, one year of high school botany, Biology 101J-102J, or Zoology 111 and 112.

- 113 **Elementary Botany (5; S)** Hitchcock
Local flora. Training in identification and recognition of ferns and seed plants.
- 114, 115, 116 **Forestry Botany (3,3,3; A,W,W)** Hitchcock, Blasor, Walker
114: structure of seed plants. 115: morphology of fungi and reproduction of seed plants.
116: physiology of seed plants. Prerequisites, 114 and Chemistry 112.
- 201, 202, 203 **Plant Propagation (2,2,2; A,W,S)** Muhlick
201: propagation by seeds, cuttings, grafts, etc. 202: identification and culture of garden plants. 203: care and treatment of seeds and seedlings. Prerequisites for each course, 111, 114 or Biology 101J-102J, and permission.
- 331 **Ornamental Plants (3; S)** Kruckeberg
Identification and use of trees and shrubs. Prerequisite, 113 or equivalent.
- 332 **Taxonomy Field Trip (*, maximum 27; offered alternate summers, not offered 1953)**
- 361 **Forest Pathology (5; AS)** Stuntz
Common wood-destroying fungi and diseases of forest trees. Prerequisite, 115 or equivalent.
- 371 **Elementary Plant Physiology (5; S)** Dyar, Walker
For nonmajors. Open for only 3 credits to those who have had 116. Prerequisites, 111 and Chemistry 112, 116, or equivalent.
- 431, 432 **Taxonomy (5,5; offered alternate summers, not offered 1953)**
- 441, 442, 443 **Morphology (5,5,5; A,W,S)** Blasor
441 and 442: vascular plants. 443: Algae and Bryophytes. Prerequisite for each course, 112 or equivalent.
- 444 **Plant Anatomy (5; offered alternate years, not offered 1952-53)**
- 445 **Algology (6; Summer)** Staff
Offered at Friday Harbor only. Prerequisites, 112 and staff permission.
- 461 **Yeasts and Molds (5; S)** Stuntz
Classification, recognition, cultivation, and relationship to industries and man. Prerequisite, 15 credits in botany, microbiology, or zoology.
- 462, 463 **Mycology (5,5; A,W)** Stuntz
462: structure and classification of basidiomycetes and ascomycetes. Prerequisites, 111 and 112, or equivalent, as determined by instructor. 463: structure and classification of phycomycetes and fungi imperfecti. Prerequisites, 111 and 112, or 462, or equivalent, as determined by instructor.
- 471 **Mineral Nutrition (5; S)** Walker
The soil and culture solution as nutrient media for the growth of plants. Prerequisites, 111 or 116, and 10 credits in chemistry.
- 472 **Plant Physiology (5; A)** Dyar, Walker
Recommended for biology majors. Not open to those who have taken 371. Prerequisites, 111 or 116, and Chemistry 232 and 242.
- 473 **Plant Physiology (5; W)** Dyar, Walker
Metabolism of organic compounds. Prerequisites, 472 or 371, Chemistry 232 and 242, and permission.
- 474 **Plant Physiology (5; offered alternate years, not offered 1952-53)**
- 498 **Special Problems in Botany (1-15; AWS)** Staff
Prerequisite, permission of instructor.

COURSES FOR GRADUATES ONLY

Botany

- 501 **Advanced Cytology (5; offered alternate years, not offered 1952-53)**
- Botany**
- 520 **Seminar (1; AWS)** Staff
- 521 **Seminar in Plant Physiology (1, maximum 5; W)** Dyar, Walker
Modern methods and trends in plant physiology. Prerequisite, 371 or 472.
- 561 **Advanced Fungus Morphology (5; not offered 1952-53)**
- 571 **Physiology of the Fungi (3 or 5; not offered 1952-53)**
- 572 **Physiology of the Algae (3 or 5, 6 at Friday Harbor only; not offered 1952-53)**
- 600 **Research (*; AWS)** Staff
Original investigations of special problems in genetics, morphology, mycology, taxonomy, or plant physiology.
- Thesis (*; AWS)** Staff

CHEMISTRY

Executive Officer: PAUL C. CROSS, 103 Bagley Hall

Professors: G. H. Cady, P. C. Cross, S. G. Powell, R. J. Robinson, H. V. Tartar.

Associate Professors: H. J. Dauben, E. C. Lingafelter, D. M. Ritter, V. Sivertz.

Assistant Professors: A. G. Anderson, Jr., A. L. Crittenden, N. W. Gregory, G. D. Halsey, B. S. Rabinovitch, W. M. Schubert, W. T. Simpson.

Instructors: D. F. Eggers, K. B. Wiberg.

The Department of Chemistry offers courses leading to the degrees of Bachelor of Science, Bachelor of Arts, Master of Science, and Doctor of Philosophy.

For undergraduate students, the Department provides two curricula leading to bachelor's degrees: a prescribed curriculum which permits an intensive study of chemistry and related sciences in preparation for graduate study or for a professional career, and an elective curriculum which provides a basic introduction to chemical science and allows a wider choice of electives in fields outside the physical sciences.

In addition, the Department offers first and second teaching areas for students in the College of Education (see page 202).

Transfer students must complete at least 9 credits in chemistry in this department to receive a degree.

BACHELOR OF SCIENCE

Requirements in the prescribed curriculum are: 65 credits in chemistry; 15 in physics; 24 in mathematics; 18 in science electives; 24 in humanities and social studies; and 26 in free electives. For graduation, the student must demonstrate a reading knowledge of German; obtain a grade-point average of at least 2.5 in his chemistry courses, with a C or better in each course; and obtain a total grade-point average of 2.5.

During the first year the student should take: Chemistry 115, 116, 325 (or 111, 112, 113); Mathematics 104 (Plane Trigonometry), 105 (College Algebra), 153 (Analytic Geometry and Calculus); Physics 121, 122, 123 (General); and Physical Education 110 or 175 (Health Education).

The second-year program should include English 101, 102, 103 (Composition); Chemistry 325 (if not taken in the first year), 335, 336, 337, 345, 346, 355, 356, 357; and Mathematics 251 (Analytic Geometry and Calculus), 252, 253 (Engineering Calculus). Electrical Engineering 200 (Elementary Electronics) is recommended in the third quarter for those who completed Chemistry 325 during their first year.

The third and fourth years generally include the sequences Chemistry 358, 359, 426, and 415, 425, 445. Other upper-division courses may be elected to fulfill the general requirements and to provide advanced work in fields of greatest value to the individual.

BACHELOR OF ARTS

Requirements in the elective curriculum are: Chemistry 115, 116 (or 111, 112, 113), 221, 231, 232, 241, 242, 351, 352, 353, and 354; one year of college physics; mathematics through one quarter of calculus; and 10 credits in German or French. At least 30 credits in the sciences should be completed during the first two years. A grade of C or better must be obtained in each of the required chemistry courses.

The Department should be notified of intention to enter this curriculum not later than the end of the sophomore year.

ADVANCED DEGREES

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School (see page 261). The Department of Chemistry requires that all candidates for advanced degrees take entrance, or qualifying, examinations, which are designed to assess the student's knowledge and understanding of the material normally contained in an undergraduate program with a major in chemistry. These examinations are usually given on the Friday and Saturday preceding the opening of Autumn Quarter, during the first week of Winter Quarter, and toward the end of Spring Quarter.

MASTER OF SCIENCE. Candidates for this degree usually present German as their foreign language.

DOCTOR OF PHILOSOPHY. Students who have completed at least one year of satisfactory graduate study and are acceptable for work leading to the doctorate are required to take "cumulative" examinations regularly, twice each quarter. They are not then required to take formal examinations in courses offered by the Department, except as may be specified by their research professors or advisory committees. The cumulatives are general examinations in the student's area of specialization (analytical, inorganic, organic, or physical chemistry) and are designed to stimulate independent study and thought. They attempt to evaluate the breadth of knowledge gained from courses, seminars, and literature, and the student's ability to apply this knowledge to diverse problems. The cumulative requirement is satisfied when six examinations are passed, usually out of the first twelve taken.

Candidates for the doctorate usually meet the language requirement with German and either French or Russian.

COURSES FOR UNDERGRADUATES

- | | |
|--|--------------|
| 101, 102 General Chemistry (5,5; W,S) | Staff |
| For students in home economics, nursing, forestry, and others who expect to take only 10 credits in chemistry. | |
| 105, 106, 107 General Chemistry (3,3,3; A,W,S) | Staff |
| For engineering students only (except those in chemical engineering). Prerequisite, <u>high school chemistry</u> . | |
| 108, 109, 110 General Chemistry and Qualitative Analysis (5,5,5; A,W,S) | Staff |
| General inorganic chemistry and qualitative analysis. For pharmacy students only. | |
| 111 General Chemistry (5; AWS) | Staff |
| Open only to students without high school chemistry. For engineering and premedical students and science majors, who may continue through Chemistry 113 or 107. | |
| 112 General Chemistry (5; AWS) | Staff |
| Prerequisite, 111 or 115. | |
| 113 Elementary Qualitative Analysis (5; AWS) | Staff |
| Prerequisite, 112. | |
| 115 General Chemistry (5; AWS) | Staff |
| For students who have had high school chemistry and who plan to take more than 10 credits in chemistry. Departmental advisers should be consulted as to whether this course should be followed by 112 or by 116. | |
| 116 General Chemistry and Qualitative Analysis (5; W) | Staff |
| Prerequisite, 115 and permission. | |
| 221 Quantitative Analysis (5; AW) | Staff |
| Volumetric and gravimetric. Prerequisite, 113 or 116. | |
| 230 Organic Chemistry (5; AS) | Staff |
| For home economics and nursing students and others who want only one quarter of organic chemistry. Prerequisite, 102 or 112. | |
| 231, 232 Organic Chemistry (3,3; AWS, AWS) | Staff |
| For those who want only two quarters of organic chemistry. Prerequisite, 112. | |
| 237, 238, 239 Organic Pharmaceutical Chemistry (5,5,5; A,W,S) | Staff |
| The chemistry of the carbon compounds and their application to pharmacy. For pharmacy students only. Prerequisite, 110. | |
| 241, 242 Organic Chemistry Laboratory (2,2; AWS,AWS) | Staff |
| 241: preparation of representative compounds. Prerequisite, 231 (which may be taken concurrently). 242: preparations and qualitative organic analysis. Prerequisites, 241 and 232 (which may be taken concurrently). | |
| 321 Advanced Qualitative Analysis (5; S) | Staff |
| Prerequisite, 113 or 116. | |
| 325 Quantitative Analysis (5; S) | Staff |
| Volumetric and gravimetric analysis. For chemistry and chemical engineering majors and other qualified students. Prerequisite, 113 or 116. | |
| 333 Intermediate Organic Chemistry (3; AS) | Staff |
| Prerequisite, 232. | |
| 335, 336, 337 Organic Chemistry (3,3,3; A,W,S) | Staff |
| For chemistry and chemical engineering majors and other qualified students. Prerequisite, 113 or 116. | |
| 345, 346 Organic Chemistry Laboratory (2,2; A,W) | Staff |
| Organic synthesis. Prerequisite for 345, 335 (which may be taken concurrently). Prerequisites for 346, 345 and 336 (which may be taken concurrently). | |
| 351, 352 Elementary Physical Chemistry (3,3; A,W) | Staff |
| Introductory lecture and laboratory course. Prerequisites, 221 and college physics. | |
| 353 Chemical Thermodynamics (4; S) | Staff |
| Prerequisites, 352 and calculus (which may be taken concurrently). | |
| 354 Elementary Physical Chemistry Laboratory (2; S) | Staff |
| Prerequisite, 352. | |

For Engr. who have
not had H.S. Chem.
(Not Chem Engr.)
Sequence 103, 104, 107
103 General (5)
104 " (5)

- 355, 356, 357 Physical Chemistry (3,4,3; A,W,S)** **Staff**
For chemistry and chemical engineering majors and other qualified students. Prerequisites, 113 or 116, calculus, and college physics, or permission.
- 358, 359 Physical Chemistry Laboratory (3,3; A,W)** **Staff**
Prerequisites, 325 and 357, or 355, 356, and 357 (which may be taken concurrently as offered).
- 415, 416, 417 Advanced Inorganic Chemistry (3,3,3; A,W,S)** **Cady, Gregory, Ritter**
Systematic study based upon atomic, molecular, and crystal structure, the nature of chemical bonds and the periodic table. Prerequisite, 357 or permission
- 425 Quantitative Analysis (3; W)** **Crittenden**
Special analytical methods. Prerequisites, 325, 337, and 357, or permission.
- 426 Instrumental Analysis (3; S)** **Crittenden**
Introduction to electrical and optical methods of analysis. Prerequisites, 325, 337, and 359, or permission.
- 427 Advanced Quantitative Theory (3; A)** **Crittenden**
Theoretical principles of analytical chemistry. Prerequisites, 325 and 337, or permission.
- 428 Chemical Microscopy (3; W)** **Robinson**
Theory of the polarizing microscope and its application to chemistry. Prerequisite, 426 or permission.
- 429 Microquantitative Analysis (3; A)** **Robinson**
Principles and techniques. Prerequisite, 426 or permission.
- 435, 436, 437 Advanced Organic Chemistry (3,3,3; A,W,S)** **Dauben**
Consideration of synthetic methods, structure determinations, and reaction mechanisms for acyclic, alicyclic, and aromatic compounds, with emphasis on modern theory and practice. Prerequisites, 337 and 445, or permission.
- 445 Qualitative Organic Analysis (3; AS)** **Wiborg**
Identification and characterization of simple organic compounds. Prerequisite, 346 or permission.
- 446 Advanced Organic Preparations (3; W)** **Staff**
Preparation, isolation, and purification of organic compounds requiring advanced techniques and specialized apparatus. Critical consideration of alternative synthetic methods. Prerequisite, 445 or permission.
- 451 Advanced Physical Chemical Laboratory (2-3; S)** **Staff**
Prerequisite, 359 or permission.
- 455, 456, 457 Advanced Physical Chemistry (3,3,3; A,W,S)** **Gregory, Rabinovitch, Simpson**
Elementary concepts of quantum chemistry, statistical mechanics, thermodynamics, kinetic theory, and chemical kinetics. Prerequisite, 357 or permission.
- 458 Solutions and Colloids (3; S)** **Gregory, Ritter**
Thermodynamic consideration of solubility and theories of electrolytic solutions, electrochemical methods, electrokinetic phenomena, colloids, and surface chemistry. Prerequisite, 456 or permission.
- 459 Molecular Structure (3; W)** **Eggers**
Measurement and interpretation of molecular spectra (ultraviolet, visible, infrared, Raman), X-ray and electron diffraction, dipole moments, magnetic susceptibilities, etc. Prerequisite, 357 or permission.
- 499 Undergraduate Research (*, maximum 9; AWS)** **Staff**
For qualified students in the prescribed curriculum, especially those planning graduate work. Prerequisite, permission.

COURSES FOR GRADUATES ONLY

- 515 Topics in Inorganic Chemistry (3, maximum 9; offered when demand is sufficient)** **Staff**
Discussion of developments of current research interest. Prerequisite, permission.
- 520 Seminar (1-3, maximum 9; AWS)** **Staff**
- 526 Advanced Instrumental Analysis (3; W)** **Crittenden**
Absorption and emission spectroscopy, polarography, potentiometry, and dielectric properties as applied to problems in analytical chemistry. Prerequisite, 426 or permission.
- 527 Topics in Analytical Chemistry (3, maximum 9; offered when demand is sufficient)** **Staff**
Discussion of current developments in theory and practice. Prerequisite, 427 or permission.
- 528 Microqualitative Analysis (3; S)** **Robinson**
Identification of ions by means of optical properties of their crystals. Prerequisite, 428 or permission.
- 535, 536 Chemistry of Natural Organic Compounds (3,3; A,W)** **Anderson**
Structure determination, synthesis and reactions of carbohydrates, fats, oils, terpenoids, steroids, aminoacids, alkaloids, heterocyclics, vitamins, and accessory dietary factors of natural origin. Chemotherapeutics. Prerequisite, permission.
- 537 Physical Organic Chemistry (3; S)** **Dauben, Schubert**
Interpretation and application of data obtained by combined methods of organic and physical chemistry to the problems of structure of organic compounds and mechanism of organic reactions. Prerequisites, 437 and 457, or permission.
- 538 Topics in Organic Chemistry (3, maximum 9; offered when demand is sufficient)** **Staff**
Discussion of developments of current research interest. Prerequisite, permission.

531 Adv. Organic (3).

- 555, 556, 557 **Quantum Chemistry** (3,3,3; W,S,A) **Simpson**
 Quantum theory of valence, unsaturation, quantum statistics, molecular dynamics, and related topics. Prerequisite, permission.
- 558 **Chemical Crystallography** (3; S) **Lingafolter**
 Crystal structure of diffraction of X-rays, electrons, neutrons; crystal chemistry; spectra of crystals; theory of metals. Prerequisite, 357 or permission.
- 559 **Topics in Physical Chemistry** (3, maximum 9; offered when demand is sufficient) **Staff**
 Discussion of developments of current research interest. Prerequisite, permission.
- 591 **Seminar in Inorganic Chemistry** (1-3, maximum 9; AWS) **Staff**
- 592 **Seminar in Analytical Chemistry** (1-3, maximum 9; AWS) **Staff**
- 593 **Seminar in Organic Chemistry** (1-3, maximum 9; AWS) **Staff**
- 595 **Seminar in Physical Chemistry** (1-3, maximum 9; AWS) **Staff**
- 600 **Research** (*; AWS) **Staff**
- Thesis** (*; AWS) **Staff**

CLASSICAL LANGUAGES AND LITERATURE

Executive Officer: JOHN B. McDIARMID, 203 Denny Hall

Professors: H. B. Densmore, W. M. Read.

Associate Professor: J. B. McDiarmid.

Assistant Professors: E. L. Bassett, W. C. Grummel.

Acting Assistant Professor: W. G. Rabinowitz.

The Department of Classical Languages and Literature offers courses leading to the degrees of Bachelor of Arts and Master of Arts.

For undergraduate students, the Department offers an elective curriculum with a major in Classics, Greek, or Latin. In addition, first and second teaching areas are provided for students in the College of Education (see page 202).

The Department offers a group of classical courses in English, for which a knowledge of Greek or Latin is not necessary. These courses are recommended to students in other departments.

BACHELOR OF ARTS

CLASSICS MAJOR. The requirement is: 18 credits in upper-division Greek courses; and 18 credits in upper-division Latin courses.

GREEK MAJOR. The requirement is: 27 credits in upper-division Greek courses; and 9 credits chosen with the consent of the Department from among upper-division Greek and Latin courses, Classics 330, History 201-202 (Ancient History), History 401 (Greece in the Age of Pericles), and Philosophy 320 (History of Philosophy).

LATIN MAJOR. The requirement is: 27 credits in upper-division Latin courses; and 9 credits chosen with the consent of the Department from among upper-division Latin and Greek courses, Classics 300, History 201-202 (Ancient History), History 403 (The Roman Republic), History 404 (The Roman Empire), and Philosophy 320 (History of Philosophy).

MASTER OF ARTS

Students who intend to work toward this advanced degree must meet the requirements of the Graduate School (see page 261). The Department requires that applicants for candidacy have a reading knowledge of French or German. Latin and Greek courses to be applied toward this degree must be numbered 400 and above.

Departmental requirements for a graduate minor in Latin or Greek are the same as those for an undergraduate major.

COURSES FOR UNDERGRADUATES

Greek Courses

- 101-102, 103 **Elementary Greek** (5-5,5; A-W,S) **Rabinowitz**
 Introduction to classical Greek, with emphasis on rapid development of ability to read Attic prose. In the first two quarters the study of forms and syntax is accompanied by the reading of selections from standard authors; the third quarter is devoted to more extensive reading in one or more classical texts.
- 201-202 **Socrates** (3-3; A-W) **McDiarmid**
 A study based on Plato's *Apology* and *Crito*, Xenophon's *Memorabilia*, and Aristophanes' *Clouds*.

557 Adv. Physical (3)
 554 Molecular Structure (3)

- 207, 208 Grammar and Composition (2,2; A,W)** **Staff**
 Systematic review of grammatical principles; exercises in prose composition. To be taken concurrently with 201-202.
- 241 New Testament Greek (3; S)** **Read**
 Prerequisite, 202.
- 262 Homer (3; S)** **McDiarmid**
 Introduction to Greek poetry through selections from the *Iliad* or the *Odyssey*. Prerequisite, 202.
- 309 Advanced Grammar and Composition (3; S)** **Staff**
 Prerequisite, 208.
- 322 Herodotus and the Persian Wars (3; A)** **Rabinowitz**
- 323 Thucydides and the Peloponnesian War (3; W)** **Rabinowitz**
 In 322 and 323 portions of the histories are studied intensively and the rest read rapidly. These courses acquaint the student with the historical background of the Greek world in the fifth century B.C. The dialects and styles, as well as the historical methods and suppositions of the authors, are considered.
- 330 Attic Orators (3; S)** **Rabinowitz**
 Selections from the orations of Antiphon, Andocides, Lysias, Isocrates, and Isaeus. The stylistic principles of Greek oratory; orations as sources for political and social conditions of classical Greece.
- 360 Lyric Poetry (3; offered alternate years, not offered 1952-53)**
- 361 Hellenistic Poetry (3; offered alternate years, not offered 1952-53)**
- 390 Supervised Reading (3-5; AWS)** **Staff**
 Prerequisite, permission.
- N391 Sight Reading (0; AWS)** **Staff**
 Prerequisite, 202 or permission.
- 413 The Pre-Socratic Philosophers (3; offered alternate years, not offered 1952-53)**
- 414 Plato: The Phaedo (3; offered alternate years, not offered 1952-53)**
- 415 Aristotle: Selections from the Metaphysics (3; offered alternate years, not offered 1952-53)**
- 416-417 Plato: Republic (3-3; A-W)** **Rabinowitz**
- 418-419 Aristotle: Nicomachean Ethics (3-3; W-S)** **Rabinowitz**
- 442 Introduction to Greek Drama: Euripides (3; A)** **McDiarmid**
- 443 Sophocles (3; W)** **McDiarmid**
- 444 Aeschylus (3; S)** **McDiarmid**
 In 442, 443, and 444 one play of each author is studied in the original and several others read in translation.
- 453 Pindar: The Epinician Odes (3; offered alternate years, not offered 1952-53)**
- 499 Undergraduate Research (*, maximum 15; AWS)** **Staff**

Latin Courses

- 101-102, 103 Elementary Latin (5-5,5; A-W,S)** **Grummel**
 Introduction to classical Latin, with emphasis on the rapid development of reading ability. In the first two quarters the study of forms and syntax is accompanied by the reading of selections from standard authors; the third quarter is devoted to more extensive reading in one or more Latin texts.
- 201 Roman Letters (3; A)** **Bassett**
 Reading in the letters of Cicero and Pliny to illustrate important phases of Roman life. Prerequisite, two years of high school Latin or 103.
- 202 Roman Elegy (3; W)** **Bassett**
 Selected elegies of Catullus, Tibullus, Propertius, and Ovid. Prerequisite, 201 or permission.
- 203 Vergil (3; S)** **Grummel**
 Selections from the first six books of the *Aeneid*. Prerequisite, 202 or permission.
- 207, 208 Grammar and Composition (2,2; A,W)** **Staff**
 Systematic review of grammatical principles; exercises in prose composition. Prerequisite, three years of high school Latin or permission.
- 309 Advanced Grammar and Composition (3; S)** **Read**
 Prerequisite, 208.
- 322 Livy (3; offered alternate years, not offered 1952-53)**
- 324 Tacitus (3; offered alternate years, not offered 1952-53)**
- 326 Roman Biography (3; offered alternate years, not offered 1952-53)**
- 342 Roman Drama (3; A)** **Bassett**
- 355 Catullus (3; W)** **Grummel**
- 356 Horace (3; S)** **Bassett**
- 390 Supervised Reading (3-5; AWS)** **Staff**
 Prerequisite, permission.

N391 Sight Reading (0; AWS)	Staff
Prerequisite, permission.	
401 Medieval Latin (3; A)	Grummel
Prerequisite, permission.	
404 Comparative Grammar of Latin and Greek (3; S)	Bassett
Comparative and historical study of Latin and Greek as an introduction to Indo-European philology. Prerequisite, permission.	
412 Lucretius (3; A)	Grummel
414 Seneca (3; S)	Bassett
415 Cicero's Philosophical Works (3; W)	Grummel
430 Latin Novel (3; offered alternate years, not offered 1952-53)	
451 Roman Satire (3; offered alternate years, not offered 1952-53)	
459 Lucan (3; offered alternate years, not offered 1952-53)	
499 Undergraduate Research (*, maximum 15; AWS)	Staff

Classical Courses in English

101 Latin and Greek in Current Use (3; AWS)	Staff
Primarily for students who have not had Latin and Greek. Latin and Greek derivatives in English, including literary words and phrases of classical origin, and most Latin and Greek words used in technological and scientific terminology.	
320, 321, 322 Greek Literature (2,2,2; A,W,S)	Staff
320: Homer; 321: drama; 322: history and philosophy.	
324, 325 Latin Literature (2,2; W,S)	Staff
324: epic; 325: drama.	
330 Greek and Roman Mythology (3; WS)	Rabinowitz

COURSES FOR GRADUATES ONLY

Greek Courses

520 Seminar (5, maximum 15; AWS)	Staff
540, 541, 542 Literary Criticism: Aeschylus (3,3,3; A,W,S)	McDiarmid
Textual criticism. Aristotle and other ancient critics. Independent study of one play.	
600 Research (3-5 each quarter; AWS)	Staff
Thesis (*; AWS)	Staff

Latin Courses

520 Seminar (5, maximum 15; AWS)	Staff
550 Propertius (3; A)	Grummel
600 Research (3-5 each quarter; AWS)	Staff
Thesis (*; AWS)	Staff

COMMUNICATIONS

Acting Director: MERRITT E. BENSON, 208 Lewis Hall

Professors: M. E. Benson, B. H. Christian, H. P. Everest, V. R. Frost, V. McKenzie, R. S. Mansfield.

Associate Professor: E. H. Adams.

Assistant Professors: G. B. Astel, H. M. Brier, L. L. Jermain, M. Ryan.

Lecturer: W. L. Worden.

Instructor: R. A. Sethre.

Acting Instructor: C. Murton.

Director of Laboratories: C. Root.

The School of Communications, through the Divisions of Journalism and Radio-Television, offers professional training in writing, editing, advertising, and production in the field of mass media. Courses are also offered in special functions of communications, such as public relations and propaganda. Both journalism and radio-television programs of study lead to bachelor's degrees.

JOURNALISM

Acting Director: MERRITT E. BENSON, 208 Lewis Hall

The Division of Journalism offers a prescribed curriculum with three sequence options available. These options are: editorial, advertising and management, and public relations.

In addition, the Division offers first and second teaching areas for students in the College of Education (see page 202).

Students majoring in other fields who wish to obtain journalism training as a supporting field for their major should elect Journalism 100, 200, 201, 220, 303, and 304. They are required to maintain a 2.5 grade average in these specific journalism courses.

Home economics students who wish to take a supporting field in journalism should elect Journalism 100, 200, 201, 220, 303, 304, and 342.

Students planning to transfer to the Division of Journalism from other schools are urged to do so not later than the beginning of their last quarter as sophomores. This will enable them to satisfy lower-division requirements and enroll as regular third-year majors the following fall. Those unable to do this will be asked to take lower-division requirements and senior electives in the junior year and take the third-year professional sequence as seniors. Transfer students are rarely permitted to enter the third-year sequence their first quarter in the University.

Upon the recommendation of the Director, students without upper-division standing may be admitted to upper-division courses in journalism if they are proficient in English composition and typing; have had sound training in history, economics, political science, and sociology; and have had not less than one year's experience in newspaper work or other professional writing.

A student holding a bachelor's degree from a recognized college or university may, with the consent of the Director, take third-year journalism. This work may not be counted toward an advanced degree.

BACHELOR OF ARTS

The work of the freshman and sophomore years is essentially the same for all journalism students, except that those planning an editorial or a public relations sequence include among their electives Geography 170 (Geography of World Affairs), History 102 (Modern European), and Political Science 353 (Theory and Practice of Government in the State of Washington); and those planning an advertising and management sequence take General Business 101 (Introduction), Art 105 (Drawing), and Marketing 301 (Principles).

Students who cannot type 45 words per minute must take Secretarial Training 10 (Typewriting).

In addition, students must complete a total of 9 credits in English literature at some time during the four years.

FIRST AND SECOND YEARS

CREDITS		CREDITS	
Journ. 100	2	Sociol. 110 Survey	5
Journ. 200	5	Speech 120 Intro. to Public Speak.	5
Journ. 201	3	or 240 Oral Interpretation	5
Journ. 220	3	Science electives	10
Econ. 200 Introduction	5	Electives	29
Engl. 101, 102 Composition	6	P.E. 110 or 175 Health	2
Hist. 241 Survey of U.S.	5	P.E. Activity	6
Pol. Sci. 100 Survey	5	R.O.T.C.	12 or 18
Psychol. 100 General	5		

90-108

Third-year professional journalism is divided into three sequences. To be admitted to third-year journalism, the student must have completed 90 academic credits with an over-all grade-point average of at least 2.5 and an average of 3.0 in the four lower-division journalism courses.

No elective courses may be taken during the third year. A minimum grade-point average of 3.0 must be maintained, and students who fail to meet this requirement at the end of any quarter may be requested to change their major.

EDITORIAL OPTION. Third-year requirements are: Journalism 300, 303, 304, 306, 310, 311, 320, 324, 326, 327, 329, 330, 333, 334, and 370.

Fourth-year requirements are: Journalism 400 and 428.

ADVERTISING AND MANAGEMENT OPTION. Third-year requirements are: Journalism 300, 303, 304, 310, 311, 340, 341, 342, 346, 347, 348, 349, 350, 351, 352, 355, 356, and Accounting 150 (Fundamentals).

Fourth-year requirements are: Journalism 440, 452, and Marketing 381 (Retailing).

PUBLIC RELATIONS OPTION. Third-year requirements are: Journalism 300, 303, 304, 311, 320, 324, 326, 329, 330, 360, and 370. During the third and fourth years the student must also complete: Sociology 223 (Social Statistics); Business Statistics 201 (Statistical Analysis) or Psychology 301 (Statistical Methods); Psychology 446 (Public Opinion Analysis) or Sociology 442 (Public Opinion); Sociology 443 (Mass Communication); Business Communications 310 (Business Correspondence); Human Relations 460 (Human Relations in Industry and Business); and Journalism 460.

COURSES FOR UNDERGRADUATES

Only those courses in journalism whose descriptions include the phrase "open to nonmajors" may be included in the registration of students from other departments. Particular attention is called to the fact that some courses are open to nonmajors in specific quarters only.

- 100 Journalism Today (2; AW)** **Everest, McKenzie**
A survey of the fields of communication: newspaper, magazine, radio, advertising, public relations, propaganda, and photo journalism. Objectives and responsibilities of the various areas of journalistic communications. Review of career opportunities in these fields. Open to nonmajors.
- 200 Preliminary News Writing (5; AWS)** **Christian, Benson, Brier, Frost, Jermain, Sothre**
Structure of the news story, types of news leads, and feature stories. Open to nonmajors.
- 201 Copy Editing (3; WS)** **Jermain, Benson, Brier**
Editing news copy, writing outlines and captions, headline writing, and newspaper make-up. Open to nonmajors. Prerequisite, 200 or permission.
- 220 Fundamentals of Advertising (3; AS)** **Frost, Sothre**
Survey, fundamentals of strategy, layout, attention devices, appeals, copy, and media. Open to nonmajors in Autumn Quarter only.
- 300 Laboratory Work on University Daily (2-5, maximum 15; AWS)** **Astel**
Practical work on the editorial staff of the University of Washington Daily. Prerequisite, journalism major or permission.
- 303 Public Relations (3; AS)** **Christian**
Principles and practice of public relations in business, industry, government, and social agencies; policy and conduct as fundamentals in good relationships. Prerequisite, upper-division standing or permission. Open to nonmajors in Spring Quarter only.
- 304 Magazine Article Writing (3; AWS)** **Mansfield, Brier**
Professional nonfiction writing for national magazines, trade journals, and specialized publications. Open to nonmajors in Autumn Quarter only. Prerequisite, upper-division standing or permission.
- 306 Printing Processes (3; A)** **Everest**
Basic principles of the graphic arts and newspaper make-up.
- 310 Photographic Laboratory (1; AWS)** **Root**
Basic news photography; the photographic process; news camera technique; darkroom practices; planning news pictures.
- 311 Printing Laboratory (1; A)** **Root**
Use and application of printing materials and techniques; layout of the type case; point system; composing stick; imposition; lock-up; make-up.
- 320 Radio News Writing (3; AWS)** **Ryan**
Techniques of gathering, writing, and editing news for radio; building news programs. Regularly open to nonmajors Autumn Quarter; permission required Winter, Spring. Prerequisite, 200.
- 324 Advanced News Writing (3; A)** **Benson, Christian, Frost, Jermain**
Instruction and practice in the handling of complex news stories.
- 326 Contemporary Affairs (2, maximum 8; AWS)** **McKenzie**
Background and significance of international, national, and local newsworthy events. Primarily a discussion course.
- 327 Court Reporting (3; S)** **Benson**
Covering the courts for the press; legal terminology; legal forms; trial procedures.
- 329 Law of the Press (3; A)** **Benson**
Legal regulations governing editorial content of publications; libel, copyright, rights of access and publication.
- 330 Reporting (4; WS)** **Christian**
Covering the principal news beats for the press; operations of local government and institutions. Supplemented by city assignments.
- 333, 334 Comparative Journalism (2,2; W,S)** **Benson**
Comparative study of contemporary dailies from the standpoint of editorial techniques. Discussion of the editorial and agencies of communication.

- 340 Advertising Campaigns and Media (3; S)** **Sethro**
Steps in planning and preparing an advertising campaign. Each student makes layouts, writes copy, and sets up a budget for campaigns. Open only to majors in the advertising sequence, to business administration students majoring in advertising and marketing, and to commercial art students. Prerequisite, 220 or Marketing 391.
- 341 Advertising Regulation (3; S)** **Sethro**
National, state, and city laws regulating advertising; provisions governing trademarks; rulings of the Federal Trade Commission, Federal Communications Commission, U. S. Post Office, and other official agencies. Open to nonmajors. Prerequisite, 220 (which may be taken concurrently) or Marketing 391.
- 342 Radio Advertising (3; AWS)** **Ryan**
Principles of radio broadcasting as they apply to the advertiser; planning a radio campaign; writing announcements and commercial copy. Regularly open to nonmajors Autumn Quarter; permission required Winter, Spring. Prerequisite, 220.
- 346 Advertising Production (2; A)** **Murton**
Identification and use of physical materials of advertising; production techniques.
- 347 Business Office (2; A)** **Frost**
Organization and promotion of noneditorial departments of publications; management problems.
- 348 Advertising Layout (3; W)** **Frost**
Elements of attention, arrangement of visual elements of display to achieve effective layout—"The advertisement as a picture."
- 349 Advertising Copy Writing (2; W)** **Frost**
A companion course to 348. The wording of the message, proceeding from original strategy to the writing of effective advertising copy; includes retail copy.
- 350 Advertising Laboratory (2; W)** **Murton**
Supervision of student efforts in layout, copy fitting, and production specifications.
- 351 Advertising Selling Techniques (1; A)** **Frost**
Elements of salesmanship applied to advertising space and media selling.
- 352 Advertising Selling Laboratory (2, maximum 4; WS)** **Staff**
Experience selling space for the *University Daily* and other campus publications.
- 355 Advanced Advertising Copy Writing (3; S)** **Frost**
Refinements of basic copy writing, with attention to direct-mail and retail systems.
- 356 Advanced Advertising Layout (2; S)** **Murton**
Professional standards applied from rough visuals through finished advertising layouts.
- 360 Techniques of Public Relations (5; W)** **Christian**
The use of surveys, publicity, advertising, and special events in public relations. Open to nonmajors. Prerequisites, 303 and permission.
- 370 Display Advertising (3; W)** **Frost**
Layouts and copy writing. Open only to majors in communications, to business administration students majoring in advertising and marketing, and to commercial art students. Prerequisite, 220 or Marketing 391.
- 371 Advertising Typography (3; S)** **Sethro**
Type laboratory course in display advertising and campaign planning and production. Prerequisite, 370.
- 375J Principles of High School Journalism (3; S)** **Brier**
Offered jointly with the College of Education. For teachers in high schools and junior colleges, and education students taking teaching majors or minors in journalism. Prerequisites, 200 and 201.
- 390 Magazine Production (2, maximum 12; AWS)** **Brier**
Practical work on the editorial staff of the *University of Washington Columns*. Planning, writing, and production of the magazine throughout the academic year. Open to nonmajors. Prerequisite, permission.
- 400, 401 Editorial Problems (2,2; A,W)** **Everest**
Group discussion of current problems in communications; guest lecturers. Prerequisite, completion of third-year journalism.
- 420 Advanced Radio News (3, maximum 6; AWS)** **Ryan**
Editing and writing news for radio under actual broadcasting conditions. Does not include newscasting. Open to nonmajors. Prerequisites, 320 and permission.
- 428 History of Journalism (3; S)** **Jermian**
Growth and development of the press, with emphasis on journalism in the United States. Open to nonmajors.
- 440 Publishing Problems (2; A)** **Frost**
Group discussion of current problems in advertising and management; guest lecturers; field trips. Prerequisite, completion of third-year journalism advertising and management sequence.
- 452 Advertising Selling Laboratory (2; A)** **Staff**
Experience in advertising office management and selling for the *University Daily* and other campus publications.
- 460 Problems in Public Relations (2; S)** **Christian**
Each student does a case study of the public relations of some local business or agency and makes a report. Open to nonmajors. Prerequisites, 303 and permission.

- 481 Psychological Warfare (5)*
- 473, 474-475 Short Story Writing (5,5-5; A,W-S)** **Mansfield**
Professional fiction writing for national magazines. Open only to upper-division students with permission of instructor. Must be taken in sequence, starting in Autumn Quarter. Open to nonmajors.
- 480 Propaganda (5; W)** **McKenzie**
Propaganda as a social and political force; development of propaganda and techniques in nineteenth and twentieth centuries. Emphasis on post-1914 period, and on international propaganda as it affects the United States. Open to nonmajors.
- 498 Problems of Journalism (2-5, maximum 15; AWS)** **Staff**
Research and individual study. Prerequisite, permission.

COURSES FOR GRADUATES ONLY

- 525, 526, 527 Seminar in Short Story Writing (2-4,2-4,2-4; AWS)** **Mansfield**
Professional fiction writing for national magazines. May be repeated for credit at discretion of the Division. Open to nonmajors. Prerequisite, permission of instructor. Limited to eight students.
- 580 Seminar in Propaganda (5; S)** **McKenzie**
The crystallization of public opinion and of propaganda techniques. Open to nonmajors. Prerequisites, 480 and permission.
- 600 Research (3-5 each quarter; AWS)** **Staff**

RADIO-TELEVISION

Director: **EDWIN H. ADAMS, Radio Hall**

The Division of Radio-Television offers professional training in the field of broadcasting. This training is aimed at meeting the needs of those who hope to find careers in the broadcasting industry, those who will make some use of radio, either in their business life or in some community service activity, and those who want to use radio and television service more intelligently.

Because of the nature of American broadcasting, radio-television majors are not divided into program (or "editorial") and advertising groups. Instead, the major curriculum for all students represents an integration of programming and advertising.

BACHELOR OF ARTS

Students who plan careers in the broadcasting industry concentrate their professional courses in the junior and senior years. During the first two years their attention is directed toward fulfilling the College group requirements and toward other basic courses which will provide as broad as possible a background of knowledge, on which any medium of communications draws constantly for its materials. In addition, the following courses are required and may be taken during the first two years:

	CREDITS		CREDITS
Radio-Television 200	5	Journ. 220 Fundamentals of	3
Radio-Television 205	3	Advertising	3
Drama 251, 252 Acting	6	Music 107 Survey of Music	5
Engl. 101, 102 Composition	6	Speech 110 The Speaking Voice	5
Engl. 328 Dramatic Composition	3	Speech 240 Oral Interpretation	5
Journ. 200 Preliminary News Writing	5	P.E. Activity	6
		R.O.T.C.	12 or 18
			46-64

The following courses are required during the junior and senior years:

Radio-Television 380	3	Music 314 Music in Broadcasting	3
Drama 441, 442, 443 Radio Acting	3	Sociol. 442 Public Opinion	3
and Production	6	Sociol. 443 Mass Communication	3
Drama 444, 445, 446 Radio Writing	9	Speech 260 Radio Speech	3
Journ. 303 Public Relations	3	Speech 361 Advanced Radio Speech	3
Journ. 320 Radio News Writing	3	Speech 462 Radio Production Methods	3
Journ. 342 Radio Advertising	3	Speech 463 Radio Program Building	3
Journ. 480 Propaganda	5		

Additional related courses include Electrical Engineering 310, 311 (Broadcast Transmitter Operation); Journalism 341 (Advertising Regulation), 420 (Advanced Radio News); and Radio-Television 498.

COURSES FOR UNDERGRADUATES

- 200 Introduction to Radio (5; A)** **Adams**
History of broadcasting; organization and regulation of the radio industry; commercial aspects; social, educational, and cultural responsibilities of radio.

- 205 Survey of Television (3; AW)** **Ryan**
History of television; possibilities and limitations; organization and operations of the television station; commercial aspects; elements of programming.
- 380 Station Organization (3; S)** **Ryan**
Functions and interrelationship of departments of the radio station. Should be taken in the last quarter of the senior year. For majors only. Prerequisite, permission.
- 498 Problems of Radio and Television (2-5, maximum 15; AWS)** **Adams**
Special projects and individual study.

DENTAL HYGIENE, PREPROFESSIONAL PROGRAM

Adviser: 121 Education Hall

The two-year preidental hygiene program is designed to prepare women students for admission to the major in dental hygiene in the School of Dentistry (see page 200).

In this program, the applicant must complete 90 quarter credits in the College of Arts and Sciences, together with the required quarters of physical education activity. Courses must include: English 101, 102, 103 (Composition); Biology 101J-102J (General); Chemistry 101, 102 (General); Physical Education 110 (Health Education); Physics 170 (Physics for Nurses) or 100 (Survey); Psychology 100 (General); and Speech 120 (Introduction to Public Speaking). Of the remaining 44 elective credits, a minimum of 10 credits must be taken in the humanities and a minimum of 20 credits in the social sciences, which must include Sociology 110 (General). The student should choose elective subjects which are of greatest interest and give the broadest educational background for dental hygiene.

Chemistry 230 (Organic), a requirement in the dental hygiene program, may be taken during these two years provided the elective requirement has been fulfilled.

If a student is in the General Education program, she must have in her curriculum Chemistry 101, 102 (General) and Speech 120 (Introduction to Public Speaking).

DENTISTRY, PREPROFESSIONAL PROGRAM

Adviser: VICTORIAN SIVERTZ, 121 Education Hall

This program is designed for students in the College of Arts and Sciences who plan to enter a dental school when their preprofessional training is completed.

The minimum requirement for admission to most dental schools is two years of college training (90 academic quarter credits), with a grade-point average of 2.0. The two-year course should include one year each of biology, English, inorganic chemistry, and physics; 6 credits in organic chemistry; and the required quarters of physical education activity and/or military training.

Students who are interested in attending a particular dental school should choose electives to meet the requirements of that school.

Students who do not enter dental school by the end of the second year must select a departmental major. (Also, see Basic Medical Science, page 59.)

DRAMA

Director: GLENN HUGHES, 410 Denny Hall

Professors: J. A. Conway, G. Hughes.

Associate Professor: D. Harrington.

Assistant Professor: R. S. Gray.

Instructors: K. M. Carr, A. B. Davis, F. Fonfara, A. M. Haaga, W. C. Lounsbury.

Acting Instructors: V. S. Galstaun, G. Siks.

Theater Assistants: T. B. Bell, C. Rotter, A. S. Valentinetti.

The School of Drama offers courses leading to a bachelor's degree. In addition, it offers first and second teaching areas and a basic academic field for students in the College of Education (see page 202).

BACHELOR OF ARTS

In this elective curriculum, 63 credits are required. Courses must include: Drama 101, 102, 146, 147, 148, 251, 252, 253, 403, 404, 405, 406, 414, 421 or 423, 422, 427, 428, 429, 451, 452, 453, 481 (or 482 or 483), and 497; and 25 credits in literature, including English 264, 265 (Literary Backgrounds), 370 (Shakespeare), and either 371 (Shakespeare) or 372 (Shakespeare).

The Department requires senior students to take a comprehensive examination in drama.

COURSES FOR UNDERGRADUATES

- 101, 102, 103 Introduction to the Theater (2,2,2; A,W,S)** Hughes
Significant aspects of the modern theater.
- 146, 147, 148 Theater Speech (3,3,3; A,W,S)** Gray, Carr
Prerequisites, 146 for 147; 147 for 148.
- 251, 252, 253 Acting (3,3,3; A,W,S)** Harrington, Gray, Carr
Theory and practice of pantomime, improvisation, and characterization. Prerequisites, 148 for 251; 251 for 252; 252 for 253.
- 307, 308, 309 Puppetry (2,2,2; A,W,S)** Valentinetti
Practical work in constructing and manipulating simple hand and string puppets which may be used in nursery, elementary, or secondary teaching, therapy, recreation, play guidance, and creative dramatics. With permission, may be repeated for credit.
- 403 Scene Construction (3; AWS)** Lounsbury
Principles and actual construction of stage scenery and properties.
- 404 Scene Design (3; AWS)** Conway
Prerequisite, 403.
- 405 Theatrical Costume Design and Construction (3; AWS)** Fonfara, Rottor
- 406 Make-up (3; AWS)** Davis
- 411, 412, 413 Playwriting (3,3,3; A,W,S)** Hughes
A professional course. Prerequisites, English 328, 329, or 330, and permission.
- 414 Stage Lighting (3; AWS)** Conway, Lounsbury
A nontechnical survey course.
- 415 Advanced Stage Lighting (3; WS)** Staff
- 417, 418, 419 Advanced Theater Workshop (2,2,2; A,W,S)** Staff
Prerequisite, either 403, 404, 405, 406, 414, or 415, or permission.
- 421, 422, 423 Advanced Acting (3,3,3; A,W,S)** Harrington
Group acting. Styles in acting: tragedy, comedy, period, modern. Prerequisites, 251, 252, and 253. With permission, may be repeated for credit.
- 427, 428, 429 History of the Theater (2,2,2; A,W,S)** Conway
The Orient, Europe, and America. The physical playhouse, methods of production, great actors, stage machinery, scenery, lighting, costumes, and masks.
- 434, 435, 436 Children's Theater (3,3,3; A,W,S)**
Theory and methods. Participation in productions, with emphasis on directing. Prerequisite, 253.
- 437, 438, 439 Creative Dramatics with Children (3,3,3; AWS,WS,S)** Siks, Staff
Practical training for work with children's groups. Emphasis on development of the child intellectually, emotionally, physically, and socially, through story and impromptu dramatizations. Lectures, reading, laboratory, and field observation.
- 441, 442, 443 Radio Acting and Production (2,2,2; A,W,S)** Bell
Prerequisites, 251 and 252.
- 444, 445, 446 Radio Writing (3,3,3; A,W,S)** Bell
Prerequisite, two quarters of advanced English composition or one quarter of playwriting.
- 451, 452, 453 Representative Plays (3,3,3; A,W,S)** Hughes
Great playwrights of all important periods. Theories of the drama.
- 481, 482, 483 Directing (3,3,3; A,W,S)** Harrington
Prerequisites, 251, 252, 253, 421 or 423, and 422.
- 497 Theater Organization and Management (2; S)** Hughes
Personnel, box-office methods, advertising, production costs, royalties, and executive policies.
- 499 Undergraduate Research (1-5, maximum 15; AWS)** Staff

COURSES FOR GRADUATES ONLY

- 601, 602, 603 Research (5,5,5; A,W,S)** Hughes
Prerequisite, permission.

Thesis

ECONOMICS

Executive Officer: J. RICHARD HUBER, 331 Savery Hall

Professors: J. K. Hall, W. S. Hopkins, J. R. Huber, V. A. Mund.

Professor Emeritus: M. M. Skinner.

Associate Professors: H. T. Buechel, E. C. Hald, D. A. Worcester, Jr.

Assistant Professors: P. W. Cartwright, J. Crutchfield, J. B. Gillingham, M. D. Glickfeld, D. F. Gordon, R. J. Lampman, K. M. McCaffree, D. C. North, W. Pettibone, C. S. Sheldon II.

The Department of Economics offers courses leading to the degrees of Bachelor of Arts, Master of Arts, and Doctor of Philosophy.

For undergraduate students, the Department offers two elective curricula leading to bachelor's degrees: a four-year general curriculum for students who want a broad economics background with opportunity to develop interests in other social sciences or in related business fields, and a five-year specialized curriculum for students who plan to enter government service as professional economists or statisticians.

Within both curricula, the fields of specialization are: economic theory; money, banking, and cycles; government regulation, public utilities, and transportation; labor economics; public finance and taxation; economic history; international trade; and national economies.

In addition, the Department offers first and second teaching areas for students in the College of Education (see page 202).

BACHELOR OF ARTS

GENERAL CURRICULUM. Economics 200, 201, 301, and 302, plus 25 additional credits to be selected from four fields other than the field of economic theory, are required. Of the 25 credits, 10 must be taken in one of the four fields and 5 in each of the other three fields. Other requirements are: Accounting 150 (Fundamentals), 255 (Basic Accounting Analysis); and one of the following courses: Business Statistics 201 (Statistical Analysis), Mathematics 281 (Elements of Statistical Method), Psychology 301 (Statistical Methods), or Sociology 223 (Social Statistics). Students who specialize in international trade must take Foreign Trade 310 (Foreign Trade Practices).

CURRICULUM FOR ECONOMISTS IN GOVERNMENT SERVICE. The adviser for students in this curriculum is James K. Hall, 318 Savery Hall. In cooperation with the College of Business Administration and the Departments of Political Science, Psychology, and Sociology, the Department of Economics provides this program to meet the growing need for trained men and women in government service.

To remain in the curriculum, students must maintain a 3.0 grade-point average. During the first two years, they complete Economics 200, 201; Accounting 150, 151 (Fundamentals), 255 (Basic Accounting Analysis); History 241 (Survey of the United States); Political Science 100 (Survey); Psychology 100 (General); Sociology 110 or 310 (General); and Speech 120 (Introduction to Public Speaking).

At the beginning of the third year, each student chooses a field of specialization. In addition to courses in a special field, students must complete during this year Economics 301, 302, 320, 330, 340, 350, 370, 390, and 432; Political Science 376 (State and Local Government and Administration), 460 (Constitutional Law), 471 (Administrative Management), and 472 (Administrative Law).

When the fourth year of work is completed, the student in this curriculum receives his bachelor's degree.

In the fifth year, the student's program is planned to fit his particular objective and needs. Whenever possible, one quarter is spent in internship with a government agency. A certificate is awarded at the end of the fifth year. Students may apply the work of the fifth year toward a master's degree by fulfilling the requirements for that degree.

ADVANCED DEGREES

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School (see page 261). Requirements for both advanced degrees in economics include work in some of these fields of specialization: economic theory and the history of economic thought; money, banking, and cycles; government regulation, public utilities, and transportation (students may be permitted to concentrate their

work in two of these three sub-fields); labor economics; public finance and taxation; economic history; international trade; and national economies.

MASTER OF ARTS. Candidates must complete a program in economic theory and two other fields of economics. Those who take a minor in a related subject must complete a minimum of 12 credits in that subject and a minimum of 15 credits in graduate economics courses. Those who do not take a minor must complete a minimum of 20 credits in graduate economics courses.

The requirement for a minor in economics for a master's degree is 12 credits in advanced economics courses.

DOCTOR OF PHILOSOPHY. Candidates must complete a program in four fields of economics (including the field of economic theory and the history of economic thought) and a minor in another department.

Through the cooperation of the Far Eastern and Russian Institute, a candidate may offer, together with a minor in Far Eastern, a Far Eastern area study program as a substitute for one field. In such a case the fields offered will include three in economics (one of which must be economic theory and the history of economic thought), one joint economics and Far Eastern, and the Far Eastern minor. When this option is allowed, the candidate normally chooses a thesis subject related to his Far Eastern specialty and the thesis is jointly supervised by the Institute and the Department.

Doctoral candidates offering a minor in economics must demonstrate competence in two fields, including economic theory. While normally 30 credits in courses approved for graduate credit will be required, candidates with an adequate background may offer less. In any case a minimum of 15 credits in graduate courses, including 10 credits in economic history, must be offered.

COURSES FOR UNDERGRADUATES

- 160 American Economic History (5; AWS)** **Glickfeld, North**
American economic institutions, their European background and development; the impact of industrialization on the American economy from 1850 to the present.
- 200 Introduction to Economics (5; AWS)** **Staff**
Organization and operation of the American economy; consideration of contemporary economic problems of money, banking, labor, international trade, and employment; and proposals for promoting social welfare. Open to freshmen. Prerequisite to 201 and all upper-division economics courses.
- 201 Principles of Economics (5; AWS)** **Staff**
Operation of the American economy, with special emphasis on prices, wages, production, and distribution of income and wealth; problems of the world economy; alternative economic systems—communism, socialism, fascism, and mixed economies. Prerequisite, 200.
- 211 General Economics (3; AWS)** **Staff**
Condensation of 200. Primarily for engineering and forestry students; other students by permission.
- 212 Current Economic Problems (5; not offered 1952-53)**
- Economic Theory**
- 301 National Income Analysis (5; AWS)** **Cartwright, Crutchfield, Gordon**
Analysis of the determinants of the aggregate level of employment, output, and income of an economy. Prerequisite, 201.
- 302 Intermediate Economics (5; AWS)** **Gordon, Mund, Pettibone, Worcester**
The fundamental concepts and principles of economics. Markets, market price, and the determination of price under monopolistic conditions. The relations of price and cost, income and its functional distribution in capitalistic society. Prerequisite, 201.
- 304 Economics of Consumption (5; not offered 1952-53)**
- 306 Development of Economic Thought (5; W)** **Glickfeld, Gordon, North**
The development of economic doctrines against the background of emerging industrial society. Emphasis upon the impact of the other social sciences and the natural sciences on economic thought.
- 403 Economics of the Firm (5; A)** **Worcester**
Analysis of the price and output behavior of the individual business firm; the allocation of resources under conditions of pure competition, imperfect competition, monopoly, and oligopoly. Prerequisites, 301 and 302.
- 407 Neo-Classical Economics and Its Critics (5; not offered 1952-53)**

Money, Banking, and Cycles

- 320 Money and Banking (5; AWS)** **Crutchfield, Mald, Pettibone**
Nature and functions of money; the banking system, other credit-granting institutions, and the relationship of money and bank deposits to the economy. Prerequisite, 200.

- 421 Money, Credit, and the Economy (5; W)** **Crutchfield**
Supply and use of money, bank deposits, and bank reserves. Relationship of Treasury, Federal Reserve, and commercial bank policies, and the value of money. Factors generating flows of money income. Prerequisites, 301 and 320.

- 422 Economic Cycles (5; AS)** **Hald**
The characteristics of prosperity-depression cycles. Analysis of leading cycle explanations and proposed cycle remedies; discussion of current problems. Prerequisites, 301 and 320.

- 423 Monetary, Banking, and Cycle Policies (5; S)** **Hald**
A critical review of past and current proposals to stabilize the value of the dollar and mitigate economic fluctuations. Prerequisite, 421 or 422.

Government Regulation, Public Utilities, and Transportation

- 330 Government and Business (5; S)** **Mund**
The development in the United States of public policy with regard to regulation of business activity. Federal antitrust legislation and its judicial interpretation. Basing-point and zone-delivered pricing systems. The policy of preserving competition as a means of regulating private business. Prerequisite, 200.

- 336 Economics of Transportation I (5; A)** **Sheldon**
Domestic and international transport: economic principles and development; public policy and special problems. Prerequisite, 200.

- 432, 433 Economics of Public Utilities (5,5; S,W)** **Hall**
432: economic, legislative, and administrative problems in the regulation of public utility rates and service standards. The holding company and its control. Prerequisite, 200. 433: public utility costs, pricing policies, rates, plant utilization, and competition. Prerequisite, 201.

- 437 Economics of Transportation II (5; W)** **Sheldon**
Economic problems and trends in domestic and international transport, including effects on regional development. Prerequisites, 201 and 336, or Transportation 301.

Labor Economics

- 340 Labor in the Economy (5; AWS)** **Buechel, Gillingham, Lampman, McCaffree**
Employment, unemployment, wages, working conditions, trade-unionism, collective bargaining, labor-management relations, and public policy. Prerequisite, 200 or 211.

- 345 Social Security (5; A)** **Lampman**
Problems arising from economic hazards confronting individuals, including old age, unemployment, illness, and disability. Study of social institutions designed to meet these problems, with emphasis on their economic effects. Prerequisite, 200.

- 441 Union-Management Relations (5; AWS)** **Gillingham, Hopkins**
Collective-bargaining process, with special reference to economic implications. Prerequisite, 340; 201 recommended.

- 442 American Labor History (5; S)** **Gillingham**
Analysis in historical perspective of the American labor movement, its organizational structure, ideology, policy, and practices. Prerequisite, 340.

- 443 Advanced Labor Economics (5; W)** **McCaffree**
Analysis of factors which determine wage rates and employment levels in the firm, industry, and economy. Special emphasis upon the union in the labor market. Prerequisites, 302 and 340; 301 recommended.

- 446 Labor Problems Abroad (5; W)** **Glickfeld**
History and analysis of labor problems in foreign countries. Prerequisite, 340.

Public Finance and Taxation

- 350 Public Finance and Taxation I (5; AWS)** **Hall, Lampman**
Principles of taxation, tax forms and practices, public expenditure, public credit, and public budgetary policy. Prerequisite, 200.

- 451 Public Finance and Taxation II (5; W)** **Hall, Lampman**
Fiscal policy, tax systems, incidence and effects of taxation, and management of the public credit. Prerequisites, 301 and 350.

Economic History

- 461 Economic History of Europe (5; A)** **Glickfeld**
Origins of contemporary European economic institutions; emergence of the capitalistic system; problems of nineteenth-century European economic organization; international conflict, the growth of new systems, and patterns of European economic organization. Prerequisite, 200.

- 462 Development of American Commercial Capitalism (5; W)** **North**
Analysis of the origins and significance of the American economic structure before the Civil War. Prerequisite, 200.

- 463 Development of American Industrial Capitalism (5; S)** **North**
Structural changes and trends in the American economy since the Civil War. Prerequisite, 200.

International Trade

- 370 Economic Principles of Foreign Trade (5; AWS)** **Pettibone, Sheldon**
Role of trade in world economic development, standards of living, and stability. Principles of trade and foreign exchange. Analysis of tariffs and other commercial policies. International organizations dealing with trade, foreign exchange, and foreign investment. Prerequisite, 200.

- 373 Foreign Trade of Latin America (5; not offered 1952-53)**
- 471 International Economic Problems (5; A)** **Huber, Pettibone**
Analysis of the European Recovery Program. Problems involved in state trading, cartels, commodity agreements, and foreign investment. Industrialization of undeveloped areas. American economic foreign policy. Prerequisites, 302 and 370.
- 472 International Monetary Policies (5; S)** **Huber**
Exchange rates and international payments. Alternative policies, including international gold standard, exchange control, currency blocs, and multilateral clearing systems. Problems growing out of World War II. International Monetary Fund. Prerequisites, 320 and 370.
- National Economies**
- 390 Comparative Economic Systems (5; S)** **Worcester**
The American, British, and Soviet economic systems in practice. How these economic systems deal with basic economic problems. Some attention given to Marxian doctrine and to the general problems involved in economic planning. Prerequisites, 200, and 15 additional credits in social science.
- 492 Economic Problems of the Far East (5; S)** **Staff**
Far Eastern countries exclusive of China. Problems of reconstruction, industrialization, commercial policies, exchange and finance, transportation, agriculture, labor, economic planning, and national incomes and distribution. Prerequisites, 200, and 15 additional credits in social science and/or Far Eastern studies.
- 493 Economic Problems of China (5; A)** **Staff**
Problems of reconstruction, industrialization, commercial policies, exchange and finance, transportation, agriculture, labor, economic planning, and national incomes and distribution. Prerequisites, 200, and 15 additional credits in social science and/or Far Eastern studies.
- 495 The Economy of Soviet Russia (5; W)** **Staff**
Analytical survey of the operating principles, organization, and performance of the Soviet economy under the five-year plans, with attention to resources, population and labor force, agriculture, industry, domestic and foreign trade, and composition and distribution of the national product. Prerequisites, 200, and 15 additional credits in social science and/or Far Eastern and Slavic studies.
- 499 Undergraduate Research (3, maximum 6; AWS)** **Staff**
Does not carry graduate credit. Prerequisite, permission.

COURSES FOR GRADUATES ONLY

Economic Theory

- 505 Value and Distribution Theory (5; W)** **Mund**
Systematic review of the theories of value, price, costs, and supply. The capital concept. Income and its functional distribution. Prerequisites, 301 and 302, or permission.
- 506 Income and Employment Theory (5; AS)** **Cartwright**
Theories of employment, output, and income of the Keynesian and neo-Keynesian groups. Prerequisite, 505 or permission.
- 510 Contemporary Developments in Income and Employment Theory (5; offered alternate years, not offered 1952-53)**
- 511 Mathematical Relationships in Economic Theory (5; W)** **Gordon**
Mathematical analysis applied to economic problems. Consideration given to indifference curves, elasticity of demand, the description of economic equilibria, and problems relating to rates of change, time lags, and related phenomena. Prerequisites, 403 and 506, or permission.
- 512 Advanced Theory of the Firm (5; A)** **Worcester**
The problems of profit maximization in all major types of market interdependence under both static and dynamic conditions. Prerequisites, 403 and 505, or permission.
- 513 Capital and Distribution Theory (5; not offered 1952-53)**
- 515 History of Economic Thought (5; S)** **Gordon, North**
Prerequisite, permission.

Money, Banking, and Cycles

- 521 Monetary Theory (5; S)** **Crutchfield**
Recent developments in monetary theory. Prerequisite, permission.
- 522 Cycle Theory (5; W)** **Hald**
Leading theories of economic cycles, with emphasis upon recent developments. Prerequisite, permission.

Government Regulation, Public Utilities, and Transportation

- 530 Public Control of Industry (5; W)** **Mund**
Public policy in the United States on industrial combinations, pricing practices, and monopoly control. Recent issues in the public control of business. Prerequisite, permission.
- 532 Public Utilities (5; S)** **Hall**
Critical consideration of recent developments in the study of public utilities. Special emphasis on electrical utilities and public power projects of federal and local governments. Prerequisite, permission.
- 536 Transportation (5; S)** **Sheldon**
Economic aspects of current transportation problems. Prerequisite, permission.

Labor Economics

- 541 **Theory of Trade-Unionism (5; A)** Gillingham
Prerequisite, permission.
- 542 **Labor Economics (5; W)** Hopkins
Prerequisite, permission.
- 543 **Labor Law (5; S)** Lampman
Selected problems of governmental regulation of the labor-management relationship. Prerequisite, permission.

Public Finance and Taxation

- 550 **Public Finance (5; S)** Hall
Effects of fiscal policy on income and employment; limitations of fiscal policy; and review of current literature. Prerequisite, permission.

Economic History

- 561 **European Economic History (5; S)** Glickfold
Emphasis on the period since 1750. Prerequisite, permission.
- 562 **American Economic History (5; offered alternate years, not offered 1952-53)**

International Trade

- 571 **International Trade Theory (5; W)** Huber
Theories of international trade, prices, and payments. Modern developments in theory of national income and international trade. Theory of international capital movements. Prerequisite, permission.
- 572 **International Economic Policies (5; not offered 1952-53)**

National Economies

- 595 **Soviet Economics (5; S)** Staff
Analysis of problems of development, optimum resource allocation, and planning in the Soviet Union. Prerequisite, permission.
- 600 **Research (*; AWS)** Staff
Prerequisite, permission.
- Thesis (*; AWS)** Staff

EDUCATION, PREPROFESSIONAL PROGRAM

Freshman students who expect to teach, and who either have not met all the requirements for admission to the College of Education (see page 202) or have not decided which subjects they intend to teach, should register as pre-education students in the College of Arts and Sciences. Students in this category follow the regular course of the College of Education (in addition to making up deficiencies, if necessary) and at some time during the year they confer with advisers in that college. In the conferences, students are advised on procedures for gaining admission to the College of Education and are given help in selecting courses and suitable combinations of teaching subjects.

ENGLISH

Executive Officer: ROBERT B. HEILMAN, 115 Parrington Hall

Professors: R. B. Blankenship, E. H. Eby, D. D. Griffith, J. B. Harrison, R. B. Heilman, J. S. Lawson, P. G. Perrin, T. Roethke, B. Stirling, E. A. Taylor, S. K. Winther.

Professors Emeriti: A. R. Benham, E. G. Cox.

Associate Professors: R. P. Adams, E. E. Bostetter, H. H. Burns, D. M. Cornu, J. Mathews, A. M. Pellegrini, A. Stein, L. Zillman.

Assistant Professors: S. F. Anderson, M. L. Beal, M. Brown, J. Burgess, W. Burns, A. L. Colton, M. Davis, D. Emery, G. Ethel, F. Gould, M. L. Guberlet, J. Hall, M. Harris, E. L. Hart, A. Hilen, H. Kaufman, B. M. Kuhn, F. McKinlay, M. J. Nix, H. Person, G. Redford, P. G. Trueblood, M. C. Walters, L. S. Willis, E. M. Yaggy.

Instructors: M. Duckett, F. B. Huston, S. N. Mark, M. L. Mason, W. L. Phillips, V. K. Rivenburgh, B. T. Stocks, B. Thorpe.

Acting Instructors: J. Firebaugh, W. Lamont, L. Rabel, W. Stevens.

The Department of English offers courses leading to the degrees of Bachelor of Arts, Master of Arts, and Doctor of Philosophy.

For undergraduate students, the Department provides two elective curricula leading to the bachelor's degree, one in composition and advanced writing, the other in language and literature. In addition, it provides a first teaching area, two second teaching areas, and a basic academic field for students in the College of Education (see page 202).

The first-year composition courses, English 101, 102, and 103, are College requirements and may not be counted toward a major in English. English 101 or its equivalent is a prerequisite for all courses except 267, 269, 272, and 273, which are especially recommended for students majoring in other fields.

BACHELOR OF ARTS

CURRICULUM IN ADVANCED WRITING. At least 50 credits in English are required. Courses must include: English 258; 264 or 370; 377 or 374; 448 or 449; one course from 404, 406, and 466; 6 credits from the sequences of 251, 252, 253; 261, 262, 263; 328, 329, 330; and 277, 278, 279; and 15 credits in advanced writing courses numbered above 300, 10 of these in consecutive courses. The remaining credits may be obtained in courses in advanced writing, literature, and related fields.

CURRICULUM IN LITERATURE. At least 50 credits in English are required. Courses must include: English 257 or 258; 351; 370; one course from 344, 345, 367, 368, and 369; one course from 374, 375, 377, 378, and 379; one course from 361, 362, and 363; and 10 credits in courses which continue or are closely related in period or subject matter to two of those already chosen. The remaining credits may be obtained in upper-division courses in literature and advanced writing, and in courses in foreign literature in translation offered by other language departments.

ADVANCED DEGREES

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School (see page 261). Candidates for advanced degrees in English must have the equivalent of an undergraduate major in English.

MASTER OF ARTS. Candidates must complete a program of 37 to 40 credits, including 10 credits in one period or type of literature. Those who wish to take a minor may include in the total credit requirements a maximum of 10 credits in a related field. Courses required for each major are: literary history, English 505, 507, and either 509 or 547; literary criticism, English 505, 507, 508, and 509; rhetoric, English 505, 509, 547, and 530 or equivalent; language, English 505, 530, and 10 credits in Old or Middle English; advanced writing, English 505 or 507, 509, and 10 credits in advanced writing. Candidates majoring in advanced writing may present an original work in imaginative or factual writing in lieu of a thesis.

The requirement for a minor in English for a master's degree is 50 credits in undergraduate and graduate work combined; at least 5 of these must be in graduate courses, and at least 10 must be earned in residence.

DOCTOR OF PHILOSOPHY. Candidates must take an examination in one language before completing 45 credits, and in the other language not later than three months before the general examination. In addition, candidates must demonstrate a reading knowledge of Latin if that language is needed in their specialization. These language requirements are to be supplemented by a familiarity with the classics of ancient and modern languages.

A minimum of 90 credits must be completed before the general examination. Courses required for each major are: literary history, English 505, 507, either 508 or 509, 530, and 531; literary criticism, English 505, 507, 508, 509, 530, and 531; rhetoric, English 505, 507, 509, 530, 547, and 553; language, English 505, 530, 531, 532, 10 credits in one field of language study, and 10 credits in linguistics in one language other than English. Advanced writing may not be used as a major subject, but candidates are allowed 10 credits in advanced writing and with permission may petition for 10 additional credits.

A minor or supporting courses may be taken either in English or in a related field. A maximum of 20 credits may be taken in courses given by other departments.

The candidate must have the subject of his dissertation approved by the Graduate Studies Committee of the Department before beginning work on it.

The general examination includes an oral examination and three days of written examinations on (1) Chaucer, Shakespeare, and Milton (four to six hours); (2) a type of literature—drama, fiction, or essay (four to six hours); and (3) a choice of two of the following three groups (two to three hours each): six major figures of English literature, 1550 to 1800, selected by the student; six major figures of English literature, 1800 to the present, selected by the student; and six major figures of American literature selected by the student.

The oral examination consists of questions based on (1) the written examination and related topics; and (2) a 5,000-word critical essay in the candidate's field of specialization, which is to be submitted in the first three weeks of the quarter in which he takes the examination. The essay must be a critical evaluation of an assigned literary work in the candidate's field; any approach or technique, critical or scholarly, may be used, but a reasoned judgment is required. It will be read before the oral examination by all members of the examining committee and will be evaluated for its style and organization as well as its content.

The candidate should not rely entirely on formal course work in preparation for this examination, but should do a considerable amount of preparation by private study.

Courses leading to the degrees of Master of Arts and Doctor of Philosophy with specialization in general and comparative literature are offered through the General and Comparative Literature program (see page 93).

COURSES FOR UNDERGRADUATES

- | | |
|---|--|
| 50 Elementary Composition (0; AWS) | Lawson |
| For students who fail in entrance tests for 101. | |
| 101, 102, 103 Composition (3,3,3; AWS,AWS,AWS) | Lawson |
| Fundamentals of effective exposition; collecting, organizing, and evaluating materials for writing; reading contemporary writings for meaning and form. | |
| 150 English for Foreign Students (3; AWS) | Rabel |
| 251, 252, 253 Factual Writing (3,3,3; AW,AWS,A) | Staff |
| 251: biographical and informational writing; 252: opinion writing; 253: scholarly and technical writing. Prerequisites, 101, 102, and 103, or equivalent. | |
| 257 Introduction to Poetry (5; AWS) | Zillman |
| Poetry as an art; its relationship to other arts and to the creative mind. No verse writing required. | |
| 258 Introduction to Fiction (5; AWS) | Staff |
| Analysis of short stories and novels. | |
| 261, 262, 263 Verso Writing (5,5,5; A,W,S) | Roethke |
| Prerequisites, 101, 102, and 103. | |
| 264, 265, 266 Literary Backgrounds (5,5,5; AWS,AWS,AWS) | Staff |
| Content, literary forms, and historical relations of important English classics. | |
| 267, 269 Survey of American Literature (3,3; AWS,AWS) | Davis, Hilen, Phillips |
| Not open for credit to students who have taken or are taking 361, 362, or 363. | |
| 272, 273 Introduction to Modern Literature (3,3; AWS,AWS) | Hall |
| Essays, poetry, novels, and plays. Not open for credit to students who are taking or have taken 404, 406, or 466. | |
| 277, 278 Narrative Writing (3,3; AWS,AWS) | Staff |
| Prerequisites, 101, 102, and 103, or equivalent. | |
| 301 The Bible as Literature (5; AWS) | Trueblood |
| 303 Advanced English for Foreign Students (3; AWS) | Rabel |
| 320 Modern Poetry (5; S) | Zillman |
| Backgrounds and tendencies of the period 1900 to 1920. | |
| 328, 329 Dramatic Composition (3,3; A,W) | Redford |
| Experimental creative work. Prerequisites, 101, 102, and 103, or equivalent. | |
| 344, 345 Eighteenth-Century English (5,5; AWS,S) | Cornu, Hart |
| 344: Swift, Pope, Defoe, Addison, and Steele; 345: Doctor Johnson and his circle; the preromantics. | |
| 350, 351, 352 Old and Middle English Literature (5,5,5; A,AWS,S) | Ethel, Griffith, Kaufman, Porson |
| 350: Old English literature in translation; 351: Chaucer and his contemporaries; 352: romances and folk literature. | |
| 353, 354 English Literature: 1476-1642 (5,5; A,W) | Adams |
| 353: the Renaissance; 354: non-Shakespearean Elizabethan drama. | |
| 361, 362, 363 American Literature (5,5,5; WS,AWS,AWS) | Blankenship, H. Burns, Davis, Harrison, Hilen, Phillips |
| 361: to 1830; 362: Emerson, Thoreau, Hawthorne, Melville, and Whitman; 363: Twain, Howells, and James. | |

- 367, 368, 369 **Seventeenth-Century Literature** (5,5,5; A,AWS,S) Stein, Ethel
367: Bacon, Burton, Brown, the Spenserians, the cavalier poets, and the metaphysical poets;
368: Milton; 369: Dryden, Bunyan, and Locke; the dramatists; the lyric poets.
- 370, 371, 372 **Shakespeare** (5,5,5; AWS,WS,AWS) Adams, Kaufman, Pellegrini,
Stirling, Taylor, Willis
370: introduction; 371: comedies and histories; 372: tragedies and romances. Prerequisite,
370 for 371 and/or 372.
- 374, 375, 376 **Late Nineteenth-Century Literature** (5,5,5; AWS,S,S) Brown, Winther
374, 375: poetry; 376: prose.
- 377, 378, 379 **Early Nineteenth-Century Literature** (5,5,5; AWS,WS,S) Bostetter,
Trueblood, Zillman
- 380, 381, 382 **Old English Language** (5,5,5; not offered 1952-53)
- 387 **English Grammar** (3; AWS) Emery
- 388 **Current English Usage** (3; A) Perrin
- 390, 391, 392 **Major Conference** (3,3,3; A,W,S) Staff
- 404 **Modern European Literature** (5; W) Harrison, Hall
- 406 **Modern English Literature** (5; AS) Harrison, Hall
- 410, 411, 412 **Advanced Verse Writing** (5,5,5; A,W,S) Roethke
- 413, 414, 415 **Types of Contemporary Poetry** (5,5,5; A,W,S) Roethke
- 417 **History of the English Language** (5; AWS) Person
Growth and development of the English language from Anglo-Saxon times to the present.
Open to sophomores.
- 424, 425 **Types of Dramatic Literature** (5,5; not offered 1952-53)
- 431, 432 **Advanced Factual Writing** (5,5; A,W) Harris
Work in nonfictional forms, including short biography, historical narrative, and opinion
writing. Prerequisite, permission.
- 437, 438 **Advanced Short Story Writing** (5,5; A,W) Harris, Redford
Prerequisites, 277, 278, and 279, or permission.
- 440, 441 **Social Ideals in Literature** (5,5; W,S) Adams
Model commonwealths; literature and society.
- 447, 448, 449 **The English Novel** (5,5,5; A,WS,S) Heilman, Winther, W. Burns
- 456, 457, 458 **Novel Writing** (5,5,5; A,W,S) Staff
Prerequisites, 277, 278, and 279, or permission.
- 466 **Modern American Literature** (5; AWS) Blankenship, Harrison, Davis, Hall
The beginning of realism; tendencies from 1900 to 1915; contemporary fiction and poetry.
- 484, 485 **Advanced Writing Conference** (3-5,3-5; A,W) Harris, Redford
Revision of manuscripts. Preliminary work on writing projects should be completed before
entrance. Prerequisite, permission.
- 489 **English Prose Style** (5; S) Perrin

COURSES FOR GRADUATES ONLY

- 505 **Graduate English Studies** (5; AW) Stirling
- 507, 508 **Literary Criticism** (5,5; AW,A) Winther, H. Burns
- 509 **Methods of Contemporary Criticism** (5; AS) Bostetter, Mathews, Stein
- 510, 511, 512 **The Renaissance and Spenser** (5,5,5; S,A,W) Adams, Stirling
- 513 **Shakespeare's Dramatic Contemporaries** (5; W) Adams
- 514, 515, 516 **Chaucer** (5,5,5; A,W,S) Staff
- 517, 518, 519 **Shakespeare** (5,5,5; A,W,S) Taylor
- 521, 522, 523 **Seventeenth-Century Literature** (5,5,5; A,W,S) Stein
- 524, 525, 526 **American Literature** (5,5,5; A,W,S) Eby
- 527, 528, 529 **Fifteenth-Century Literature** (5,5,5; not offered 1952-53)
- 530 **The English Language** (5; S) Reed
A historical and descriptive survey.
- 531 **Introductory Reading in Old English** (5; A) Person
- 532 **Advanced Reading in Old English** (5; W) Person
- 533 **Foundations of American English** (3; A) Reed
History and present state of American English.
- 534 **American English Dialectology** (3; W) Reed
Research methods, history, and analysis.
- 538, 539, 540 **Early Nineteenth-Century Literature** (5,5,5; A,W,S) Bostetter
- 541, 542, 543 **Victorian Literature** (5,5,5; A,W,S) Brown, W. Burns, Winther
- 544, 545, 546 **Eighteenth-Century Literature** (5,5,5; A,W,S) Cornu, Hart

547 Rhetoric (5; AS)

548 Twentieth-Century Literature (5; S)

553 Current Rhetorical Theory (5; W)

600 Research (*; AWS)

Thesis (*; AWS)

586 Grad. Writing Conference (5)

Perrin

Hall

Perrin

Staff

Staff

FAR EASTERN AND RUSSIAN INSTITUTE

Director: **GEORGE E. TAYLOR**, 406 Thomson Hall

Professors: W. B. Ballis, H. M. Leppard, F. K. Li, F. H. Michael, N. Poppe, G. E. Taylor, F. G. Williston, K. A. Wittfogel.

Associate Professors: P. Kirchhoff, J. M. Maki, V. Shih, I. Spector, H. Wilhelm.

Visiting Professor: K. C. Hsiao.

Assistant Professors: M. B. Jansen, J. C. Sherman, D. W. Treadgold.

Lecturer: S. E. Lee.

Instructors: E. D. Kastner, S. Spector.

The Far Eastern and Russian Institute integrates graduate and undergraduate instruction and research in Far Eastern and Russian studies at the University, provides adequate library facilities, and cooperates in research with other institutes in America and abroad.

The Institute offers courses in the field of the social sciences. Undergraduate degrees are given through the Department of Far Eastern and Slavic Languages and Literature. Graduate degrees in the social sciences are sponsored by the Institute in cooperation with the Departments of Anthropology, Economics, History, Political Science, and others. In the programs leading to these degrees, graduate students receive an education in the methodology and main aspects of their respective disciplines, combined with a study of the countries of the Far East and the application of their disciplines to the Far East. Joint degrees are described in the curricula announcements of the respective departments.

The Far Eastern and Russian Institute has established three research projects: a Modern Chinese History project, which analyzes Chinese society in transformation from about 1800 to the present; an Inner Asia project, which studies the societies of Mongolia, Tibet, and Turkestan and the Chinese and Russian impact on these societies; and a Russia in Asia project, which studies the tsarist and Soviet development of Asiatic Russia and the Russian and Soviet impact on the Far East.

In each of these projects several faculty members from various disciplines work together in cooperative programs of research. A number of graduate students have the opportunity to participate in the research through special studies of their own and to profit from the advice and criticism of faculty members working on the projects. The Far Eastern and Russian Institute has a limited number of research fellowships which are given to especially qualified graduate students.

The following courses from other departments may be used for credit toward a Far Eastern major: Anthropology 312 (Peoples of Oceania), 314 (Peoples of Central and Northern Asia), 542 (Personality Patterns in Japanese Culture); Art 382, 383, 384 (Eastern Art), 413, 414, 415 (Oriental Ceramic Art); Economics 492 (Economic Problems of the Far East), 493 (Economic Problems of China), 495 (The Economy of Soviet Russia); Geography 303 (Asia), 435 (Southeast Asia), 437 (Japan), 503 (Problems in the Geography of Asia); Philosophy 428 (Chinese Philosophy); Political Science 342 (Comparative Governments of the Far East), 344 (Chinese Government), 414 (Oriental Political Thought), 420 (Foreign Relations of the Soviet Union), 429 (International Relations in the Far East), 432 (American Foreign Policy in the Far East), 441 (Political Institutions of the Soviet Union); and Foreign Trade 450 (Far Eastern Foreign Trade Problems).

COURSES FOR UNDERGRADUATES

110 Survey, Problems of the Pacific (5; AWS)

Michael, Taylor, Williston
Social, economic, and political problems of China, Japan, Korea, the Philippines, Indonesia, and Southeast Asia. Includes the development of Russia as an Asiatic power as well as the role of the Western powers in the Far East. For freshmen and sophomores; juniors and seniors should take 310 rather than 110 if possible.

- 240 Chinese Civilization (5; S)** **Shih**
China's material civilization, including fine arts, literature, religion, and thought in relation to the general development of Chinese society.
- 242 Korean Civilization (3; A)** **Williston**
Korea's material civilization, including fine arts, literature, religion, and thought in relation to the general development of Korean society.
- 243 Russian Civilization (5; AW)** **Spector**
Russia's material civilization, including fine arts, literature, religion, and thought in relation to the general development of Russian society.
- 290 History of China (5; A)** **Williston**
Chinese history from earliest times to the present, with emphasis on the development of Chinese society.
- 292 History of Korea (5; W)** **Williston**
Korean history from earliest times to the present, with emphasis on the modern period.
- 296J History of Japanese Civilization (5; W)** **Jansen, Staff**
A survey of political, economic, social, intellectual, literary, and artistic developments in Japan from earliest times to the present. Offered jointly with the Department of History. Not open to students who have taken 241 or 291.
- 310 Problems of the Pacific (5; AWS)** **Michael, Taylor, Williston**
Social, economic, and political problems of China, Japan, Korea, the Philippines, Indonesia, and Southeast Asia. Includes the development of Russia as an Asiatic power as well as the role of the Western powers in the Far East. Juniors and seniors are advised to take this course in place of 110 if possible. Credit cannot be received for both 310 and 110.
- 313 Civilization of Southeastern Asia (5; not offered 1952-53)**
- 323 Survey of the Soviet Union (5; A)** **Treadgold**
A survey of the social, economic, and political problems, past and present, of the U.S.S.R. Primarily for nonspecialists.
- 335J Japanese Foreign Policy in Asia (3; S)** **Maki**
Analysis of modern Japanese expansion in Asia; Japanese political, diplomatic, and economic impact on Asia; the "Greater East Asia Co-Prosperity Sphere." Offered jointly with the Department of Political Science. Prerequisite, Political Science 100 or permission.
- 345J Japanese Government (3; W)** **Maki**
Premodern Japanese government; characteristics of Japanese government, 1868-1945; governmental changes since 1945. Offered jointly with the Department of Political Science. Prerequisite, Political Science 100.
- 422J Early Russian History (5; W)** **Treadgold**
Survey of the development of Russia from the earliest times to the reign of Nicholas II (1894-1917). Offered jointly with the Department of History.
- 423J Recent Russian History (5; S)** **Treadgold**
Survey of Russia and the U.S.S.R. from the reign of Nicholas II (1894-1917) to the present. Offered jointly with the Department of History.
- 424J Russian Revolutionary Movement (3; W)** **Treadgold**
Intellectual and political aspects of Russian opposition to tsarism from 1825 to 1917. Offered jointly with the Department of History.
- 430 Survey of Mongol Culture (3; A)** **Poppe**
Mongolian nomadic culture and tribal organization in ancient times; present state and cultural life of Mongolia.
- 443 Chinese Social Institutions (5; W)** **Hsiao**
- 444 Chinese History: Earliest Times to 221 B.C. (5; A)** **Wilhelm**
History of pre-imperial China. Prerequisite, 290 or upper-division standing.
- 445 Chinese History: 221 B.C. to 906 A.D. (5; W)** **Wilhelm**
History of the development of the imperial Chinese state. Prerequisite, 290, 444, or upper-division standing.
- 446 Chinese History: 906 A.D. to 1840 A.D. (5; S)** **Wilhelm**
History of the Wu Tai, Sung, Yuan, Ming, and early Ch'ing periods. Prerequisite, 390, 444, or upper-division standing.
- 447 Modern Chinese History (5; S)** **Taylor**
Modern Chinese society from 1840 to the present. Prerequisite, 110 or 310.
- 448 History of Republican China (3; W)** **Michael**
- 449 Contemporary China (3; not offered 1952-53)**
- 451J History of Chinese-Japanese Relations (5; S)** **Jansen**
Nature and extent of China's influence on Japan before the modern period, Japan's influence on China in the modern period, and the present relationship between the countries. Offered jointly with the Department of History.
- 452J Early Japanese History (5; A)** **Jansen**
Dominant trends in the development of Japan from the earliest times to 1600 A.D. Offered jointly with the Department of History.
- 453J Tokugawa Period (5; W)** **Jansen**
1600 to 1868. Political system, economic problems, and intellectual currents in Japan up to the time of Perry's arrival. Offered jointly with the Department of History.

- 454J **Modern Japanese History** (5; AS) Jansen
Beginnings and development of modern Japan; Japan's transformation under American rule.
Offered jointly with the Department of History.
- 458 **Japanese Social Institutions** (5; not offered 1952-53)
- 478 **Russia in Asia** (3; W) Ballis
Relations of Tsarist Russia and the Soviet Union with eastern Asia.
- 490 **Undergraduate Seminar on China** (3; A) Williston
Principal literature of China in Western languages; introduction to the methodology of Chinese studies and historiography. Prerequisite, permission.
- 499 **Undergraduate Research** (3-5, maximum 15; AWS) Staff
For Far Eastern majors. Prerequisite, permission.

COURSES FOR GRADUATES ONLY

- 510 **Methodology in Far Eastern Studies** (3; AS) Maki
Required of all graduate students taking degrees or writing theses in Far Eastern subjects other than languages.
- 519J **Seminar on Asia** (3; S) Wilhelm, Kirchhoff, Staff
The large cultural regions of the continent are studied in succession, with special reference to anthropological problems.
- 521, 522, 523 **Seminar on Eastern Asia** (4,4,4; A,W,S) Maki, Taylor
- 525, 526 **Seminar on Far Eastern Diplomacy** (3,3; W,S) Williston
- 530, 531 **Seminar on China** (3,3; A,W) Shih, Wilhelm
Chinese historiography. Prerequisite, permission.
- 532 **Seminar on China** (3; not offered 1952-53)
- 533 **Seminar on Chinese Society** (4; offered when demand is sufficient) Wittfogel
Comparative institutional analysis of representative periods and key aspects of Chinese society.
- 540J **Seminar on the Soviet Union: Government and Diplomacy** (4, maximum 8; AS) Ballis
Offered jointly with the Department of Political Science. Prerequisite, permission.
- 545J **Seminar on Japanese Government and Diplomacy** (3, maximum 6; S) Maki
Offered jointly with the Department of Political Science.
- 551J **Seminar in Japanese History** (3, maximum 6; W) Jansen
Research, discussion, and preparation of a seminar paper. Offered jointly with the Department of History. Prerequisite, permission.
- 553J **Analysis of Linguistic Structures** (3; S) Jacobs, Li
Offered jointly with the Department of Anthropology.
- 580, 581, 582 **Colloquium on Russia in Asia** (5,5,5; A,W,S) Ballis, Erlich, Treadgold
Research problems in the impact of Tsarist Russia and the Soviet Union on Asia.
- 598 **Inner Asia Research Colloquium** (5, maximum 15; AWS) Kirchhoff, Carrasco, K. Chang, Li, Poppe, Staff
- 599 **Colloquium on Chinese History Research** (5, maximum 15; AWS) Michael, C. L. Chang, Hsiao, Laai, Shih, Wilhelm
Research seminar on the Modern Chinese History project dealing with various aspects of Chinese society of the nineteenth and twentieth centuries. Prerequisite, permission.
- 600 **Research** (*, AWS) Staff
Prerequisite, permission.
- Thesis** (*, AWS) Staff

FAR EASTERN AND SLAVIC LANGUAGES AND LITERATURE

Executive Officer: GEORGE E. TAYLOR, 406 Thomson Hall

Professors: F. K. Li, N. Poppe, G. E. Taylor.

Professor Emeritus: H. H. Gowen.

Associate Professors: E. Reifler, V. Shih, I. Spector, H. S. Tatsumi, H. Wilhelm.

Assistant Professors: V. Erlich, N. D. Gershevsky, R. McKinnon.

Instructors: K. Chang, E. T. Novikow, V. O. Pahn.

Acting Instructors: M. Ifland, C. H. Lee, L. Longwell, J. R. Shaw, R. F. S. Yang.

The Department of Far Eastern and Slavic Languages and Literature works closely with the Far Eastern and Russian Institute. Courses given by the Department carry credit in the humanities; those given by the Institute carry credit in the social sciences.

The Department offers courses leading to the degrees of Bachelor of Arts, Master of Arts, and Doctor of Philosophy. For undergraduate students, the Department offers

three elective curricula: a general curriculum for students interested in a survey of Far Eastern and Slavic subjects, which is sponsored by the Institute; an area curriculum for students who want to specialize in a particular geographical area; and a linguistics curriculum for students who are interested in a particular Far Eastern or Slavic language or who plan to enter professional language work or to continue their linguistic studies in the Graduate School.

In addition, the Department offers a second teaching area for students in the College of Education (see page 202).

BACHELOR OF ARTS

GENERAL CURRICULUM. The requirements are: Far Eastern 110 or 310; 45 credits in Far Eastern subjects excluding language courses; and at least 20 credits in one of the social sciences or humanities.

AREA CURRICULUM. The requirements are: Far Eastern 110 or 310; 30 credits in either Chinese, Japanese, Korean, or Russian; and at least 20 credits in one of the social sciences or humanities.

LINGUISTICS CURRICULUM. The requirements are: Far Eastern 110 or 310; 45 credits in Chinese, Japanese, or Russian; and 20 credits in courses dealing with the civilization and history of the people who speak the elected language, and of the Far East in general.

ADVANCED DEGREES

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School (see page 261).

MASTER OF ARTS. The Department offers majors in linguistics (Chinese, Japanese, Slavic, or Russian) and in Far Eastern and Russian studies. For the linguistic major, 45 credits are required, of which 20 must be in advanced language courses. The requirement for the Far Eastern and Russian studies major is 45 credits, including Far Eastern 510 and a minimum of 11 credits in seminars. The thesis must be in addition to the 45 credits. A working knowledge of the Russian language is required for the Russian field. For the Far Eastern field, knowledge of a Far Eastern language is desirable, but not required if the candidate presents strong specialization in a discipline.

DOCTOR OF PHILOSOPHY. Majors are offered in Chinese languages and literature and in Russian languages and literature. Candidates majoring in Chinese must be able to read and translate literary Chinese and must know the history, the phonology, and the structural features of the written and spoken language. Familiarity with the history and types of Chinese literature is required; candidates must specialize in two of the following: a period of Chinese literature; a school; an author; the phonology of any period or text; the grammatical features of any period or text; historical or comparative studies; and epigraphy. All candidates must acquire a knowledge of general Chinese history and philosophy. Course requirements are 55 credits in Chinese and 20 credits in Japanese or Korean, or the equivalent.

COURSES FOR UNDERGRADUATES

Chinese

- | | |
|--|--------------|
| 101 Chinese Language. Intensive A (10; AW) | K. Chang |
| 206 Chinese Language. Intensive B (10; WS) | Li |
| Prerequisite, 101 or equivalent. | |
| 301 Chinese Language. Intensive C (10; AS) | K. Chang, Li |
| Prerequisite, 206 or equivalent. | |
| 402, 403, 404 Advanced Modern Chinese (5,5,5; AWS,W,AS) | Yang |
| 402: simple Chinese stories, selections from modern authors. Prerequisite, 301. 402: newspaper Chinese. Prerequisite, 402. 404: modern essays, editorials, etc. Prerequisite, 403 or equivalent. | |
| 405, 406, 407 Introduction to Classical Chinese (5,5,5; A,W,S) | Reifler |
| Syntactical analysis, translation from literary Chinese into English and vice versa. Prerequisite, 301 or equivalent. | |
| 408 Chinese Reference Works and Bibliography (3; S) | Wilhelm |
| Introduction to the methodology of Sinology. Prerequisite, 301 or equivalent. | |
| 455, 456, 457 Chinese Literature (5,5,5; not offered 1952-53) | |
| 499 Undergraduate Research (3-5, maximum 15; AWS) | Staff |
| For Far Eastern majors. Prerequisite, permission. | |

Japanese

- 101-102, 103 First-Year Conversational Japanese (5-5,5; AW-WS,AS)** **Tatsumi**
Introduction to conversation, pronunciation, oral composition, and grammar; reading of the romanized Japanese; conversation, composition, and grammar; introduction to *kana* syllabaries and Chinese characters. 101-102 not open to students who have taken 101-A; 103 not open to students who have taken 206-B.
- 151, 152, 153 First-Year Reading Japanese (5,5,5; A,W,S)** **McKinnon**
Reading and translation of modern Japanese. 151 not open to students who have taken 206-B. Prerequisites, 101-102 or equivalent for 151; 151 for 152; 152 for 153.
- 201, 202, 203 Intermediate Japanese (5,5,5; A,W,S)** **Tatsumi**
Advanced conversation, grammar, and composition; introduction to literary and epistolary styles; introduction to calligraphy. Not open to students who have taken 402, 403, and 404.
- 351, 352, 353 Reading in Japanese (5,5,5; A,W,S)** **McKinnon**
Reading and translation of primary and secondary source materials in Japanese. Not open to students who have taken 405, 406, and 407. Prerequisites, 153 or equivalent for 351; 351 for 352; 352 for 353.
- 499 Undergraduate Research (3-5, maximum 15; AWS)** **Staff**
For Far Eastern majors. Prerequisite, permission.

Korean

- 301 Korean Language. Intensive A (10; not offered 1952-53)**
- 302-303 Elementary Spoken Korean Language (5-5; AS-AW)** **Lee**
- 304 Intermediate Korean (5; WS)** **Lee**
Prerequisite, 303 or equivalent.
- 306 Korean Language. Intensive B (10; not offered 1952-53)**
- 401 Korean Language. Intensive C (10; not offered 1952-53)**
- 402, 403, 404 Advanced Korean (5,5,5; not offered 1952-53)**
- 405 Korean Grammar (5; AS)** **Lee**
Prerequisite, 304 or equivalent.
- 406, 407 Advanced Korean Reading (5,5; W,S)** **Lee**
Korean composition, literature, and advanced reading. Prerequisite, permission.
- 408 Advanced Korean Reading (5; not offered 1952-53)**
- 499 Undergraduate Research (3-5, maximum 15; AWS)** **Lee**
For Far Eastern majors. Prerequisite, permission.

Mongolian

- 302 Introduction to Mongolian (5; A)** **Poppe**
- 303 Classical Mongolian (5; W)** **Poppe**
Grammar, syntax, and styles of the Mongolian written language of the seventeenth to twentieth centuries. Prerequisite, 302.
- 304 Colloquial Mongolian (5; S)** **Poppe**
Grammar of colloquial Mongolian spoken in Outer and Inner Mongolia. Reading of colloquial texts with translation into English; conversation in Mongolian. Prerequisite, 303.
- 406 Comparative Grammar of Mongol Language (5; A)** **Poppe**
History of sounds and grammatical forms of written Mongolian and colloquial language. Prerequisite, 304.
- 499 Undergraduate Research (3-5, maximum 15; AWS)** **Poppe**
For Far Eastern majors. Prerequisite, permission.

Russian

- 101 Russian Language. Intensive A (10; AWS)** **Gershevsky, Ifland**
- 102-103 Elementary Russian Language (5-5; AWS-AWS)** **Novikow**
- 204 First-Year Elementary Russian (5; AWS)** **Staff**
Prerequisite, 103 or equivalent.
- 206 Russian Language. Intensive B (10; AWS)** **Ifland, Pahn**
Prerequisite, 101 or equivalent.
- 301 Russian Language. Intensive C (10; AWS)** **Pahn, Ifland**
Prerequisite, 206 or equivalent.
- 302 Russian Grammar and Composition (5; AS)** **Shaw**
Prerequisite, 301.
- 303 Advanced Conversation and Composition (5; AWS)** **Novikow**
Conversation based on material presented by the instructor and written compositions by students. Students entering this course should have a vocabulary of about two thousand words.
- 304 Advanced Russian Language (5, maximum 10; AW)** **Gershevsky**
Scientific Russian.
- 407, 408, 409 Advanced Russian Reading (5,5,5; A,W,S)** **Staff**
407: industrial Russian; 408: introduction to Russian classics; 409: modern Russian literature. Prerequisite, 302 or equivalent.

104 Russian for Social Scientists (5)

411 Adv. Grammar & Comp. (5)

- 410 Advanced Russian Grammar and Composition (5; AS)** Erlich, Gershevsky
Prerequisite, 303 or equivalent.
- 455 Modern Russian Poetry (3; A)** Erlich
Russian poetry in its renaissance, from 1890 to 1925. Prerequisite, 409.
- 458 Contemporary Russian Literary Criticism (3; not offered 1952-53)**
- 475 Soviet Press Translation (5; S)** Shaw
Prerequisite, 410 or equivalent.
- 485 History of Russian Standard Language (5; S)** Erlich
Outline of the Russian literary language from its inception to the present. Prerequisite, 410.
- 499 Undergraduate Research (3-5, maximum 15; AWS)** Staff
For Far Eastern majors. Prerequisite, permission.

Slavic

- 491 Introduction to Slavic Philology (3; A)** Erlich
Examination of the common origin of Slavic languages. Prerequisite, Russian 410.

Tibetan

- 402 Introduction to Literary Tibetan (3; W)** K. Chang
Accurate interpretation of Tibetan texts and rapid development of reading ability are emphasized. The reading of an easy popular Tibetan text is accompanied by textual criticism and discussion of grammatical problems. Indic influence on Tibetan language is also discussed.
- 403 Advanced Reading in Tibetan Literature (3; AS)** K. Chang
Reading of Buddhist Tibetan translations and historical documents. Students should have some knowledge of Chinese and Sanskrit.

Literature Courses in English

- Chinese 420 Literature of China (5; A)** Shih
Interpretative and appreciative readings in Chinese masterpieces. Does not carry credit for Chinese language.
- Japanese 420 Literature of Japan (5; A)** McKinnon
- Russian 420, 421, 422 Literature of Russia (5,5,5; W,S,A)** Spector
420: the great masters of the Golden Age; 421: contemporary literature from Gorky to Sholokov; 422: Russian plays, 1782-1948.

COURSES FOR GRADUATES ONLY**Chinese**

- 510 Morphology and Syntax of Literary Chinese (5; not offered 1952-53)**
- 521 Chinese Bibliography (3; not offered 1952-53)**
- 522, 523, 524 Readings in Classical Chinese (5,5,5; A,W,S)** Reifler
- 525 Structure of Chinese Characters (5; W)** Reifler
- 526, 527, 528 Studies in Chinese Literature (5,5,5; not offered 1952-53)**
- 529 Chinese Phonology (3; not offered 1952-53)**
- 530 Studies in Chinese Prose (5; not offered 1952-53)**
- 531 Studies in Chinese Poetry (5; A)** Shih
- 532 Studies in Chinese Drama and Novel (5; W)** Shih
- 550 Seminar on Chinese Literature (4, maximum 8; S)** Shih
- 555 Seminar on Chinese Linguistics (3; W)** Li
Advanced phonology, problems of archaic Chinese, dialectology; descriptive and historical treatment of Sinitic languages. For advanced students of Chinese or of linguistics. Prerequisite, permission.
- Thesis (*; AWS)** Staff

Japanese

- 510 Morphology and Syntax of the Japanese Language (5; A)** McKinnon
- 521 Japanese Reference Works and Bibliography (3; W)** McKinnon
- 522, 523, 524 Readings in Documentary Japanese (5,5,5; not offered 1952-53)**
- 525, 526 Advanced Composition in Documentary Japanese (5,5; W,S)** Tatsumi
- Thesis (*; AWS)** Staff

Mongolian

- 521 Ancient Mongol hPhagspa Script (3; A)** Poppe
Script and grammar of hPhagspa texts; reading and translation. Prerequisite, 304.

522 Mongol Ancient Texts (3; W) **Poppe**
Grammar and reading of Mongol texts of the fourteenth to seventeenth centuries. Historical texts are emphasized.

580 Comparative Mongol and Turkic Languages (3; S) **Poppe**
Comparative phonology and morphology of Mongol and Turkic and other related languages.

Russian

521 Advanced Russian Syntax (3; not offered 1952-53)

526 Pushkin (4; not offered 1952-53)

527 Studies in Russian Prose (4; not offered 1952-53)

557 Seminar in Russian Language (3; W) **Erlich, Gershevsky**
Examination and discussion of Russian masterpieces.

559 Russian Oral Epic Tradition (3; W) **Erlich**
Russian folklore.

560 Studies in Early Russian Literature (3; S) **Staff**
Thesis (*; AWS) **Staff**

Slavic

522 Phonetic Structure of Slavic Languages (3; not offered 1952-53)

523 Morphological Features of Slavic Languages (3; not offered 1952-53)

531 Old Church Slavonic (3; W) **Erlich**
Descriptive study of the phonology and grammar of Old Church Slavonic.

532 Readings in Old Church Slavonic (3; S) **Erlich**
Reading and grammatical interpretation of Old Church Slavonic texts.

Literature Course in English

Russian 540 Seminar on Dostoevski (3; S) **Spector**

FISHERIES

Director: RICHARD VAN CLEVE, Fisheries Center

Professors: L. R. Donaldson, J. E. Lynch, R. Van Cleve.

Associate Professors: A. C. De Lacy, W. H. Hastings.

Assistant Professor: A. D. Welander.

Curator of Fishes: A. W. Herre.

The School of Fisheries offers courses leading to the degrees of Bachelor of Science in Fisheries, Bachelor of Science, Master of Science, and Doctor of Philosophy. For undergraduate students, the School offers both a prescribed and an elective curriculum. Students with a grade-point average of 2.5 may receive their bachelor's degree in either curriculum; those whose grade-point average is below 2.5 may graduate through the elective curriculum only. Students in both curricula choose options in either commercial fishery management, fresh-water fishery management, or fisheries technology.

The course of study in the first year is the same for all fisheries majors.

FIRST YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Fish. 108	1	Fish. 109	1	Fish. 110	1
Chem. 111 or 115 General	5	Chem. 112 or 116 General	5	Chem. 113 Qual. Analysis	5
Engl. 101 Composition	3	Engl. 102 Composition	3	Engl. 103 Composition	3
Zool. 111 General	5	Zool. 112 General	5	Electives	7
P.E. 110 or 175 Health	2	Electives	2	P.E. Activity	1
P.E. Activity	1	P.E. Activity	1	R.O.T.C.	2 or 3
R.O.T.C.	2 or 3	R.O.T.C.	2 or 3		
	17 20		17 20		17 20

During the second year, students continue to take background courses that prepare them for upper-division specialization. Electives vary according to the option chosen. Options A and B differ in the second year in that A calls for Chemistry 221 (Quantitative Analysis), and 10 credits of electives, while B requires organic chemistry and biochemistry.

SECOND YEAR

Options A and B

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Foreign language	5	Foreign language	5	Math. 281 Stat. Method.	5
Math. 104 Plane Trig.	3	Math. 105 Algebra.	5	Zool. 456 Vert. Embryol.	5
Chem. 221 Quantitative, or 231, 241 Organic.	5	Elective or Chem. 232, 242 Organic.	5	Elective or Biochem. 361 Biochem.	3-5
P.E. Activity	1	P.E. Activity	1	P.E. Activity	1
R.O.T.C.	2 or 3	R.O.T.C.	2 or 3	R.O.T.C.	2 or 3
	14-17		16-19		14-19

Option C

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Chem. 221 Quantitative	5	Foreign language	5	Foreign language	5
Gen. Engr. 101 Drawing.	5	Gen. Engr. 102 Drawing.	5	Math. 281 Stat. Method.	5
Math. 105 Algebra	5	Math. 153 Analyt. Geom.	5	Physics 101 or 104 General.	5
P.E. Activity	1	P.E. Activity	1	P.E. Activity	1
R.O.T.C.	2 or 3	R.O.T.C.	2 or 3	R.O.T.C.	2 or 3
	16-19		16-19		16-19

During the third and fourth years, students specialize in one of the three options. Some of the courses recommended will have been taken during the sophomore year; most of the others will be completed during the junior and senior years.

A. COMMERCIAL FISHERY MANAGEMENT OPTION. Fisheries 425, 426, 427, 456, 457, 458; Mathematics 104 (Plane Trigonometry), 105 (College Algebra), 251 (Analytic Geometry and Calculus), 252 (Engineering Calculus), or, in lieu of 251 and 252: 307, 308, 309 (Differential and Integral Calculus); Mathematics 281 (Elements of Statistical Method), 382, 383 (Statistical Inference in Applied Research); and Zoology 456 (Vertebrate Embryology).

B. FRESH-WATER FISHERY MANAGEMENT OPTION. Fisheries 451, 452, 453; Biology 473 (Limnology); Chemistry 221 (Quantitative Analysis), 231, 232 (Organic Chemistry); Biochemistry, 361, or 401, 402 (Biochemistry); Mathematics 104 (Plane Trigonometry), 105 (College Algebra), 281 (Elements of Statistical Method); and Microbiology 301 (General Bacteriology).

C. FISHERIES TECHNOLOGY OPTION. Fisheries 480, 481, 484, 485, 486; Chemical Engineering 271 (Introduction to Chemical Engineering); Chemistry 221 (Quantitative Analysis), 231, 232 (Organic); Economics 200 (Introduction); Home Economics 300 (Nutrition); Mathematics 281 (Elements of Statistical Method); and Microbiology 301 (General Bacteriology), 431 (Food Spoilage).

Any course in fisheries, zoology, or oceanography may be used as an elective in a fisheries major.

BACHELOR OF SCIENCE IN FISHERIES

In the prescribed curriculum, a cumulative grade-point average of 2.5 is required. Other requirements are: 42 credits in fisheries, including Fisheries 108, 109, 110, 401, 405 (or 406), and 6 credits (three quarters) in 495; 10 credits in a foreign language (in addition to the foreign language required for admission to the College of Arts and Sciences), preferably German or French; and 10 credits in the social sciences. No more than 102 credits may be taken in any two departments.

BACHELOR OF SCIENCE

In the elective curriculum, 39 credits in fisheries are required. Courses must include Fisheries 108, 109, 110, 401, 405 (or 406), and 6 credits (three quarters) in 495.

ADVANCED DEGREES

Students who intend to work toward the advanced degree of Master of Science or Doctor of Philosophy must meet the requirements of the Graduate School (see page 261). Candidates must complete 6 credits (three quarters) in Fisheries 520.

COURSES FOR UNDERGRADUATES

- 108, 109, 110 General Survey of Fisheries Work (1,1,1; AWS,AWS,AWS)** **Staff**
Lectures by eminent speakers from game and fish agencies, commercial fisheries agencies, and the commercial fishing industry, which provide vocational orientation.
- 401 Comparative Anatomy and Physiology of Fishes (5; A)** **Welander**
Survey of the morphology and bodily functions of fishes. Prerequisite, Zoology 112.
- 402 Phylogeny of Fishes (5; W)** **Welander**
Survey of the system of fish classification; distribution of fishes. Prerequisite, 401.
- 403 Identification of Fishes (5; S)** **Welander**
Introduction to research methods and techniques of ichthyological systematics. Prerequisite, 402.
- 405 Economically Important Mollusca (5; A)** **Lynch**
Classification, life histories, distribution, methods of cultivation, and economic importance of oysters, clams, scallops, abalones, cephalopods, and other mollusca. Prerequisite, Zoology 112.
- 406 Economically Important Crustacea (5; W)** **Lynch**
Classification, life histories, distribution, methods of capture, and economic importance of crabs, shrimps, lobsters, crayfish, and the smaller crustacea, which are fished commercially or are important as food for fishes and other vertebrates. Prerequisites, Zoology 111 and 112.
- 407 Aquatic Invertebrates of Minor Economic Importance (5; S)** **Lynch**
Classification, life histories, occurrence, and utilization of sponges, corals, annelid worms, echinoderms, and other aquatic invertebrates fished or cultivated on a commercial scale. Prerequisite, Zoology 112.
- 425 Migrations and Races of Fishes (5; A)** **De Lacy**
Marking and other methods of determining migrations of fishes and homogeneity of fish populations; implications of these factors in the management of both fresh-water and marine fisheries. Prerequisite, 402.
- 426 Early Life History of Marine Fishes (5; W)** **De Lacy**
Reproduction and larval and post-larval life of economically important marine fishes; dispersion and survival rates; implications of these factors in the management of food fisheries; research methods in this field. Prerequisite, 402.
- 427 Ecology of Marine Fishes (5; S)** **De Lacy**
Effect of variations in hydrographic conditions, availability of food, geographic location, and other environmental conditions on distribution of fishes; their variation in abundance and availability to the fisheries; research techniques in this field. Prerequisite, 402.
- 451 Propagation of Salmonoid Fishes (5; A)** **Donaldson**
Natural propagation; methods of hatching and rearing; collection and incubation of salmon eggs; design, structure, and maintenance of hatcheries, pond systems, and aquaria. Prerequisites, 402 and Chemistry 112 (or 116).
- 452 Nutrition of Fishes (5; W)** **Donaldson**
Feeding and efficiency of diets; food costs and supplies; basic nutritional requirements of fish; nutritional diseases of fish. Prerequisites, 402 and Chemistry 112 (or 116).
- 453 Fresh-Water Fisheries Management: Biological (5; S)** **Donaldson**
Creel census methods; stocking policies, lake poisoning, pond fish propagation; determination of the productive capacities of streams, lakes, and ponds and their suitability for particular kinds of fishes. Prerequisites, 402 and Chemistry 112 (or 116).
- 454 Communicable Diseases of Fishes (5; W)** **Lynch**
Organisms causing diseases in fishes; prevention and known treatments of fish diseases. Prerequisites, 402 and Microbiology 301.
- 456 Age and Growth of Fishes (5; A)** **Van Cleave**
Principles of growth; methods of determining age and rates of growth in fresh-water and marine fishes. Prerequisites, 402, and Mathematics 385 or permission.
- 457 Population Enumeration (5; W)** **Van Cleave**
Methods of enumerating animal populations; availability; dominant age groups; gear selectivity. Prerequisite, 456 or permission.
- 458 Population Dynamics (5; S)** **Van Cleave**
Influence of natural and artificial factors on variation in abundance and yield from animal populations. Prerequisite, 457 or permission.
- 480, 481 Introduction to Commercial Fishing Industry (3,3; A,W)** **Staff**
Lectures, demonstrations, and trips conducted by qualified persons from the industry. Commercial fishing operations, marketing, processing, reduction, organization, and labor relations are discussed and observed. Prerequisite, 15 credits in chemistry.
- 484 Canning and Curing of Fish (5; A)** **Hastings**
Application of physical, chemical, and biological sciences to fish and shellfish preservation; processing engineering, quality control, and commercial methods. Prerequisites, Chemistry 221 or 232, and Microbiology 301.
- 485 Refrigeration of Fish (5; W)** **Hastings**
Application of refrigeration to processing and marketing of fishery products; refrigeration engineering. Prerequisites, Chemistry 221 or 232, and Microbiology 301.
- 486 Preparation of Fish By-products (5; S)** **Hastings**
Production of industrial oils, meals, and pharmaceutical products; utilization of fish wastes. Prerequisites, Chemistry 221 or 232, and Microbiology 301.
- 495 Introduction to Fisheries Literature (2, maximum 6; AWS)** **Staff**
Directed training in searching bibliographic sources. Prerequisite, 15 credits in fisheries.

- 499 Undergraduate Research (3, maximum 9; AWS)** **Staff**
Individual research within the School of Fisheries or on-the-job training in governmental or industrial fisheries organizations. Prerequisite, permission.

COURSES FOR GRADUATES ONLY

- 501 On-the-Job Training (3, maximum 9; AWS)** **Staff**
Guided on-the-job training in governmental or industrial fisheries organizations. Prerequisite, permission.
- 520 Seminar (2, maximum 6; AWS)** **Staff**
Training in methods of searching fisheries literature.
- 604 Research (3 or 10; AWS)** **Staff**
For the Master of Science degree, a maximum of 3 credits is allowed; for the Ph.D., the maximum is 10.
- Thesis (*; AWS)** **Staff**

FOOD TECHNOLOGY

Chairman: HOWARD C. DOUGLAS, H309 Health Sciences Building

Professors: B. S. Henry, E. R. Norris, J. I. Rowntree.

Associate Professors: H. C. Douglas, E. J. Ordal.

The prescribed program in food technology, leading to a bachelor's degree, is offered by the Department of Microbiology and the School of Home Economics. It provides professional training for students who intend to enter the field of food production as either control- or research-laboratory workers, and for students who are interested in home economics research or in teaching food and nutrition in college.

BACHELOR OF SCIENCE IN FOOD TECHNOLOGY

A grade-point average of 2.5 in microbiology, chemistry, and home economics courses, and a 2.5 grade-point average in all other subjects are required for graduation.

Students interested in laboratory work concerned with food production should elect the following courses: Chemical Engineering 481 (Inorganic Chemical Processes), 482 (Organic Chemical Processes), 483 (Chemical Engineering Process Design); Home Economics 415 (Experimental Cookery); and 10 credits in mathematics chosen from 104 (Plane Trigonometry), 105 (College Algebra), and 106 (Analytic Geometry).

Students interested in teaching nutrition in college or working in laboratories conducting food preparation studies should elect the following courses: Home Economics 115 (Food Preparation), 307 (Nutrition), 315 (Advanced Food Selection and Preparation), and 407 (Advanced Nutrition).

During the fourth year, some electives may be chosen to emphasize microbiology and chemistry or food utilization; others may be in either formal course work or practical work in federal, state, or private food or plant laboratories or institution kitchens.

FIRST YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Chem. 111 or 115 General.....	5	Chem. 112 or 116 General.....	5	Chem. 113 Qual. Analysis.....	5
Engl. 101 Composition.....	3	Engl. 102 Composition.....	3	Engl. 103 Composition.....	3
Physics 101 General.....	5	Physics 102 General.....	5	Math. 101 Algebra or	
P.E. 110 or 175 Health Ed. 2		Electives.....	2	104 Plane Trig.....	3 or 5
P.E. Activity.....	1	P.E. Activity.....	1	Physics 103 General.....	5
R.O.T.C.	2 or 3	R.O.T.C.	2 or 3	P.E. Activity.....	1
	16-19		16-19	R.O.T.C.	2 or 3
					17-22

SECOND YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Chem. 231 Organic.....	3	Chem. 232 Organic.....	3	Chem. 325 Quant. Analysis	5
Chem. 241 Organic Lab.....	2	Chem. 242 Organic Lab.....	2	Social science elective.....	5
Zool. 111 General or		Zool. 112 General or		Electives.....	5
Bot. 111 Elementary.....	5	Bot. 112 Elementary.....	5	P.E. Activity.....	1
Electives.....	3-5	Electives.....	7	R.O.T.C.	2 or 3
P.E. Activity.....	1	P.E. Activity.....	1		16-19
R.O.T.C.	2 or 3	R.O.T.C.	2 or 3		
	14-19		18-21		

THIRD YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Biochem. 401 Biochem.....	3	Biochem. 402 Biochem.....	3	Bot. 461 Yeasts & Molds... 5	
Micro. 300	6	Chem. 351 Elem. Physical. 3		Chem. 352 Elem. Physical. 3	
Electives	5-6	Electives	9-15	Electives	8-9
	14-15		15-21		16-18

FOURTH YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Micro. 430 Industrial.....	5	Micro. 431 Food Spoil.....	5	Micro. 499 Research.....	5
Electives	10	Biochem. 483	3	Electives	10
	15	Electives	7		15
			15		

GENERAL AND COMPARATIVE LITERATURE

Adviser: JACKSON MATHEWS, 7 Parrington Annex B

This program is administered by the Department of English. It leads to the degrees of Bachelor of Arts, Master of Arts, and Doctor of Philosophy.

BACHELOR OF ARTS

Before entering this curriculum, the student must earn 18 credits in lower-division courses in either English, Latin, Far Eastern, or Romance literature. Requirements for this degree are: some upper-division credit or the equivalent in one foreign language, ancient or modern; 20 credits in General Literature 300, 301, 302, and 450, or equivalents; and not less than 30 credits in other subjects selected with the adviser to make a coherent program.

ADVANCED DEGREES

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School (see page 261).

MASTER OF ARTS. This degree is offered with a major in general literature. Students who do not intend to obtain a doctorate may earn this degree largely in courses in foreign literature in translation. Candidates must present an undergraduate major in English or a foreign language and must have a reading knowledge of two foreign languages, ancient or modern, with upper-division credit or the equivalent in one of these. Other requirements are: 10 credits in general literature, 5 of which must be in course 510 or 511; English 507; and 25 credits in a coherent program of courses.

DOCTOR OF PHILOSOPHY. This degree is offered with a major in comparative literature. Candidates are usually concerned with problems common to English or American literature and one or more foreign literatures. They must have a reading knowledge of at least two foreign languages, ancient or modern, and must take graduate courses in at least one of these. Other requirements are: General Literature 510, 511; 40 credits in English, including English 507 and 509; and 40 credits in other fields. No more than 10 credits are allowed in English courses numbered below 500.

COURSES FOR UNDERGRADUATES

- 300, 301, 302 Masterpieces of European Literature (5,5,5; A,W,S)** Mathews
Reading of great works from Homer to the present in several genres, mainly the long poem, the drama, and the novel.
- 350, 351 Romanticism and the Nineteenth Century in Europe (5,5; not offered 1952-53)**
- 400 European Literary Criticism since 1900 (5; not offered 1952-53)**
- 450 The Art of Translation (5; not offered 1952-53)**
- 480 The Symbolist Movement (5; A)** Mathews
French literature from Baudelaire to Proust and Valéry; and manifestations of the movement outside France, both in Europe and America.
- 481 The Symbolist Movement (5; not offered 1952-53)**

COURSES FOR GRADUATES ONLY

- 510 Studies in General and Comparative Literature (5; W)** Mathews
- 511 Studies in General and Comparative Literature (5; not offered 1952-53)**

GENERAL EDUCATION

Professor: MAX SAVELLE, 316C Smith Hall

Professors: W. R. Blankenship, J. A. Conway, Howard A. Coombs, P. C. Cross, D. S. Davidson, J. B. Harrison, S. Katz, Linden A. Mander, M. M. Rader, M. Savelle.

Associate Professors: M. A. deVries, E. Hewitt, F. S. Hulse, B. P. Johnson, R. W. Kenworthy, E. C. Lingafelter, A. F. Smullyan, J. Verrall.

Assistant Professors: M. J. Brown, K. C. Clark, A. L. Colton, S. S. Culbert, D. Eyre, A. Hilen, M. B. Jansen, W. G. Lutey, M. Rozen, C. M. Turbayne, M. C. Walters.

Instructors: J. L. Beatty, C. A. Burroughs, R. P. Cecil, J. J. Firebaugh, S. Moseley.

Acting Instructor: C. A. Rogers.

The General Education program provides courses for first- and second-year students who desire a broad range of learning, either as an end in itself or as a basis for a choice of a major. These courses consider the physical universe, the biological world (including man), human society, aesthetic expression in literature and the arts, and philosophy as integral unities to be studied integrally. They are therefore given in such a way as to present these concepts whole, rather than to study in highly technical detail any of their specialized aspects. They are given by regular members of the faculties of the departments involved.

This two-year integrated program does not in itself lead to a degree, but provides the basic minimum of a general education. Any student may take all of it, or any part of it; it is especially recommended for premajors and for students in elective curricula who wish to fulfill their group requirements with General Education courses. Several of the courses are given in two or three quarters each year; the logical sequences of the courses in this program, however, are as follows:

FIRST YEAR

<i>Humanistics</i>	<i>Social Sciences</i>	<i>Natural Sciences</i>	<i>Expression and Methodology</i>
1. Hum. 101 Literature	Soc. Sci. 101 Hist. of Civ.	Phys. Sci. 101 The Universe	Engl. Comp. 101
2. Hum. 102 The Arts	Soc. Sci. 102 Hist. of Civ.	Phys. Sci. 102 The Universe	Engl. Comp. 102
3. Hum. 103 Philos.	Soc. Sci. 103 Hist. of Civ.	Sci. elective	Engl. Comp. 103

SECOND YEAR

1. Hum. 201 Literature	Soc. Sci. 201 Modern Society	Biol. Sci. 101J Gen. Biol.	Phys. Sci. 104 Math.
2. Hum. elective	Soc. Sci. 202 Modern Society	Biol. Sci. 102J Gen. Biol.	
3. Hum. 203 Philos.	Soc. Sci. 203 Modern Society		

Some General Education courses, but not all of them, may be applied toward specific majors. Students who are interested in offering these courses in partial fulfillment of the requirements for departmental majors should obtain permission to do so from the departments involved.

THE CORE GROUP. In the interest of providing a carefully integrated liberal education for those students who desire it, the General Education Committee has formed a special group of students who take the entire General Education program. A special effort is made to integrate all the studies of the students of this group. Students in the core group are placed in special sections and follow the complete two-year curriculum.

FIRST YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Hum. 101	5	Hum. elective	5	Hum. 103	5
Soc. Sci. 101	5	Soc. Sci. 102	5	Soc. Sci. 103	5
Phys. Sci. 101	5	Phys. Sci. 102	5	Sci. elective	5
Engl. 101 Composition	3	Engl. 102 Composition	3	Engl. 103 Composition	3
P.E. Activity	1	P.E. Activity	1	P.E. 110 or 175 Health	2
R.O.T.C.	2 or 3	R.O.T.C.	2 or 3	P.E. Activity	1
	16-19		19-22	R.O.T.C.	2 or 3
					21-24

SECOND YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Hum. 201	5	Hum. elective	5	Hum. 203	5
Soc. Sci. 201	5	Soc. Sci. 202	5	Soc. Sci. 203	5
Biol. Sci. 101J	5	Biol. Sci. 102J	5	Phys. Sci. 104	5
P.E. Activity	1	P.E. Activity	1	P.E. Activity	1
R.O.T.C.	2 or 3	R.O.T.C.	2 or 3	R.O.T.C.	2 or 3
	16-19		16-19		16-19

COURSES FOR UNDERGRADUATES

English 101, 102, 103 English Composition (3,3,3; A,W,S)

Staff

Students in the General Education program enter special sections of English 101, 102, and 103. In these sections their work consists of analysis and critical evaluation of readings selected for their relevance to the aims of a liberal education and to other courses in the program; training in effective organization and expression in various kinds of writing, including the investigative paper and the critical essay, with emphasis on well-built paragraphs and clear, effective sentences; study of words and their importance in the communication of thought and emotion.

Humanities

101 Literature (5; AWS)

Blankenship, Harrison, Stocks, Brown

An introduction to literary forms and techniques through the analysis of representative examples of narrative and poetic art, with emphasis upon the relationship of content and expression.

102 The Arts (5; W)

Verrall, Moseley, and Staff

Painting, sculpture, music, architecture, the dance, and drama studied through example, discussion, and criticism.

103 Philosophy (5; AWS)

Rader, Smullyan, Turbayne

Methods of reflective thinking and the use of them in considering such essential questions as the existence and nature of God, the meaning of a good life and a good social order, the nature and limits of human knowledge, the relationship between mind and body, and the nature of the universe. This course may be offered in partial fulfillment of the requirements for a major in philosophy.

201 Literature (5; W)

Staff

Reading and critical discussion of some of the greatest works in world literature.

203 Philosophy (5; A)

Staff

Reading and critical discussion of some of the world's greatest philosophical systems. This course may be offered in partial fulfillment of the requirements for a major in philosophy.

Social Science

101, 102, 103 History of Civilization (5,5,5; A,W,S)

Katz, Savello, Jansen, Beatty, Cecil

Part I: The historic foundation of civilizations—Mesopotamia, Egypt, India, China; economy, society, government, religion, and culture; the elaboration of culture and institutions in Greece, Rome, and the Orient; Christianity and the beginning of civilization in western Europe; early medieval civilization in the West. Part II: The beginning of modern civilization: the Renaissance; the Protestant Revolt; the state; commercial revolution and mercantilism; the rise of science; the "era of revolutions"; Indian, Chinese, and Japanese civilizations in the medieval and early modern eras; the Industrial Revolution and the rise of democracy. Part III: The meeting of East and West: the "one-world" community in the twentieth century; imperialism, communism, fascism, democracy, internationalism, twentieth-century science; present-day philosophy; religion, literature, and art; the meaning of history for the citizen of the contemporary world. This sequence of courses may be offered in partial fulfillment of the requirements for a major in history.

201, 202, 203 Modern Society (5,5,5; A,W,S)

Eyre, Rosen, Mander, Davidson

Part I: The various forms of society in the world today; the so-called "primitive" societies; the patterns of culture; the historical beginnings of industrial society in the West. Part II: The major social, economic, and political "regions" of the contemporary world; the Far East; the industrial West; the impact of western industrialism upon the East. Part III: Economic, social, and political interrelationships of the modern regions and states; theories of society; the United Nations.

Physical Science

101-102 The Physical Universe (5-5; A-W)

Cross, Clark, Kenworthy, Coombs

Part I: The universe as a unit; the stars; the solar system; the earth; the basic process: the atom. Part II: The nature of matter; the structure and behavior of the atom; relations between atoms; the elements; combinations of inorganic and organic elements.

104 Mathematics (5; AS)

Hewitt, Rogers

Symbolism and inference, the essential processes in pure mathematics; precision and accuracy in reasoning and in expression; mathematical logic; mathematical proofs; detailed analysis of mathematical systems; the applications of mathematics in other sciences.

Biological Science

Biology 101J-102J General Biology (5-5; A-W)

Staff

This course is offered jointly by the Departments of Botany and Zoology and is described in the course announcements of both departments.

GENERAL STUDIES

Director: W. GLEN LUTEY, 213 Denny Hall

Advisory Committee: W. G. Lutey (General Studies), Chairman; H. T. Buechel (Economics); A. Hilen (English); T. F. Normann (Music); F. H. Schmidt (Physics); D. W. Treadgold (History, Far Eastern); H. E. Wheeler (Geology).

Interdepartmental Staff for General Studies 451, 455-456: S. Arestad (Scandinavian); J. A. Barr (Education); M. Black (Philosophy); B. Brazil (Political Science); L. D. Carlson (Physiology and Biophysics); S. Chapple (Music); Rev. D. R. Cochran (Religion); G. Costigan (History); S. S. Culbert (Psychology); S. C. Dodd (Sociology); F. B. Farquharson (Civil Engineering); J. B. Harrison (English); M. H. Hatch (Zoology); N. O. Hines (Official Publications); J. R. Huber (Economics); M. Jacobs (Anthropology); W. G. Lutey (General Studies); A. W. Martin (Zoology); A. I. Melden (Philosophy); V. A. Mund (Economics); J. R. Naiden (Humanistic-Social Studies); D. C. North (Economics); H. L. Nostrand (Romance Languages); R. W. O'Brien (Sociology); M. Rader (Philosophy); G. Sabagh (Sociology); W. Sanborn (Political Science); G. A. Shipman (Political Science); V. Sivertz (Chemistry); D. W. Treadgold (History); E. L. Turner (Medicine); R. G. Tyler (Civil Engineering); E. A. Uehling (Physics); F. G. Williston (Far Eastern).

Enrollment in General Studies is open to students who plan to follow through to graduation the study of a field of knowledge or a subject of special interest not provided for in departmental curricula. It is also open to those who can spend only a limited time in the University and need guidance in making up a program of work from this or other colleges adapted to their special needs. To be admitted to the Division of General Studies the student must have maintained at least a C average in his previous educational experience, and must complete his transfer not later than the third quarter before graduation.

In addition to the flexible programs made out to supply the needs of individual students and the curricula developed as preparation for the School of Librarianship and the Graduate School of Social Work, there are several organized curricula in General Studies. A nonprofessional major program in home relations focuses both on the physical home and its operation and on an understanding of family relations within the home. For students interested in personnel work with social, religious, or other groups, a program is provided in which the characteristics of both individuals and groups are studied. The music for radio curriculum emphasizes courses in the Schools of Music and Communications.

Several area studies are offered. The literature and society program, for example, brings together the study of the literature of a country or period and courses in the social sciences and humanities which create a wider understanding of the societal implications of that literature. The French area study curriculum integrates the study of the language and literature with courses in the geography, history, economics, political science, and arts of France. The Latin American studies program combines the study of the Spanish and Portuguese languages and their literature with courses related to the Latin American area in the fields of anthropology, history, geography, political science, economics, and sociology. This curriculum is now being revised; inquiries about it should be addressed either to the Division of General Studies or to Professor Vargas-Barón, of the Department of Romance Languages and Literature, who is chairman of the interdepartmental committee directing this program.

A major curriculum in nursery education (see page 132) is also offered by the Division of General Studies.

BACHELOR OF ARTS OR BACHELOR OF SCIENCE

The Bachelor of Arts degree is awarded when the major is in humanities or social science, the Bachelor of Science degree when the major is in science.

The requirements for graduation are: the early selection of a special field or subject of interest and the formation of an approved schedule of courses; completion of at least 70 credits in the chosen field or subject; and a thesis giving evidence of the student's competence in his major field.

COURSES FOR UNDERGRADUATES

391 Supervised Study in Selected Fields (*, maximum 6; AWS)

Special supervised study in a field represented in the College of Arts and Sciences. Prerequisite, permission of major department, supervisor of study, and General Studies Office.

Staff

- 451 Sources of the Modern Cultural Crisis** (2, maximum 6; AWS) **Interdepartmental Staff**
Individual reading assigned by members of the interdepartmental staff. May be repeated in various fields. Prerequisite, permission.
- 455-456 Analysis of the Modern Cultural Crisis** (3-3; W-S) **Interdepartmental Staff**
Economic, psychological, scientific and technological, artistic, moral, religious aspects; essential conflicts; the problem of synthesis. Open to seniors; juniors by permission.
- 493 Thesis** (1-5; AWS) **Staff**
For majors only. Prerequisite, permission of supervisor of study and General Studies Office.

GEOGRAPHY

Executive Officer: G. DONALD HUDSON, 406 Smith Hall

Professors: G. D. Hudson, H. M. Leppard, H. H. Martin, E. L. Ullman.

Associate Professor: F. M. Earle.

Assistant Professors: J. D. Eyre, W. L. Garrison, M. E. Marts, W. R. Murphey, J. C. Sherman.

Instructor: W. C. Massey.

The Department of Geography offers courses leading to the degrees of Bachelor of Arts, Master of Arts, and Doctor of Philosophy. In addition, it offers first and second teaching areas and a basic academic field for students in the College of Education (see page 202).

BACHELOR OF ARTS

In the elective curriculum, 50 credits in geography are required. Courses must include: Geography 100, 102, 202, 207, 210, and 358. The remaining 26 credits are elected from among upper-division geography courses. Recommended supporting courses include: Anthropology 390 (Introduction); Economics 200 (Introduction); Geology 101 (Survey), 206 (Elements of Physiography); History 463 (The Westward Movement); Meteorology 101 (Survey), 322 (Regional Climatology); Political Science 100 (Survey), 220 (International Relations); and Sociology 310 (General).

Fields of specialization may be developed in accordance with student interests. Each field of specialization consists of the courses required of all students majoring in geography, selected upper-division geography courses, and supporting courses from other departments and schools. Programs of study may emphasize such fields as general geography, Anglo-America, the Far East, economic geography, and cartography.

ADVANCED DEGREES

Students who intend to work toward the degree of Master of Arts or Doctor of Philosophy must meet the requirements of the Graduate School (see page 261). The Department requires all candidates for advanced degrees to enroll in Geography N500.

COURSES FOR UNDERGRADUATES

Introductory Courses

- 100 Survey of World Geography** (5; AWS) **Eyre, Murphey**
An introductory study of the human geography of the world primarily in terms of the human occupancy of major world regions.
- 102 Introductory Physical Geography** (5; AWS) **Staff**
The components of man's habitat (landforms, climates, soils, etc.) with reference to human occupancy.
- 115 Mountain Geography** (2; AWS) **Marts**
Agricultural, industrial, and recreational features characteristic of highland areas.
- 170 Geography in World Affairs** (5; AS) **Martin**
An introduction to world geography, with emphasis on the major political areas of the world, including their regions, resources, and economic activities.

Systematic Geography

- 207 Introductory Economic Geography** (5; AWS) **Garrison, Martin, Ullman**
A world survey of major occupations; their distribution, resources used, and commodities produced.
- 325 Geographical Background of American History** (3; W) **Martin**
The role of geography in settlement and national development.

- 370 Conservation of Natural Resources (5; A)** Sherman
Principles and practices of the effective utilization of resources; public policies relating to conservation.
- 374 The Extractive Industries (5; A)** Garrison
Geographic principles related to the distribution, resources, and products of agriculture, mining, and lumbering.
- 441 Industrial Geography (3 or 5; A)** Marts
Geographic principles related to the development, distribution, and problems of manufacturing industries; case studies of industrial regions. Lectures (3 credits); field work (2 credits) optional with permission of instructor.
- 442 Commercial Geography (3 or 5; W)** Garrison
Geographic principles related to the localization of world, national, and city commercial areas; case studies including extra- and intra-city commercial patterns. Lectures (3 credits); field work (2 credits) optional with permission of instructor.
- 443 Industrial Geography of the Pacific Northwest (3 or 5; not offered 1952-53)**
- 444 Water Resources in the Pacific Northwest (3 or 5; W)** Marts
An analysis and appraisal of water resources in land and industrial developments; problems relating to water resources. Lectures (3 credits); field work (2 credits) optional with permission of instructor.
- 445, 446, 447 Problems in Physical Geography (5,5,5; not offered 1952-53)**
- 448 Geography of Transportation (5; A)** Ullman
An analysis of the nature and distribution of rail, highway, water, and air transport facilities and their role in area development.
- 475 Political Geography (3; not offered 1952-53)**
- 477 Urban Geography (3-5; W)** Ullman
A geographic analysis of urban settlements in terms of their nature, distribution, principal functions, and supporting areas. Primarily for students majoring in geography and such other fields as city and regional planning.
- Regional Geography**
- 202 Anglo-America (3; A)** Hudson
A survey of the natural resources, their utilization, and the regional structure of Alaska, Canada, and the United States.
- 210 The Pacific Northwest (3; AWS)** Staff
A regional survey emphasizing natural resources, their use, and their role in rural and urban developments.
- 300 Advanced Regional Geography (5; WS)** Hudson
An analysis of the principles and concepts of regional geography.
- 303 Asia (5; AWS)** Earle, Eyre, Murphey
A survey of countries and regions; their resources, economic activities, settlement patterns, and international relations.
- 304 Europe (5; A)** Leppard
The distribution of urban and rural settlement, chiefly in terms of natural assets and liabilities of the continent; industrial power, agricultural production, international trade; regional differentiation; strength and weakness of greater and lesser powers; military geography.
- 305 South America (5; S)** Massey
A survey of regions, with emphasis on present and potential development and overseas relations.
- 306 Africa (5; not offered 1952-53)**
- 309 Caribbean America (3; W)** Massey
Economic and cultural regions; peoples and politics.
- 402 United States (5; W)** Martin
An analysis of the resources of the United States with particular reference to population patterns, economic activities, and regional structures.
- 404 Problems in the Geography of Europe (5; S)** Martin
Investigation of the geographic aspects of selected current issues.
- 407 Australia and New Zealand (5; not offered 1952-53)**
- 408 Canada and Alaska (3; S)** Garrison
An analysis of present and potential developments chiefly in terms of resource occupancy, and interregional and international relations.
- 419J Australia: Its Peoples, Environment, and Institutions (5; A)** Earle
Geographic and cultural patterns; economic and political development; relationships with the British Commonwealth of Nations. Offered jointly with the Departments of Anthropology and History. Prerequisite, 15 credits in anthropology, geography, or history.
- 432 Islands of the Pacific (3; A)** Earle
An analysis of major Pacific islands and island groups with respect to their resources, settlement, population composition; role in modern transportation and communication; current political status.
- 433 U.S.S.R. (3; not offered 1952-53)**
- 435 Southeast Asia (5; W)** Earle
An analysis of regional and political structures; resources, economic activities, and problems of development; overseas and internal relationships.

219J Australia (5)
425J Graphic Techniques in Social Sciences

- 436 **China (3; S)** **Murphy**
Regional structure; resources and population problems; settlement features, rural and urban.
- 437 **Japan (3; W)** **Eyre**
Resources and population problems, economic activities, and overseas relationships of contemporary Japan.

Geographic Techniques

- 358 **Maps and Map Reading (2; AWS)** **Leppard, Sherman**
Categories of maps and aerial photographs and their special uses; map reading and interpretation.
- 360 **Introductory Cartography (5; AWS)** **Sherman**
Practical laboratory experience in using drafting instruments and cartographic materials; map scale, grid, symbolism, color, lettering, and reproduction.
- 363 **Aerial Photograph Interpretation (2; not offered 1952-53)**
- 461 **Intermediate Cartography (5; W)** **Leppard**
Construction and analysis of map projections, relief representation, and field mapping. Prerequisite, 360.
- 462 **Advanced Cartography (5; WS)** **Leppard, Sherman**
Problems in cartographic design. Prerequisite, 461.
- 464 **Map Reproduction (3; S)** **Sherman**
Reproduction processes and methods of photographic projection as applied to cartography.
- 499 **Field Research (12; Summer)** **Garrison, Sherman**
The development and application of skills essential to geographic field investigations: (1) training in the use of basic and special field techniques and base materials; (2) evaluation of these techniques and materials in a variety of research situations; (3) analysis and interpretation of field data; and (4) presentation of the results of field investigations.

COURSES FOR GRADUATES ONLY

- N500 **Geography as a Professional Field (0; AWS)** **Staff**
- 501 **Source Materials in Geographic Research (3; A)** **Earle**
- 502 **Seminar: Writing and Critique (3; W)** **Martin**
- 503 **Problems in the Geography of Asia (3, maximum 9; WS)** **Earle, Eyre**
- 504 **Problems in the Geography of Europe (3, maximum 9; W)** **Leppard**
- 506 **Geography of Anglo-America (3, maximum 9; S)** **Marts**
- 507 **Australia and the Pacific Islands (3, maximum 9; not offered 1952-53)**
- 510 **Settlement and Urban Geography (3; maximum 9; not offered 1952-53)**
- 514 **Physical Geography (3, maximum 9; not offered 1952-53)**
- 537 **Economic Geography (3, maximum 9; AS)** **Garrison, Ullman**
- 540 **Land Utilization (3; not offered 1952-53)**
- 551 **Recent Trends in Geographic Research (3, maximum 9; AWS)** **Staff**
- 555 **History and Theory of Geography (*, maximum 6; not offered 1952-53)**
- 600 **Research (*; AWS)** **Staff**
- Thesis (*; AWS) **Staff**

GEOLOGY

Executive Officer: GEORGE E. GOODSPEED, 42 Johnson Hall

Professors: J. D. Barksdale, H. A. Coombs, R. E. Fuller, G. E. Goodspeed, J. H. Mackin, P. H. Misch, H. E. Wheeler.

Professor Emeritus: C. E. Weaver.

Assistant Professor: E. E. Vesonen.

Instructor: C. L. Willis.

Acting Instructors: K. F. Oles, G. Steele.

The Department of Geology offers courses leading to the degrees of Bachelor of Science, Bachelor of Science in Geology, Master of Science, and Doctor of Philosophy. In addition, the Department offers first and second teaching areas for students in the College of Education (see page 202).

For undergraduate students, the Department offers two curricula leading to bachelor's degrees. Both provide a study of geology and related sciences in preparation for graduate study or for a professional career. The prescribed curriculum sets a definite sequence for all courses; the elective curriculum is more flexible.

For admission to advanced courses in geology, a grade-point average of 2.5 in Geology 205, 206, 207, and 308 is required. A cumulative grade-point average of 2.5 is necessary for graduation through either curriculum. Students majoring in geology are required each quarter to read two books of outstanding merit from a list prepared by the Department.

BACHELOR OF SCIENCE

In the elective curriculum, students must complete the background courses in mathematics, chemistry, physics, and general engineering that are listed in the prescribed curriculum below, in addition to Geology 205, 206, 207, 221, 308, 323, 324, 330, 344, 361, 412, and 443.

For students interested in paleontology, stratigraphy, or oil geology, Geology 332, 336, and 426 are recommended. Those interested in ore deposits should take Mining Engineering 421 (Elementary Mining); Metallurgical Engineering 301 (Fire Assaying); and Geology 425, 427, and 429.

BACHELOR OF SCIENCE IN GEOLOGY

In the prescribed curriculum, a summer field course (Geology 400) is required. Students who adhere to the prescribed program, and who take the field course between their junior and senior years, may graduate at the end of Winter Quarter in the fourth year. Those who plan to do graduate work should take their social science and humanities electives in summer school, to allow time for additional professional geology courses.

FIRST YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Chem. 111 or 115 General	5	Chem. 112 or 116 General	5	Chem. 113 Qual. Analysis	5
Engl. 101 Composition	3	Engl. 102 Composition	3	or elective	5
Gen. Engr. 101 Engr.	3	Gen. Engr. 102 Engr.	3	Gen. Engr. 103 Drafting	3
Drawing	3	Drawing	3	Problems	3
Math. 151 Plane Trig.	3	Math. 152 Algebra	5	Math. 153 Analyt. Geom.	5
P.E. Activity	1	P.E. Activity	1	& Calc.	5
R.O.T.C.	2 or 3	R.O.T.C.	2 or 3	Electives	2
	15-17		17-20	P.E. Activity	1
				R.O.T.C.	2 or 3
					16-19

SECOND YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Geol. 205	5	Geol. 206	5	Geol. 207	5
Physics 101 General	5	Engl. 103 Composition	3	Geol. 221	5
Electives	5	Gen. Engr. 121 Plane	3	Physics 103 General	5
P.E. Activity	1	Surveying	3	P.E. Activity	1
R.O.T.C.	2 or 3	Physics 102 General	5	R.O.T.C.	2 or 3
	16-19	P.E. 110 or 175 Health	2		16-19
		P.E. Activity	1		
		R.O.T.C.	2 or 3		
			19-22		

THIRD YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Geol. 308	5	Geol. 324	5	Geol. 344	5
Geol. 323	5	Geol. 330	5	Geol. 425	5
Electives	5	Humanities electives	5	Social science electives	5
	15		15		15

FOURTH YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Geol. 361	5	Geol. 427	5	Geol. 414 or electives	5
Geol. 412	5	Geol. 443	5	Foreign language	5
Foreign language	5	Foreign language	5	Social science electives	5
	15		15		15

ADVANCED DEGREES

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School (see page 261). All candidates for advanced degrees in

geology must have completed essentially the same academic work as outlined in one of the undergraduate curricula. Examinations for both the master's and the doctor's degree will include subjects from the whole field of geology. All candidates must have an approved summer field course, such as Geology 400, or other field experience which is approved by the Department.

MASTER OF SCIENCE. The language requirement for this degree must be met with either French or German.

DOCTOR OF PHILOSOPHY. Candidates must present French and German for the language requirement.

COURSES FOR UNDERGRADUATES

- | | | |
|-----|---|-------------------------|
| 101 | Survey of Geology (5; AWS) | Coombs, Barksdale, Oles |
| 102 | Geology in World Affairs (5; AS)
Geological occurrence, world distribution, and production of coal, petroleum, and the important industrial materials. Prerequisite, 101 or 205. | Barksdale |
| 103 | Earth History (5; S)
Geology from a chronological standpoint, including the elements of stratigraphy and paleontology. Prerequisite, 101 or 205. | Steele |
| 205 | Rocks and Minerals (5; A)
Prerequisite, high school chemistry. | Goodspeed |
| 206 | Elements of Physiography (5; W)
Processes and agencies affecting the earth's surface; relationship of topography to structure, etc. Prerequisite, 101 or 205. | Mackin |
| 207 | Historical Geology (5; S)
Origin and evolution of the earth, with emphasis on the general geological history of North America. Prerequisites, 205 and 206, or permission. | Wheeler |
| 215 | Soils and Water Resources (3; W)
Basic physical geology in relation to soils and water resources. Primarily for forestry and sanitary engineering students. | Wheeler |
| 221 | Mineralogy (5; S)
Determinative crystallography and blowpipe analysis. Prerequisites, high school chemistry and 205. | Willis |
| 308 | Structural Geology (5; A)
Interpretation of rock structures and their genesis. Prerequisites, 205, 206, 207, and General Engineering 101, 102, 103. | Barksdale |
| 310 | Engineering Geology (5; W)
Elements of geology for civil engineers. Prerequisite, civil engineering major or permission. | Willis |
| 323 | Optical Mineralogy (5; A)
Petrographic microscope and recognition of common minerals in thin section. Prerequisites, 205 and 221. | Coombs |
| 324 | Petrography and Petrology (5; W)
Systematic study of rocks with the petrographic microscope. Prerequisite, 323. | Coombs |
| 330 | General Paleontology (5; W)
Systematic study of fossils. Prerequisite, 207 or permission. | Steele |
| 332 | Advanced Paleontology (5; S)
Emphasis on cretaceous faunas. Prerequisite, 207. | Steele |
| 336 | Micropaleontology (5; A)
Prerequisite, 330. | Steele |
| 344 | Field Methods (5; S)
Geologic and topographic surveying and recording. Prerequisites, 308 and General Engineering 121. | Barksdale |
| 361 | Stratigraphy (5; A)
Sedimentation and facies; rock and time units; evaluation of boundaries; principles of correlation. Prerequisites, 205, 206, and 207; suggested, 330 and 332. | Wheeler |
| 400 | Advanced or Field Work in General Geology (*; Summer)
An approved summer field course or approved field experience. | |
| 412 | Physiography of the United States (5; A)
Prerequisites, 205, 206, and 207. | Mackin |
| 414 | Map Interpretation, Constructional Landforms (5; S)
Prerequisites, 205, 206, and 207. | Mackin |
| 425 | Petrography and Petrology (5; S)
Metamorphic rocks, petrogenesis. Prerequisite, 324. | Misch |
| 426 | Sedimentary Petrography (5; A)
Prerequisite, 425. | Willis |
| 427 | Ore Deposits (5; W)
Form, structure, mineralogy, petrology, and mode of origin. Prerequisites, 221 and 324. | Goodspeed |

436 Micropaleontology (5)

429 Advanced Ore Deposits (3; S)	Goodspeed
Prerequisite, 427.	
443 Advanced Structural Geology (5; W)	Misch
Prerequisite, 308.	
450 Elements of Seismology (5; W)	Vesonen
480 History of Geology (3; A)	Barksdale
Prerequisite, 15 credits in geology.	
481 Preparation of Geologic Reports and Publications (3; W)	Coombs
498 Undergraduate Thesis (5; AWS)	Staff
Thesis must be submitted at least one month before graduation.	

COURSES FOR GRADUATES ONLY

501 Advanced Petrography and Petrology of Igneous Rocks (*; AWS)	Goodspeed
503 Advanced Petrography and Petrology of Sedimentary Rocks (*; AWS)	Coombs
510 Advanced Studies, Research, or Field Work in Physiography (*; W)	Mackin
516 Glacial Geology (5; A)	Mackin
520 Seminar (*; AWS)	Staff
521 Metamorphic Minerals (5; A)	Misch
522 Regional Metamorphism and Granitization (5; W)	Misch
523 Static Granitization (5; S)	Goodspeed
530 Advanced Work in Paleontology (*; AWS)	Wheeler
532 Stratigraphic Paleontology (3; A)	Wheeler
540 Advanced Studies or Research in Structural Geology (*; AWS)	Barksdale, Misch
545 Structure of Eurasia (5; S)	Misch
546 Structure of the Pacific Rim (5; S)	Misch
550 Advanced Study or Research in Geophysics (*, maximum 9; AWS)	Vesonen
560 Advanced Work in Stratigraphy (*; AWS)	Wheeler
565 Paleozoic Stratigraphy (5; W)	Wheeler
568 Mesozoic Stratigraphy (3; S)	Wheeler
570 Advanced or Research Work in Mineralogy, Petrography, and Petrology (*; AWS)	
<i>569 Tertiary Stratigraphy (5)</i>	Goodspeed, Coombs, Misch
580 Advanced or Research Work in Economic Geology (*; AWS)	Goodspeed, Coombs
600 Research (*; AWS)	
Thesis (*; AWS)	

GERMANIC LANGUAGES AND LITERATURE

Executive Officer: CURTIS C. D. VAIL, 111 Denny Hall

Professors: E. H. Lauer, C. C. D. Vail.

Professors Emeriti: E. O. Eckelman, F. W. Meisnest.

Associate Professors: H. C. Meyer, A. M. Sauerlander.

Assistant Professors: C. E. Reed, W. H. Rey, R. F. Wilkie.

Assistant Professors Emeriti: F. C. Ankele, M. Schertel, E. M. Wesner.

Instructors: G. C. Buck, R. L. Kahn, F. R. Sommerfeld.

The Department of Germanic Languages and Literature offers courses leading to the degrees of Bachelor of Arts, Master of Arts, and Doctor of Philosophy. In addition, it offers first and second teaching areas for students in the College of Education (see page 202).

Students majoring in mathematics and the applied sciences should take German 110-111, 112, 204 (or 205, 206), 260, and upper-division courses in scientific German. Those majoring in history and the social sciences should take German 210, 310, and 311.

BACHELOR OF ARTS

In this elective curriculum, 40 credits in German are required for graduation. Courses must include: German 207, 230, 300, 301, 302, 303, 310, 311, 401, 402, and 403.

Scientific German, courses in English translation, and first-year German are not counted toward the major.

Students majoring in German as a preparation for library work or other careers that do not require knowledge of the spoken language may substitute courses in German literature (but not courses in English translation) in lieu of German 207, 300, 301, 302, 303, 401, 402, and 403.

Qualified students may fulfill the requirements of the junior year through study abroad in a university of recognized standing.

ADVANCED DEGREES

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School (see page 261). To register for any graduate course in German, students must receive permission from the Executive Officer of the Department. All candidates for advanced degrees must take German 410, 411, 412, 415, 416, 417, 500, 501, 502, 503, 552, 556, and 557 (or equivalents) as they are offered. German 518 and 519 must be taken if twentieth-century literature is used as a major field.

MASTER OF ARTS. Candidates must pass a reading examination in some other suitable foreign language and complete 30 credits of course work.

A German minor for the master's degree requires 15 credits in German courses, including German 501, 502, and 503.

DOCTOR OF PHILOSOPHY. Candidates must pass a reading examination in French, unless some other non-German language seems more advisable, and complete an approved program of studies.

COURSES FOR UNDERGRADUATES

- | | |
|---|--------------------|
| 101-102, 103 First-Year Speaking German (5-5,5; A-W,S) | Staff |
| Recommended for prospective majors and minors and those who wish to work toward a speaking knowledge. The methods and objectives are primarily oral-aural. | |
| 110-111 First Year (5-5; AWS-AWS) | Staff |
| A beginning course devoted primarily to the reading objective. Not open to those who have taken 101-102. | |
| 112 First-Year Reading (5; AWS) | Staff |
| Continuation of 110-111. Prerequisite, 110-111 or one year of high school German. Not open to those who have taken 103. | |
| 121, 122 First-Year Reading German (5,5; A,W) | Staff |
| A special course devoted exclusively to the reading objective. Primarily for upper-division and graduate students. | |
| 204 Second-Year Reading (5; AWS) | Staff |
| Prerequisite, 103, 112, or two years of high school German. | |
| 205, 206 Second-Year Reading (3,2; AWS,AWS) | Staff |
| Prerequisite, as for 204; not open to those who have taken 204. | |
| 207 Second-Year Grammar Review (3; WS) | Staff |
| Prerequisite, 103, 112, or two years of high school German. | |
| 210 Advanced Second-Year Reading (3; AWS) | Staff |
| Prerequisite, 204, 205, or 206. | |
| 230 Conversation (3; S) | Staff |
| For students interested primarily in acquiring a speaking knowledge. Prerequisite, 204, 205, 206, or 207. | |
| 260 Lower-Division Scientific German (3; AWS) | Staff |
| Prerequisite, 204, 205, or 206. | |
| 300 Phonetics (2; W) | Reed |
| Speech sounds, stage pronunciation, and phonetic transcription. | |
| 301, 302, 303 Grammar and Conversation (2,2,2; A,W,S) | Staff |
| The materials used aim not merely at an increase in ability to speak, write, and understand German, but also to broaden the student's understanding of the culture of the German-speaking countries. Primarily for majors and minors. Prerequisite, 8 credits in second-year German, including 207; recommended, 230. | |
| 310, 311 Introduction to the Classical Period (3,3; A,W) | Sauerlander |
| Lessing, Goethe, and Schiller. Prerequisite, 8 credits in second-year German or equivalent. | |
| 312 Introduction to the German Novelle (3; S) | Sauerlander |
| Representative writers, such as Keller, Meyer, and Storm; theory of the <i>Novelle</i> . Prerequisite, as for 310. | |
| 320, 321, 322 Upper-Division Scientific German (2-3,2-3,2-3; A,W,S) | Moyer |
| Weekly conferences in which each student reports on reading in his own field. Prerequisite, 260 or equivalent. | |

- 325 **Upper-Division Scientific German for Premedics (3; S)** Staff
Prerequisite, as for 320.
- 401, 402, 403 **Grammar and Composition (2,2,2; A,W,S)** Vail, Meyer, Roy
Primarily for majors and minors. Prerequisites, 301, 302, and 303.
- 404 **History of the German Language (5; S)** Meyer
From early Germanic to the present day. Open to junior majors.
- 410, 411, 412 **History of German Literature (3,3,3; A,W,S)** Buck, Wilkie, Kahn
From the beginnings to the Classical period.
- 415, 416, 417 **Nineteenth-Century Literature (3,3,3; not offered 1952-53)**
- 418, 419 **Naturalism, Expressionism, and Twentieth-Century Realism (3,3; A,W)** Roy
- 422 **Analysis of German Poetry (3; S)** Sommerfeld
- 431 **Lessing's Life and Dramatic Works (3; not offered 1952-53)**
- 433 **Goethe: The Early Years (3; not offered 1952-53)**
- 434 **Goethe: Life and Works 1775-88 (3; not offered 1952-53)**
- 436 **Goethe's Faust I (3; not offered 1952-53)**
- 437 **Goethe's Faust II (3; not offered 1952-53)**
- 438 **Schiller's Historical Dramas (3; not offered 1952-53)**
- 450J **Introduction to General Linguistics (5; A)** Jacobs, Reed
Descriptive and historical techniques in the analysis of languages. Offered jointly with the Department of Anthropology.
- 497 **Studies in German Literature (1-5; AWS)**
Prerequisite, 310 or equivalent.
- 498 **Studies in German Philology (1-5; AWS)**
Prerequisite, 310 or equivalent.

Courses in English

- 350 **Masterpieces of German Literature (3; not offered 1952-53)**
- 351 **Contemporary Literature (3; A)** Roy
- 462 **Goethe (3; W)** Sauerlander
- 464 **Thomas Mann (3; S)** Roy
Trends in German thought and letters in the twentieth century; social, economic backgrounds.

Dutch

- 101-102, 103 **Spoken Dutch (5-5,5; not offered 1952-53)**

COURSES FOR GRADUATES ONLY

Literature Courses

- 500 **Bibliography and Methodology (2; not offered 1952-53)**
- 510 **Literature of the Middle Ages (5; A)** Buck
- 511 **Reformation and Renaissance (3; W)** Wilkie
- 512 **Baroque (3; W)** Wilkie
- 513 **Eighteenth-Century Movements (3; S)** Kahn
- 515 **The Romantic Movement (4; not offered 1952-53)**
- 516 **The Drama of the Nineteenth Century (4; not offered 1952-53)**
- 517 **The Literature of the Later Nineteenth Century (4; not offered 1952-53)**
- 518, 519 **The Literature of the Twentieth Century (3,3; A,W)** Roy
- 531 **Lessing (3; not offered 1952-53)**
- 534 **Goethe. Life and Works 1775-88 (4; not offered 1952-53)**
- 535 **Goethe: Life and Works 1788-1832 (4; not offered 1952-53)**
- 538 **Schiller (4; not offered 1952-53)**
- 590, 591, 592 **Seminar in Literary History (1-5,1-5,1-5; A,W,S)** Staff
- Thesis (*; AWS) Staff

Philology Courses

- 501, 502, 503 **Advanced Syntax and Synonymy (2,2,2; A,W,S)** Staff
- 505 **Introduction to Linguistics (3; not offered 1952-53)**
- 550 **Gothic (5; not offered 1952-53)**
- 552 **Old High German (5; not offered 1952-53)**
- 555 **Old Saxon (5; S)** Reed
- 556 **Middle High German (5; A)** Meyer

557 Middle High German Literature in the Original (5; W)

Reed

560 Modern Dialects (3; not offered 1952-53)

570 Sanskrit (3-5; not offered 1952-53)

595, 596, 597 Seminar in Germanic Philology (1-5, 1-5, 1-5; A, W, S)

Thesis (*; AWS)

Staff

Staff

HISTORY

Executive Officer: W. STULL HOLT, 308 Smith Hall

Professors: G. Costigan, C. M. Gates, W. S. Holt, S. Katz, E. Levy, H. S. Lucas, M. Savelle.

Associate Professor: E. Dobie.

Assistant Professors: D. E. Emerson, S. H. Lytle, T. J. Pressly, D. W. Treadgold.

Acting Assistant Professor: J. H. High.

Instructors: J. L. Beatty, R. P. Cecil.

The Department of History offers courses leading to the degrees of Bachelor of Arts, Master of Arts, and Doctor of Philosophy. In addition, it offers first and second teaching areas for students in the College of Education (see page 202).

BACHELOR OF ARTS

In this elective curriculum, 50 credits in history are required. Courses must include: either History 101 and 102 or the General Education sequence, Social Science 101, 102, and 103 (History of World Civilization); either History 241 or History 341, 342, and 343; and at least 25 credits in upper-division history courses.

ADVANCED DEGREES

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School (see page 261). Before beginning graduate work, students should have completed an undergraduate history major, or the equivalent. It is expected that students specializing in Far Eastern history will have had sound undergraduate preparation in history.

The requirements for both advanced degrees include work in selected fields of history. Each field is a brief period or a restricted topic which is part of a general subject in one of three major divisions of history. Subjects within the first division are ancient history, medieval history, and Renaissance history; those within the second division are modern European history, English history, and British Empire history; and the third division is American history.

MASTER OF ARTS. At least 40 credits in history are required. The candidate must complete History 501 and 502; one seminar; and graduate courses in three fields selected for special study. The candidate should select one field from a subject in each of the three divisions of history.

Students majoring in Far Eastern history must meet the same requirements, except that they may take either 501 or 502, and are examined in only two fields of special study. The rest of the program is arranged in cooperation with the Far Eastern and Russian Institute.

The prerequisite for a minor in history for the master's degree is an undergraduate program in history, or such preparation as the Department deems satisfactory. For this minor 15 credits in history are required, of which 10 must be in one historical subject and 5 in History 501 or 502.

DOCTOR OF PHILOSOPHY. Candidates must complete History 501, 502, and at least two years of seminar work; participate in the work of the advanced seminar; and take at least four graduate courses in each of four fields selected for special study. In addition, they are expected to complete a minor in another department.

Students majoring in Far Eastern history are expected to take History 501 and 502, to complete one year of seminar work, and to prepare for examinations in two fields of special study. A Far Eastern language or Russian may be substituted for either French or German. The rest of the program is arranged in cooperation with the Far Eastern and Russian Institute.

A history minor for the doctor's degree requires History 501, 502, and either a seminar or three fields selected from subjects in at least two of the three divisions of history.

COURSES FOR UNDERGRADUATES

- 219J Australia*
- 101 Medieval European History (5; AWS)** **Dobie, Katz, Lytle**
Europe from the disintegration of the Roman Empire to 1500. The evolution of basic values and assumptions of Western civilization, with emphasis on the aspects that led to the development of law, and to the growth of ideas in political, economic, and social institutions and in literature and art.
- 102 Modern European History (5; AWS)** **Dobie, Emerson, Lytle, Treadgold**
Political, social, economic, and cultural history of Europe from 1500 to the present, including the evolution of nationalism, democracy, and imperialism, and their interrelationship with the Industrial Revolution.
- 201-202 Ancient History (5-5; W-S)** **Katz**
Political, social, economic, and cultural development of the ancient Near East, Greece, and Rome; the elements of ancient civilization that contributed vitally to medieval and modern civilization.
- 241 Survey of the History of the United States (5; AWS)** **Holt, Pressly, Savelle**
Supplies the knowledge of American history which any intelligent and educated American citizen should have. Object is to make the student aware of his heritage of the past and more intelligently conscious of the present.
- 271-272, 273 English Political and Social History (5-5,5; A-W,S)** **Costigan**
England from the earliest times to the present, stressing the origins of American institutions and social patterns.
- 291-292 Latin American History (5-5; A-W)** **Massey**
The Spanish and Portuguese empires in the New World; independence and the subsequent political, social, and economic development of Latin America.
- 296J History of Japanese Civilization (5; W)** **Janson**
A survey of political, economic, social, intellectual, literary, and artistic developments in Japan from earliest times to the present. Offered jointly with the Far Eastern and Russian Institute.
- 341 Foundations of American Civilization (5; A)** **Savelle**
The founding of Anglo-Saxon society in the western hemisphere, with attention to the earliest colonial establishments, the growth of a new culture, independence, and the organization of the American Union.
- 342 The Development of American Civilization to 1877 (5; W)** **Gates**
The growth of the new nation; political, economic, and cultural activities through the post-Civil War period.
- 343 Modern American Civilization from 1877 (5; S)** **Pressly**
The emergence of modern America after the Civil War; interrelationships of economic, social, political, and intellectual developments. Not open to students who have taken 450.
- 401 Greece in the Age of Pericles (3; not offered 1952-53)**
- 402 Alexander the Great and the Hellenistic Period (5; not offered 1952-53)**
- 403 The Roman Republic (3; S)** **Katz**
Political, social, economic, and cultural history, with emphasis on the last century of the Republic, the period of Cicero and Caesar.
- 404 The Roman Empire (3; not offered 1952-53)**
- 410 The Byzantine Empire (5; A)** **Katz**
Political, institutional, and cultural history of the Eastern Roman Empire from the fourth to the fifteenth centuries, with emphasis on its relations with the Latin West and the Slavic and Moslem areas.
- 411, 412 Medieval Civilization (5,5; not offered 1952-53, not offered 1952-53)**
- 413 Medieval Civilization (5; S)** **Lucas**
Art, letters, religion, science, and thought in Europe outside Italy from 1200 to 1500.
- 414 Culture of the Renaissance (5; A)** **Lucas**
Art, literature, politics, philosophy, science, and religion in Italy from 1300 to the death of Michelangelo.
- 415 The Reformation (5; W)** **Lucas**
Political and religious crisis; Lutheranism, Zwinglianism, Anglicanism, Anabaptism, Calvinism, Catholic reform; beginnings of Baroque art.
- 419J Australia: Its Peoples, Environment, and Institutions (5; A)** **Davidson, Dobie, Earle**
Geographic and cultural patterns; economic and political development; relationships with the British Commonwealth of Nations. Offered jointly with the Departments of Anthropology and Geography.
- 422J Early Russian History (5; W)** **Treadgold**
Survey of the development of Russia from the earliest times to the reign of Nicholas II (1894-1917). Offered jointly with the Far Eastern and Russian Institute.
- 423J Recent Russian History (5; S)** **Treadgold**
Survey of Russia and the U.S.S.R. from the reign of Nicholas II (1894-1917) to the present. Offered jointly with the Far Eastern and Russian Institute.

- 424J Russian Revolutionary Movement (3; W)** **Treadgold**
Intellectual and political aspects of Russian opposition to tsarism from 1825 to 1917. Offered jointly with the Far Eastern and Russian Institute.
- 429 France from the Reformation to the French Revolution (5; not offered 1952-53)**
- 430 The French Revolution and Napoleonic Era (5; A)** **Lytle**
The background of the French Revolution, 1763-87; the Aristocratic offensive, 1787-89; the "first" Revolution and the transformation of France, 1789-92; foreign war, the "second" Revolution, and the Reign of Terror, 1792-94; the conservative reaction and the emergence of Napoleon, 1794-99; France and the growth of Napoleonic absolutism, 1799-1804; Napoleon and Europe, 1804-15.
- 431 Europe, 1814-1870 (5; S)** **Lytle**
The Europe of 1815, politically absolutist, socially aristocratic, economically agricultural; the problems of central and eastern Europe, 1815-48; industrialization and efforts to ensure and extend constitutional government in the West, 1815-48; international relations, 1814-48; the significance of the revolutions of 1848; the breakdown of European organization and the emergence of new national states, 1848-70.
- 432 Europe, 1870-1914 (5; A)** **Emerson**
The impact of the demographic, communications, and industrial "revolutions" on economy and society; problems of the European state system from Bismarckian hegemony, imperialism, and the policy of planless pushing; domestic politics in the European states; intellectual and artistic striving.
- 433J Europe, 1914-1945 (5; W)** **Emerson**
The politics and society of Europe in the age of the concentration camp. Offered jointly with the Department of Political Science.
- 436 Germany, 1648-1914 (5; not offered 1952-53)**
- 437 Germany, 1914-1945 (5; S)** **Emerson**
Political history from the collapse of the Bismarckian empire to the collapse of Hitler's empire.
- 441 American Revolution and Confederation (5; not offered 1952-53)**
- 442 The Colonial Mind (5; not offered 1952-53)**
- 443 The Intellectual History of the United States (5; not offered 1952-53)**
- 447 History of the Civil War and Reconstruction (5; A)** **Pressly**
Sectional conflict and the struggle between rival nationalisms in mid-nineteenth-century America.
- 450 Twentieth-Century America (5; W)** **Pressly**
Political, social, economic, and intellectual developments in the United States from 1900 to the present.
- 451J History of Chinese-Japanese Relations (5; S)** **Janson**
The nature and extent of China's influence on Japan before the modern period, of Japan's influence on China in the modern period, and of the present relationship between the countries. Offered jointly with the Far Eastern and Russian Institute.
- 452J Early Japanese History (5; A)** **Janson**
Dominant trends in the development of Japan from the earliest times to 1600 A.D. Offered jointly with the Far Eastern and Russian Institute.
- 453J Tokugawa Period (5; W)** **Janson**
1600 to 1868. Political system, economic problems, and intellectual currents in Japan up to the time of Perry's arrival. Offered jointly with the Far Eastern and Russian Institute.
- 454J Modern Japanese History (5; AS)** **Janson**
Beginnings and development of modern Japan; Japan's transformation under American rule. Offered jointly with the Far Eastern and Russian Institute.
- 457 The Diplomatic History of North America, 1492-1763 (5; not offered 1952-53)**
- 458 The United States in World Affairs, 1776-1865 (5; W)** **Holt**
The relationship of the United States to world politics and the balance of power; background of the major episodes in American foreign relations.
- 459 The United States in World Affairs, 1865 to the Present (5; S)** **Holt**
A continuation of 458 into the period when the United States became a major factor in the balance of power.
- 461 History of American Liberalism Since 1789 (5; A)** **Pressly**
Comparative study of the aims and accomplishments of four major reform movements in the United States: Jeffersonian democracy, Jacksonian democracy, Progressivism, and the New Deal.
- 463 The Westward Movement (5; A)** **Gates**
Territorial and economic expansion of the United States from the Revolution to World War I; conditions affecting settlement and development of the West; political and social institutions; interregional relationships.
- 464 History of Washington and the Pacific Northwest (5; WS)** **Gates**
Exploration and settlement; economic development; growth of government and social institutions; statehood.
- 471 England in the Eighteenth Century (5; not offered 1952-53)**
- 472 England in the Nineteenth Century (5; not offered 1952-53)**
- 473 England in the Twentieth Century (5; W)** **Costigan**
From the Boer War to the present; conservatism, liberalism, and socialism; England in two world wars; the decline of British imperialism.

- 474 **Modern Irish History (5; S)** Costigan
Growth of Irish national feeling in the nineteenth century, through the Home Rule and Sinn Féin movements, to the establishment of the Irish Free State and later the Republic of Eire; background of the Irish literary renaissance; establishment of Northern Ireland.
- 475 **History of Canada (5; S)** Dobie
The struggle for unity and nationhood as determined by geographical conditions, by religious antagonism, by the impact of modern commercial and industrial society upon an old-world culture, and by pulls toward Europe and the United States.
- 480 **History of the British Empire Since 1783 (5; not offered 1952-53)**
- 481 **History of the Commonwealth of Nations (5; W)** Dobie
The advancement of dependencies of Great Britain to the status of independent nations associated with Great Britain.
- 499 **Undergraduate Research (1-5; AWS)** Staff

COURSES FOR GRADUATES ONLY

- 501 **Historiography: Ancient, Medieval, and Early Modern European (5; A)** Katz, Staff
- 502 **Historiography: Modern European and American (5; W)** Katz, Staff
- 600 **Research (*; AWS)** Staff
- Thesis (*; AWS)** Staff

Courses in Fields of Specialization

These courses are introductions to advanced study. They are designed to show how important historical conclusions have been reached, to suggest further research, and particularly to give bibliographical guidance to students in their preparation for the examination on the fields selected.

- 503-504 **Philosophy of History (5-5; A-W)** Costigan
- 510 **Greek and Roman History (5; W)** Katz
- 514 **Medieval and Renaissance History (5; W)** Lucas
- 531 **Modern European History: Russia (5; A)** Treadgold
- 532 **Modern European History (5; S)** Emerson
- 533 **Modern European History (5; W)** Lytle
- 541 **American History (5; A)** Savelle
- 542 **American History (5; A)** Gates
- 543 **American History (5; S)** Holt
- 544 **American History (5; S)** Pressly
- 575 **English History (5; S)** Savelle
- 576 **British Empire History (5; A)** Dobie

Seminars

- 517-518-519 **Seminar in Ancient or Medieval History (5-5-5; A-W-S)** Lucas
- 521-522-523 **Seminar in Modern European History (5-5-5; A-W-S)** Emerson
- 551J **Seminar in Japanese History (3 per quarter, maximum 6; W)** Jansen
Offered jointly with the Far Eastern and Russian Institute. Prerequisite, permission.
- 553-554-555 **Seminar in American History (5-5-5; A-W-S)** Savelle
- 590-591-592 **Seminar in History (5-5-5; A-W-S)** Staff
- 593-594-595 **Advanced Seminar (5-5-5; A-W-S)** Holt

HOME ECONOMICS

Director: JENNIE I. ROWNTREE, 201 Raitt Hall

Professors: B. Payne, J. I. Rowntree, M. E. Terrell.

Associate Professors: D. Brockway, M. E. Dresslar, L. E. McAdams.

Assistant Professors: M. L. Johnson, K. A. Johnston, M. C. Warning.

Acting Assistant Professors: M. Bonnell, M. A. Wybourn.

Lecturer: A. E. Wade.

Instructors: F. D. Eubanks, M. G. Hosmer, D. Parks, T. S. Rose, H. M. Smith, I. V. Thorson.

The School of Home Economics offers courses leading to the degrees of Bachelor of Science in Home Economics, Bachelor of Arts in Home Economics, Bachelor of Arts, Bachelor of Science, Master of Arts in Home Economics, Master of Science in Home Economics, Master of Arts, and Master of Science.

For undergraduate students, the School provides five professional curricula and two nonprofessional curricula. The first three professional curricula, for students who plan to teach homemaking in secondary schools, to become dietitians or institution managers, or to become home economists in business, journalism, or social work, lead to the degree of Bachelor of Science in Home Economics. The fourth curriculum, for students who plan to specialize in textiles and clothing, leads to the Bachelor of Arts in Home Economics. The last is a correlated curriculum of the Schools of Home Economics and Art and the College of Business Administration; it provides specialization in design for apparel manufacturing and leads to the degree of Bachelor of Arts.

The two nonprofessional curricula are for those who wish to major in home economics but not to prepare for positions in the field. The nonprofessional curriculum in clothing and art leads to the Bachelor of Arts degree, the general nonprofessional curriculum to the Bachelor of Science.

In addition, the School offers a basic academic field and a second teaching area for students in the College of Education (see page 202), and courses and programs for students majoring in other fields.

BACHELOR OF SCIENCE IN HOME ECONOMICS

CURRICULUM IN HOME ECONOMICS EDUCATION. Students who plan to teach homemaking in Washington high schools follow this prescribed curriculum, which meets the course requirements (a total of 60 credits in home economics) for the temporary vocational certificate, as well as the course requirements for the provisional general certificate, which is issued through the College of Education (see page 204 for other requirements for the provisional general certificate). Students who plan to teach outside the state of Washington may omit Education 230 (Washington State Manual), 370E (Elementary School Methods), 372E (Professional Laboratory Experiences), and 374 (Fundamentals of Reading); History 464 (Washington and the Pacific Northwest); Music 107 (Survey); and Public Health 461 (School and Community Health).

FIRST YEAR		SECOND YEAR	
	CREDITS		CREDITS
Home Ec. 101.....	1	Home Ec. 215.....	3
Home Ec. 115.....	3	Home Ec. 234.....	3
Home Ec. 125.....	3	Home Ec. 248.....	3
Home Ec. 134.....	5	Econ. 200 Introduction.....	5
Art 109 Design.....	3	Educ. 209 Educ. Psychol.....	3
Chem. 101-102 General.....	10	Educ. 230 State Manual.....	2
Engl. 101, 102, 103 Composition.....	9	Music 107 Survey.....	5
P.E. 110 Health.....	2	Nursing 100 Home Nursing.....	3
Speech 100 Basic Improvement.....	5	Psychol. 100 General.....	5
Electives.....	4	Sociol. 110 Survey.....	5
P.E. Activity.....	3	Zool. 208 Physiology.....	5
	48	Electives.....	3
		P.E. Activity.....	3
			48
THIRD YEAR		FOURTH YEAR	
	CREDITS		CREDITS
Home Ec. 307.....	5	Home Ec. 348.....	3
Home Ec. 315.....	5	Home Ec. 356.....	3
Home Ec. 338.....	3	Home Ec. 457.....	3
Home Ec. 347.....	5	Home Ec. 495, 407, 434, or 447.....	3
Home Ec. 354.....	5	Educ. 371S Directed Teaching.....	8
Educ. 370 Intro. to Teaching.....	5	Educ. 372E Professional Lab. Experiences.....	3
Procedures.....	5	Educ. 360 Principles.....	3
Educ. 370E Elem. School Methods.....	5	Educ. 374 Fundamentals of Reading.....	5
Educ. 332 Home Economics.....	3	Hist. 464 Wash. and the Pacific N.W.....	5
Educ. 390 Evaluation.....	3	Nursery School 305 Personality Growth.....	3
Micro. 301 Bacteriology.....	5	Pub. Health 461 School & Comm. Health.....	5
Electives.....	1	Electives.....	1
	45		45

CURRICULUM IN INSTITUTION ADMINISTRATION. This prescribed curriculum is for students who plan careers as dietitians in food service. Those who intend to become members of the American Dietetic Association must take a year's internship in an approved administrative or hospital dietetics course after completing this program.

FIRST YEAR

	CREDITS
Home Ec. 101.....	1
Home Ec. 115.....	3
Home Ec. 125.....	3
Art 109 Design.....	3
Chem. 101-102 General.....	10
Engl. 101, 102, 103 Composition.....	9
P.E. 110 Health.....	2
Psychol. 100 General.....	5
Electives.....	9
P.E. Activity.....	3
	<hr/> 48

SECOND YEAR

	CREDITS
Home Ec. 130, 134, or 231.....	5 or 2
Home Ec. 215.....	3
Home Ec. 248.....	3
Chem. 230 Organic.....	5
Econ. 200 Introduction.....	5
Physics 190 Selected Topics.....	5
Sociol. 110 Survey.....	5
Zool. 208 Physiol.....	5
Electives.....	9 or 12
P.E. Activity.....	3
	<hr/> 48

THIRD YEAR

	CREDITS
Home Ec. 307, 407.....	8
Home Ec. 315.....	5
Home Ec. 347.....	5
Home Ec. 348.....	2
Home Ec. 354.....	5
Home Ec. 356.....	3
Micro. 301 Bacteriol.....	5
Nursery School 305 Personality Growth.....	3
Electives.....	9
	<hr/> 45

FOURTH YEAR

	CREDITS
Home Ec. 372, 472, 473, 474.....	16
Home Ec. 408.....	3
Home Ec. 457.....	3
Biochem. 361 Biochem.....	3
Educ. 333 Teaching Inst. Admin.....	5
Electives.....	15
	<hr/> 45

CURRICULUM IN BUSINESS, JOURNALISM, AND PUBLIC HEALTH. Those anticipating work as sales promoters with food, equipment, or utility companies, or planning to combine home economics with journalism, or with work in a social or public health agency, follow the institution administration curriculum for the first three years, and during their fourth year take one of these sequences:

FOURTH YEAR

HOME ECONOMICS AND BUSINESS

	CREDITS
Home Ec. 316.....	3
Home Ec. 408 and 415, or Biochem. 361 Biochem.....	6-3
Home Ec. 457.....	3
Journ. 100 Journalism Today.....	2
Journ. 200 Prelim. News Writing.....	5
Speech 120 Public Speaking.....	5
Electives.....	21-24
	<hr/> 45

HOME ECONOMICS AND JOURNALISM

	CREDITS
Home Ec. 457.....	3
Journ. 100 Journalism Today.....	2
Journ. 200 Prelim. News Writing.....	5
Journ. 201 Copy Editing.....	3
Journ. 220 Advertising.....	3
Journ. 303 Public Relations.....	3
Journ. 304 Mag. Article Writing.....	3
Journ. 342 Radio Advertising.....	3
Electives.....	20
	<hr/> 45

HOME ECONOMICS AND SOCIAL OR
PUBLIC HEALTH WORK

	CREDITS
Home Ec. 408.....	3
Home Ec. 457.....	3
Pub. Health 301 or 402 Comm. Disease.....	3
Pub. Health 412 Organizations and Services.....	3
Pub. Health 463 Comm. Organization.....	3
Pub. Health 464 Comm. Educ.....	3
Pub. Health 470 Statistics.....	2
10 credits from Soc. Work 300, 301, 302, 304, 305.....	10
Electives.....	15
	<hr/> 45

BACHELOR OF ARTS IN HOME ECONOMICS

CURRICULUM IN TEXTILES, CLOTHING, AND ART. This prescribed curriculum is designed for students whose primary vocational interest is in clothing.

FIRST YEAR		SECOND YEAR	
	CREDITS		CREDITS
Home Ec. 101.....	1	Home Ec. 234.....	3
Home Ec. 125.....	3	Art 106 Drawing.....	3
Home Ec. 134.....	5	Art 111 Design.....	3
Art 105 Drawing.....	3	Art 151 Figure Sketching.....	1
Art 109, 110 Design.....	6	Econ. 200 Introduction.....	5
Chem. 101-102 General.....	10	Hist. 101, 102 Medieval Europe.....	10
Engl. 101, 102, 103 Composition.....	9	Psychol. 100 General.....	5
P.E. 110 Health.....	2	Sociol. 110 Survey.....	5
Electives.....	6	Electives.....	10
P.E. Activity.....	3	P.E. Activity.....	3
	48		48
THIRD YEAR		FOURTH YEAR	
	CREDITS		CREDITS
Home Ec. 334, 434.....	6	Home Ec. 425.....	3
Home Ec. 347.....	5	Home Ec. 426.....	3
Home Ec. 354.....	5	Home Ec. 433.....	5
Home Ec. 356.....	3	Home Ec. 435, 436.....	10
Art 369, 370, 371 Costume Design & Illust.	6	Art Electives.....	8
Philos. 100 Introduction.....	5	Electives.....	16
Electives.....	15		45
	45		

BACHELOR OF ARTS

CURRICULUM IN DESIGN FOR APPAREL MANUFACTURING. This prescribed curriculum correlates work in the Schools of Home Economics and Art and the College of Business Administration. Its purpose is to equip qualified students with the knowledge and skills essential to designing for apparel manufacturing. Practical experience working in factories is required and skill in typing is highly desirable. For the first two years, students follow the textiles, clothing, and art curriculum, then take this sequence in their third and fourth years:

THIRD YEAR		FOURTH YEAR	
	CREDITS		CREDITS
Home Ec. 334, 434.....	6	Home Ec. 425.....	3
Home Ec. 347.....	5	Home Ec. 426.....	3
Home Ec. 354.....	5	Home Ec. 433.....	5
Home Ec. 356.....	3	Home Ec. 435, 436.....	10
Art 329. Appreciation.....	2	Business Admin. electives.....	10-15
Art 369, 370 Costume Design & Illust.	4	From Acctg. 150 Fundamentals (4); Hum. Rel. 460 Hum. Rel. in Indus- try (5); Pers. 310 Pers. Mgmt. (5); Mktg. 391 Advertising (5); Mktg. 441 Retail Sales Promotion (3)	
Mktg. 301, 381 Mktg. & Retailing.....	10	Prod. 380 Field Work.....	6
Social science and humanities electives.....	10	Electives.....	8-3
	45		45

NONPROFESSIONAL CURRICULUM IN CLOTHING AND ART. This elective curriculum is for those who wish to stress clothing and art. Suggested electives are: Home Economics 110 or 115; 248; 300 or 307; 457 or Nursery School 305 (Personality Growth of the Preschool Child); Architecture 105 (The House); and courses in the General Education program. The first two years are identical with the professional textiles, clothing, and art curriculum.

THIRD YEAR		FOURTH YEAR	
	CREDITS		CREDITS
Home Ec. 334, 434.....	6	Home Ec. 425.....	3
Home Ec. 347.....	5	Home Ec. 433.....	5
Home Ec. 354.....	5	5 credits from Home Ec. 321 (2), 322 (2), 329 (2), and 426 (3).....	5
Home Ec. 356.....	3	Art or upper-division business electives.....	10
Art 369, 370 Costume Design & Illust.....	4	Electives.....	22
Philos. 100 Introduction.....	5		45
Electives.....	17		
	45		

BACHELOR OF SCIENCE

NONPROFESSIONAL GENERAL CURRICULUM. This elective curriculum is for students who want a broad home economics background without specialization. Suggested electives are: Architecture 105 (The House); Microbiology 301 (General Bacteriology); Physics 190 (Selected Topics); Sociology 353 (Social Factors in Marriage); and courses in education, journalism, nursery school, and in the General Education program.

FIRST YEAR		SECOND YEAR	
	CREDITS		CREDITS
Home Ec. 101	1	Home Ec. 215	3
Home Ec. 115	3	Home Ec. 234	3
Home Ec. 125	3	Home Ec. 248	3
Home Ec. 134	5	Econ. 200 Introduction	5
Art 109 Design	3	Psychol. 100 General	5
Chem. 101-102 General	10	Sociol. 110 Survey	5
Engl. 101, 102, 103 Composition	9	Zool. 208 Physiol.	5
P.E. 110 Health	2	Electives	16
Electives	9	P.E. Activity	3
P.E. Activity	3		48
	48		
THIRD YEAR		FOURTH YEAR	
	CREDITS		CREDITS
Home Ec. 307	5	Home Ec. 457	3
Home Ec. 347	5	Electives	42
Home Ec. 348	2		45
Home Ec. 354	5		
Home Ec. 356	3		
Nursery School 305 Personality Growth	3		
Electives	22		
	45		

COURSES AND PROGRAMS FOR STUDENTS MAJORING IN OTHER FIELDS

Recommended electives for general college students are: Home Economics 110, 125, 134, 215, 231, 240 (or 347), 248, 300 (or 307), 321, 322, 332, 350 (or 354), 356, and 457.

For College of Business Administration students interested in institution management, this sequence is recommended: Home Economics 115, 125, 215, 240, 307, 372, 472, 473, and 474; Chemistry 101 and 102 (General); and Microbiology 301 (General Bacteriology).

Home Economics 115, 125, 231, 240, 300, 350, 356, and 457, or approved substitutes, are recommended as supporting courses for students majoring in journalism.

ADVANCED DEGREES

Graduates in institution administration who wish to become hospital dietitians select a hospital training course, which is a dietetic internship, for their fifth year of study. Those who wish to become dietitians in lunch rooms, restaurants, or dormitories select an administration internship, such as the one offered by the School of Home Economics. Some of these internships carry graduate credit, and completion of all approved courses makes students eligible for membership in the American Dietetic Association.

Students who intend to work toward a master's degree must meet the requirements of the Graduate School (see page 261).

MASTER OF ARTS OR MASTER OF SCIENCE. The Master of Arts is attained by work in textiles and clothing, the Master of Science by work in foods and nutrition. Study in either area may be combined with home economics education or family economics. A minor in a field related to home economics is required.

MASTER OF ARTS IN HOME ECONOMICS OR MASTER OF SCIENCE IN HOME ECONOMICS. There is no foreign language requirement for these degrees. Candidates may take all their work in home economics, or may take up to 12 credits in a related field, such as art, economics, or the biological, physical, or social sciences. Candidates must present acceptable undergraduate preparation in home economics and basic fields.

COURSES FOR UNDERGRADUATES

- 101 Introduction to Home Economics (1; A)** **Rowntree**
Orientation to college; women's educational needs and opportunities in the professional fields.
- 110 Food and Nutrition (5; AWS)** **Eubanks**
Food selection and preparation, and family meal planning and service, with emphasis on nutritive and economic values. For nonmajors.
- 115 Food Preparation (3; AW)** **Dresslar, Rose**
Cookery techniques presented in lecture-demonstrations, followed by laboratory experience. Food selection, basic cookery, simple meal planning, service, and cost calculation.
- 119 Nutrition and Food Preparation (5; W)** **Rose**
Demonstrations in preparing food, planning and serving meals; nutritive needs of different age groups and types. For student nurses.
- 125 Textiles (3; AWS)** **Brockway**
Relationship of raw materials, construction, and finish to quality and cost; identification of fibers, yarns, and fabrics; microscopic and chemical tests; economic development of textile industry.
- 130 Clothing and Textiles (5; W)** **Warning**
Construction, using commercial patterns. Planning and selecting a wardrobe. For nonmajors. Not open to students who have taken 134.
- 134 Clothing Construction and Selection (5; AWS)** **Thorson, Warning, Wybourn**
Analysis and selection of clothing and accessories. Wardrobe inventory. Planning and construction of cotton or linen dresses. Not open to students who have taken 130.
- 215 Meal Planning and Preparation (3; AS)** **Rose**
Factors in food purchasing. Preparation and service of nutritious and attractive meals for families on different economic levels. Prerequisite, 115 or permission.
- 231 Clothing Selection (2; S)** **Payne**
Choice of clothing, emphasizing appropriateness to personality and occasion as well as quality and cost. Not open to students who have taken 130 or 134.
- 234 Costume Design and Construction (3; AWS)** **Warning, Thorson**
Flat-pattern designing and wool techniques, including the design of a muslin pattern and the use of it in making a wool dress; study of clothing for children. Prerequisites, 130 or 134, and Art 109.
- 240 Home Furnishing (3; AWS)** **Hosmer**
Color and design; selection and arrangement of furniture and furnishings. Fabrics, floor coverings, wall and window treatment, and accessories. For nonmajors. Not open to students who have taken 347.
- 248 The House, Its Equipment and Management (3; AW)** **Johnston**
Management of time, energy, and equipment in the home as a factor in successful family living.
- 300 Nutrition (2; WS)** **Johnson**
Importance of food to the maintenance of health; nutritive values and human needs emphasized. For nonmajors.
- 305 Diet in Health and Disease (3; AS)** **Johnson**
Practical applications of nutrition principles to feeding problems and to dietary modifications necessitated by disease. For student nurses. Prerequisite, 119.
- 307 Nutrition (5; A)** **Rowntree, Johnson**
Chemistry of digestion and metabolism. Food values; human requirements and ways of meeting them at different cost levels. Prerequisites, general chemistry and physiology.
- 315 Advanced Food Selection and Preparation (2 or 5; AS)** **Dresslar**
Relationship of science to cookery. Food preservation. Simple experimental cookery. Meal preparation and service; food budgeting and purchasing. Qualified transfer students receive 2 credits. Prerequisites, 215 and general chemistry.
- 316 Demonstration Cookery (3; W)** **Dresslar**
Techniques and methods adapted to teaching and business. Prerequisite, 215 or permission.
- 321 Needlecraft (2; W)** **Payne**
Italian embroidery and its application to table and other household linens. History of lace. Prerequisites, 130 or 134, and Art 109.
- 322 Needlecraft (2; S)** **Payne**
National and historic embroideries with application to modern use in the home and in costume. Prerequisites, 130 or 134, and Art 109.
- 329 Hand Weaving (2; AWS)** **Brockway**
Mechanism of looms, warping techniques, designing and weaving with various yarns; contemporary designers.
- 334 Costume Design and Construction (3; AW)** **Payne, Wybourn**
Design by draping. Study of clothing production at all price levels. Silk and rayon technique. Prerequisite, 234.
- 338 Clothing for the Family (3; AS)** **Wybourn**
Study of family clothing problems, considering income, occupation, and health as well as esthetic and psychological factors; handling of silk and synthetic fabrics; construction, including renovation and children's garments. Prerequisite, 234.

- 347 Home Furnishing (5; AW)** **Hosmer**
Selection and arrangement of house furnishings to contribute to family living: wall treatment, floor coverings, fabrics, furniture, accessories, furnishings, and budgets. Field trips and special laboratory projects. Not open to students who have taken 240. Prerequisites, 125 and Art 109.
- 348 Home-Management House (2-3; AWS)** **Eubanks**
Residence in House with opportunity to apply principles of homemaking in money management; keeping of records; care of house; group relationships; and food buying, preparation, and service. *Advance reservation required.* Home economics education students receive 3 credits; others, 2.
- 350 Managing Family Finances (3; WS)** **Johnston**
Planning the use of financial and other resources to further the goals of the family. The connection between outside social and economic conditions and personal financial problems. For nonmajors.
- 354 Family Economics and Finances (5; AS)** **Johnston**
Economic and social conditions affecting the consumer, such as credit and marketing practices; managing family finances in relation to these conditions. Prerequisite, Economics 200.
- 356 Family Relationships (3; AWS)** **Rowntree**
Principles underlying good family relationships; wholesome adjustment of the home to a changing society.
- 372 Institution Food Preparation (5; A)** **Smith**
Laboratory and institution practice in large-quantity food preparation and cost control. Prerequisite, 215.
- 407 Advanced Nutrition (3; W)** **Rowntree**
Recent research on vitamins, minerals, amino acids, and their interrelationships. Methods of utilizing knowledge in public health work and in teaching. Prerequisites, 307 and organic chemistry, or permission.
- 408 Diet Therapy (3; S)** **Johnson**
Nutrition as a curative and preventive factor in disease. Primarily journal readings. Prerequisite, 407.
- 415 Experimental Cookery (3; S)** **Dresslar**
Food experiments illustrating science applications. Subjective and objective testing of food. Prerequisite, 315 or permission.
- 425 Advanced Textiles (3; W)** **Brockway**
Tests for textile strength, sun fading, washing, weight, thread count, water repellency, quantitative analysis, and microanalysis. Developments in synthetics and finishes, distributive education, technical and trade organizations, legislation, and standardization. Prerequisites, 125, Economics 200, and general chemistry.
- 426 Historic Textiles (3; S)** **Hosmer, Brockway**
Fabrics through the centuries, their relationship to cultural forces. Collections in the School and at the Seattle Art Museum are studied. Prerequisites, 347 and Art 111, or their equivalents. Correlation of design, production, and use.
- 433 History of Costume (5; A)** **Payne**
Relationship of the fashions of each historic period to their esthetic and social backgrounds. A collection of national and historic costumes is studied as source material for professional designing. Prerequisites, 234 and Art 369, or permission.
- 434 Costume Design and Construction (3; WS)** **Payne, Wybourn**
Basic principles of coat and suit construction; comparative costs of ready-to-wear. Prerequisites, 334 or 338, and junior standing.
- 435 Advanced Costume Design and Construction (5; W)** **Payne**
Flat-pattern drafting, grading, and designing. Prerequisites, 434 and Art 369.
- 436 Advanced Costume Design and Construction (5; S)** **Payne**
Advanced designing by draping; custom work. Prerequisite, 435.
- 447 Advanced Home Furnishing (3; S)** **Hosmer**
Construction of draperies and slip covers. Selection of floor and wall coverings, lighting fixtures, and accessories. Arrangement of furnishings. Individual projects. Prerequisite, 347 or Art 312.
- 454 Advanced Family Economics and Finances (2; W)** **Johnston**
Family adjustment to differing social and economic conditions. Legislation that affects consumers. Interaction of production, distribution, and consumption of consumer goods. Prerequisite, 350 or 354.
- 457 Child Nutrition and Care (3; WS)** **Rowntree, Wade**
Physical, mental, and emotional health of children. Experience with parents and children in the Child Nutrition Service. Prerequisite, 300, 307, or permission.
- 472 Institution Food Purchasing (3; W)** **Terrell**
Market organization, buying procedures, payment and credit; food selection and care; inspection of merchandise for those who plan to do institution buying. Prerequisite, 315.
- 473 Institution Management (3; S)** **Terrell**
Principles of organization, executive qualifications, characteristic responsibilities for an institution manager. Types of institutions, personnel administration, management controls, planning of work and equipment layout, budget analysis. Professional organizations and ethics presented from the standpoint of managers of food service institutions. For institution administration students; others by permission.

- 474 Institution Management (5; A)** **Parks**
Food and food service accounting problems. Recording financial transactions; cost controls; profit and loss statements. Prerequisite, 215.
- 475 Institution Equipment (3; A)** **Terrell**
Institution kitchens and serving units; routing of work; equipment selection, operation, and care; repair and depreciation records. Prerequisite, 474 (which may be taken concurrently).
- 495 Special Problems in Home Economics (2, maximum 6; AWS)** **Staff**
Individual study and research in fields of special interest. In registration, field should be indicated by letter. Prerequisite, permission.
- | | |
|-------------------------------|-----------------------------|
| A. Costume Design | E. Family Economics |
| B. Institution Administration | F. Foods |
| C. Nutrition | G. Home Economics Education |
| D. Textiles | H. Family Relations |
- I. Home Management

COURSES FOR GRADUATES ONLY

- 507 Readings in Nutrition (*; AW)** **Rowntree, Johnson**
Library research. Prerequisite, 407 or equivalent.
- 515 Readings in Food Selection and Preparation (*; W)** **Dresslar**
Professional literature on recent developments.
- 554 Social and Economic Problems of the Consumer (3, maximum 5; S)** **Johnston**
Selected topics in the family economics field. Prerequisites, 454 or equivalent and permission.
- 562 Home Economics Education (*; WS)** **McAdams**
Study of achievements, trends, functions, methods, and teaching materials.
- 576, 577, 578, 579 Supervised Field Work (4,4,4,4; AWS,AWS,AWS,AWS)** **Terrell**
Twelve months of practice and organized class work for graduates in institution management and dietetics. An administrative dietetics internship approved by the American Dietetic Association. Fee, \$25 (payable first quarter).
- 600 Research (*; AWS)**
In registration, field of interest should be indicated by letter. Prerequisite, permission.
- | | |
|-------------------------------|----------|
| A. Costume Design | Payne |
| B. Institution Administration | Terrell |
| C. Nutrition | Johnson |
| D. Textiles | Brockway |
| E. Family Economics | Johnston |
| F. Foods | Dresslar |
| G. Education | McAdams |

JOURNALISM

(See School of Communications, page 68)

LAW, PREPROFESSIONAL PROGRAM

Adviser: 121 Education Hall

Students at the University who plan to enter the University School of Law may qualify for entrance by (1) obtaining a bachelor's degree before entrance; or (2) taking three years of undergraduate work (135 credits) with a 2.5 grade-point average; or (3) taking a special three-year course of prelegal training which leads to a bachelor's degree at the successful completion of the first year in the Law School.

Students who take the three-year course leading to a bachelor's degree after one year in the Law School choose one of three curricula. The College of Business Administration provides a business-law curriculum (see page 184) and the College of Arts and Sciences provides both an arts-law and a science-law curriculum. In all these curricula the three-year program must include 138 credits with a 2.5 grade-point average, and the required quarters in physical education activity and/or military training, if a degree is to be conferred by the college at the end of a year in the Law School.

These three-year curricula are open to students from other institutions who enter the University with advanced standing, provided that they earn at least 45 approved credits in the University before entering the Law School. This privilege is not extended

to normal-school graduates attempting to graduate in two years nor to transfer students who enter the University with the rank of senior.

ARTS-LAW CURRICULUM. The requirements are: English 101, 102, 103 (Composition); Physical Education 110 or 175 (Health); 6 quarters of physical education activity; 12 or 18 credits in R.O.T.C. courses; 25 credits in a special field; 20 credits in a related field; and 82 credits in electives, arranged to fulfill group requirements and to provide 28 credits in upper-division courses.

The following courses are especially recommended by the University of Washington Law School: General Business 101 (Introduction); Economics 200 (Survey); History 271, 272 (English Political and Social); Philosophy 100 (Survey), 120 (Logic); and Political Science 100 (Survey) and 260 (Introduction to Public Law). If a student takes all these basic courses, he may choose his special and related fields from any department in the College. If not, his special and related fields must be selected from economics, history, philosophy, and political science.

SCIENCE-LAW CURRICULUM. The requirements for this curriculum are the same as those for the arts-law curriculum except that a major in a physical or biological science may be substituted for the special and related field requirements.

LIBERAL ARTS

Assistant Professor: W. GLEN LUTEY, 213 Denny Hall

There is no curriculum leading to a degree in liberal arts. Courses in liberal arts are given as general interest courses for students in all fields.

COURSES FOR UNDERGRADUATES

- | | | |
|-----|--|-------|
| 101 | Introduction to Modern Thought (5; AWS)
Man's place in the universe; cosmic origins; origin and nature of life; mind and behavior; values. | Lutey |
| 111 | Introduction to the Study of the Fine Arts (5; AWS)
The appreciation of masterpieces of architecture, painting, sculpture, and music; the problems common to them; the philosophy of art; the relations of beauty, truth, and morality. | Lutey |

LIBRARIANSHIP, PREPROFESSIONAL PROGRAM

Adviser: GLADYS BOUGHTON, 112 Library

Students planning to apply for admission to the School of Librarianship should consult the Director of the School, in person or by correspondence, for guidance in their undergraduate studies. In general, it is recommended that a student establish a major in a subject of special interest to him and supplement his comprehensive knowledge of that field with a broad cultural course which includes literature, the political and social sciences, some aspect of the physical sciences, and psychology. A study of at least one modern foreign language is essential.

An undergraduate curriculum in the Division of General Studies (see page 96) provides a flexible program for students planning to enter the School of Librarianship.

Students without substantial library experience should have some instruction in elementary library studies during their undergraduate years. Attention is called to the all-University nonprofessional course, Librarianship 100 (The Use of Books and Libraries), given by the School of Librarianship. This course is open to all students, particularly new and lower-division students, and it helps to orient those interested in librarianship as a career. The School offers certain other undergraduate courses which, although primarily designed to prepare students to meet certification requirements for teacher-librarians, may serve also as introductory work for those who plan to enter the School after graduation (see page 270 for admission requirements).

More detailed information about prelibrarianship courses of study will be found in the School's *Announcement*, which is obtainable upon request from the office of the Director.

MATHEMATICS

Executive Officer: C. B. ALLENDOERFER, 243 Physics Hall

Professors: C. B. Allendoerfer, J. P. Ballantine, Z. W. Birnbaum, C. M. Cramlet, L. H. McFarlan, R. M. Winger.

Associate Professors: R. A. Beaumont, M. E. Haller, E. Hewitt, A. R. Jerbert, H. Mullemeister, H. S. Zuckerman.

Assistant Professors: S. P. Avann, F. H. Brownell, D. G. Chapman, D. B. Dekker, J. M. Kingston, R. B. Leipnik, E. Paulson, F. Yagi.

Instructors: M. G. Arsove, R. W. Ball, R. P. Peterson.

The Department of Mathematics offers courses leading to the degrees of Bachelor of Arts, Bachelor of Science, Master of Arts, Master of Science, Master of Science in Mathematical Statistics, and Doctor of Philosophy. For undergraduate students, it provides an elective curriculum, for those who are interested in a general, nonprofessional study of the subject, and a prescribed curriculum, for those who plan graduate work or a professional career in mathematics. Both curricula lead to bachelor's degrees. Students in the prescribed curriculum may choose either a mathematics or a mathematical statistics option.

The Department also offers first and second teaching areas for students in the College of Education (see page 202).

The prerequisite for a major in the Department of Mathematics is $1\frac{1}{2}$ units of algebra in either high school or college. Trigonometry and a fourth term of algebra in high school are strongly recommended. Students who have had trigonometry in high school may be exempted from Mathematics 104, and those who have had two years of algebra in high school may be exempted from Mathematics 105. Departmental tests are given for these exemptions. Students exempted from 104 and/or 105 may replace these courses with approved mathematics electives.

Mathematics 100 is an introductory course for students who plan to major in mathematics and for other science students. It may be taken concurrently with any other freshman mathematics course. A more extensive introductory course, which is designed for nonscience students, is Physical Science 104, given in the General Education program. Mathematics 101 may be taken concurrently with Mathematics 104, and Mathematics 102 with Mathematics 104, 105, or 106. Students who have had $1\frac{1}{2}$ units of algebra in high school may not take Mathematics 101 for credit, and those who have had $1\frac{1}{2}$ units of geometry may not take Mathematics 102 for credit.

No grade lower than C in any mathematics course is accepted for credit toward a major.

BACHELOR OF ARTS

In the elective curriculum, 48 credits in mathematics are required. Courses must include Mathematics 104, 105, 106, 307, 308, 309, and 20 credits in approved electives, 13 of which must be in upper-division courses. The only approved lower-division electives are Mathematics 100 and 281.

BACHELOR OF SCIENCE

In the prescribed curriculum, a grade-point average of 2.5 is required in all mathematics courses. For both options, requirements in other fields include: Physics 101, 102, and 103 (or 104, 105, and 106, or 121, 122, and 123, or 217, 218, and 219), and 15 credits each in the humanities and the social sciences. German or French is recommended as a humanities elective.

MATHEMATICS OPTION. Sixty credits in mathematics are required, including Mathematics 104, 105, 106, 307, 308, 309, and 32 credits in approved electives. The electives must include 9 upper-division credits each in two of these fields: algebra, analysis, and geometry. The only approved lower-division electives are Mathematics 100 and 281.

This sequence of courses is recommended but not prescribed: freshman year, Mathematics 100, 104, 105, and 106; sophomore year, Mathematics 307, 308, and 309; junior year, 401, 402, and 403; 421, 422, and 423; and senior year, 441, 425, and 426; 441, 442, and 443 (or 441, 451, and 452).

MATHEMATICAL STATISTICS OPTION. This option has a threefold purpose: to train professional statisticians; to instruct students who want to broaden their mathematical studies or who want a mathematical background for work in economics, sociology, genetics, psychology, education, or some other field; and to conduct research in statistics and provide competent consultation on statistical problems. To coordinate this program and to conduct the statistical work, the Department maintains a Laboratory of Statistical Research, directed by Z. W. Birnbaum.

In this option, Mathematics 104, 105, 106, 281, 307, 308, 309, 401, 481, 482, 483, and 484 are required. An additional requirement is 10 approved credits in courses on applications of statistical methods chosen from the offerings of other departments. Prospective graduate students should take additional upper-division mathematics courses.

ADVANCED DEGREES

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School (see page 261). The candidate's minimum undergraduate preparation for an advanced degree in mathematics must be equivalent to the requirements for a mathematics major for the Bachelor of Arts degree.

The minor in mathematics for a master's degree requires at least 12 credits in approved courses numbered 400 or above. At least 9 of these are to be taken in residence.

MASTER OF ARTS. A minimum of 27 approved credits, with at least 9 credits in courses numbered 500 or above, is prescribed. These courses must include at least 6 credits in each of three of the four categories: algebra, analysis, geometry, and statistics. The thesis for this degree, while demonstrating ability and aptitude, may be largely expository.

MASTER OF SCIENCE. A minimum of 27 approved credits, with at least 18 credits in courses numbered 500 or above, is prescribed. These courses must include at least 6 credits in each of three of the four categories: algebra, analysis, geometry, and statistics. The thesis should demonstrate the student's ability to engage in independent research.

MASTER OF SCIENCE IN MATHEMATICAL STATISTICS. The undergraduate preparation should consist of courses in mathematical statistics through Chi-Tests or the equivalent. The candidate must present a minimum of 27 approved credits in mathematics. This work may include, on approval, some courses in mathematical statistics needed to make up deficiencies in undergraduate preparation and must include at least 15 credits in mathematical statistics courses numbered 500 or above.

DOCTOR OF PHILOSOPHY. The general examination of a candidate for this degree covers (1) the subject matter usually covered in first-year graduate courses in algebra, real variable, complex variable, and at least one other field chosen by the candidate; and (2) additional material related to the candidate's field of special interest, such as that included in second-year graduate courses.

The minor for the degree of Doctor of Philosophy requires a minimum of 33 approved credits in courses numbered 400 or above, including at least 6 credits in each of three of the four categories: algebra, analysis, geometry, and statistics.

COURSES FOR UNDERGRADUATES

- | | | |
|-----|--|--------------|
| 100 | Introduction to Mathematical Thinking (2; AWS)
Mathematical logic, algebraic structures, and number systems. For students taking freshman mathematics courses. Prerequisite, one year of high school algebra and one year of plane geometry. | Staff |
| 101 | Intermediate Algebra (5; AWS)
Similar to third term of high school algebra. Prerequisite, one year of high school algebra. | Staff |
| 102 | Solid Geometry (3; AWS)
Not open to students who have taken solid geometry in high school. Prerequisite, one year of plane geometry. | Staff |
| 104 | Plane Trigonometry (3; AWS)
Trigonometric functions, identities, graphs, logarithms, and solution of triangles. Mathematics 100 may be taken concurrently as a supplement to this course. Prerequisites, one and one-half years of algebra and qualifying test (or 101), and one year of plane geometry. | Staff |

- 105 College Algebra (5; AWS) Staff**
Functions and graphs; linear and quadratic equations; progressions; complex numbers; theory of equations; determinants. Prerequisites, one and one-half years of algebra and qualifying test (or 101).
- 106 Analytic Geometry (5; AWS) Staff**
Straight lines, conics, and polar coordinates. Lines and planes in space, and quadric surfaces. Not open to students who have taken 153. Prerequisites, 104 and 105 (or exemption by qualifying test).
- 111 Theory of Investment (5; AWS) Staff**
Algebra review, percentage, simple interest, compound interest, progressions, and ordinary annuities. Does not count toward a mathematics major. Prerequisite, one year of algebra.
- 112 Mathematics of Finance and Insurance (5; WS) Staff**
Annuities due; deferred annuities; perpetuities and capitalized cost; sinking funds and amortization; depreciation; valuation of bonds; probability; insurance mathematics. Does not count toward a mathematics major. Prerequisite, 111.
- 122 Intermediate Algebra and Plane Trigonometry (5; S) Staff**
Primarily for pharmacy students. Not open to students who have taken any of 101, 104, 105, 154, 155, or 156. Does not count toward a mathematics major. Prerequisites, one year of high school algebra and one year of plane geometry.
- 153 Analytic Geometry and Calculus (5; AWS) Staff**
Functional relations and loci; the straight line. Limits, derivatives and differentiation of elementary functions; integral concept; elementary applications of calculus. Not open to students who have taken 106. Prerequisites, 104 and 105 (or exemption by qualifying test).
- 154, 155, 156 Mathematics for Architects (3,3,3; AW,WS,S) Staff**
Selected topics from college algebra, trigonometry, and analytic geometry. Analytic geometry is emphasized. Not open to students who have taken any of 104, 105, 106, 122, or 153. Does not count toward a mathematics major. Prerequisites, one and one-half years of algebra and one year of plane geometry for 154; 154 for 155; 155 for 156.
- 251, 252, 253 Analytic Geometry and Calculus (5,3,3; AWS,AWS,AWS) Staff**
251: integration processes; the circle, conics, and coordinate transformations; parametric equations; further applications of differential calculus. Not open to students who have taken 307. Prerequisite, 153. 252: differential and integral calculus; application to problems in mechanics. Polar coordinates, lines and planes in space, and infinite series. Not open to students who have taken 308. Prerequisite, 251. 253: space curves and surfaces, partial differentiation, and multiple integration. Not open to students who have taken 309. Prerequisite, 252.
- 281 Elements of Statistical Method (5; AWS) Staff**
Numerical and machine computation; graphical and tabular presentation of data; averages, measures of scatter, and other statistics; scatter diagram, least-square lines, regression, and correlation; elements of sampling. Prerequisites, 105 and one year of plane geometry. Formerly 113.
- 307, 308, 309 Differential and Integral Calculus (5,5,5; AWS,AWS,AWS) Staff**
Differentiation and integration of elementary functions with applications. Series, partial differentiation, and multiple integration. 307 not open to students who have taken 251; 308 not open to students who have taken 252; 309 not open to students who have taken 253.
- 382, 383 Statistical Inference in Applied Research (5,5; W,S) Staff**
Elements of probability; discrete and continuous distribution; binomial, Poisson, and normal distributions. Elements of sampling; confidence limits; simple tests of statistical hypotheses, analysis of variance, and applications to biological problems. Prerequisites, 106 and 281, or permission, for 382; 382 for 383. Formerly 313, 385.
- 401 Linear Algebra (5; A) Staff**
Matrices; determinants; groups of transformations; linear spaces; linear transformations and their invariants. Prerequisite, 309. Formerly 480.
- 402, 403 Introduction to Modern Algebra (3,3; W,S) Staff**
Construction of the number systems in algebra; groups, rings, and fields; polynomials. Prerequisite, 401 for 402; 402 for 403. Not open to students who have taken 494, 495, and 496.
- 421, 422 Ordinary and Partial Differential Equations (3,3; AWS) Staff**
Elementary methods of solution, linear differential equations, systems of differential equations, series solutions and elementary partial differential equations. Prerequisites, 309 or 253 for 421; 421 for 422. Not open to students who have taken 414, 415, and 416.
- 423 Advanced Calculus and Vector Analysis (3; AWS) Staff**
Line and surface integrals; Stokes' Theorem; vector methods; elements of matrices; Jacobians; implicit function theorem. Prerequisite, 309 or 253.
- 424, 425, 426 Higher Calculus (3,3,3; A,W,S) Staff**
Elementary logic, sets, functions, real numbers, sequences, continuity, derivatives, integrals, elementary functions, functions on Euclidean n -space, and Fourier series. Prerequisites, 309 and 401, or permission, for 424; 424 for 425; 425 for 426.
- 427, 428, 429 Topics in Applied Analysis (3,3,3; A,W,S) Staff**
Elementary complex variable; Fourier series and integrals; Laplace transforms; orthogonal functions; partial differential equations. Prerequisites, 421 and 423 for 427; 427 for 428; 428 for 429.
- 441 Foundations of Geometry (3; A) Staff**
Axiomatic treatment of the foundations of projective and Euclidean geometries. Introduction to non-Euclidean geometry. Prerequisite, 309.

- 442 Advanced Analytic Geometry (3; W) Staff**
Advanced topics in plane analytic geometry; solid analytic geometry, including analysis of quadric surfaces; homogeneous coordinates. Prerequisites, 309 and 401, or permission.
- 443 Differential Geometry (3; S) Staff**
Elementary differential geometry of curves and surfaces. Prerequisites, 421 and 442.
- 451, 452 Elementary Topology (3,3; W,S) Staff**
A basic course in the properties of a space which are invariant under continuous transformations. Set topology, homology, homotopy, fixed point theorems, and manifolds. Prerequisites, 9 credits in courses numbered 400 and above for 451; 451 for 452.
- 462, 463 Interpolation and Approximation (3,3; W,S) Staff**
Operations on a computing machine; polynomial interpolation by the methods of La Grange; nth order difference; divided differences and valcepts; remainders; solution of equations, numerical integration of functions and differential equations of first and second orders. Prerequisites, differential calculus for 462; 462 or permission for 463. Not open to students who have taken 452 and 453.
- 481 Calculus of Probabilities (5; A) Staff**
Fundamental concepts: discrete and continuous random variables; mathematical expectations; laws of large numbers; important types of distributions; characteristic functions; central limit theorem. Prerequisite, 309.
- 482 Classical Methods of Statistical Inference (5; W) Staff**
Universe, sample, parameters, and statistics; point estimates and confidence regions; distributions of classical statistics and their use in estimation and tests of hypotheses. Prerequisites, 401 and 481.
- 483 Theory of Correlation (5; S) Staff**
Multivariate distributions; variances, covariances, regression, and correlation; specialization of multivariate normal distributions; sampling of bivariate normal variables. Prerequisite, 482.
- 484 Chi-Tests (5; A) Staff**
Distribution of the Chi-square, and its use for testing hypotheses; contingency tables; parameters estimated from sample; some nonparametric methods. Prerequisite, 483.
- 497 Seminar in Mathematics (2-5; offered when demand is sufficient) Staff**

COURSES FOR GRADUATES ONLY

- 504, 505, 506 Modern Algebra (3,3,3; A,W,S) Staff**
Theory of groups, rings, integral domains, and fields; polynomials; vector spaces, Galois theory, and theory of ideals. Prerequisite, 403 or equivalent.
- 511, 512, 513 Special Topics in Algebra (3,3,3; A,W,S) Staff**
Each may be repeated twice for credit.
- 521, 522, 523 Functions of a Complex Variable (3,3,3; A,W,S) Staff**
Analytic functions, contour integration, power series, conformal representation, analytic continuation, and other topics. Prerequisite, 426, 429, or equivalent. Not open to students who have taken 541, 542, and 543.
- 524, 525, 526 Functions of a Real Variable (3,3,3; A,W,S) Staff**
Real numbers; cardinal numbers; theory of sets; topological spaces; sequences; functions; advanced topics in series; measure; theory of integration, including Lebesgue and Stieltjes integrals. Prerequisite, 426 or equivalent.
- 527, 528, 529 Methods of Mathematical Physics (5,5,5; A,W,S) Staff**
Real and complex functions, Fourier analysis, Fuchsian differential equations, linear algebra, and eigen value theory. Special functions, second-order linear partial differential equations, and approximate solutions of Schrödinger equation. Prerequisite, 426, 429, or equivalent. Not open to students who have taken 514, 515, and 516.
- 530 Seminar in Analysis (*, maximum 5; AWS) Staff**
- 531, 532, 533 Special Topics in Analysis (3,3,3; A,W,S) Staff**
Each may be repeated twice for credit.
- 547, 548, 549 Algebraic Geometry (3,3,3; A,W,S) Staff**
Topics in the theory of algebraic curves in the plane and in space; quadratic transformations.
- 551, 552, 553 Special Topics in Geometry (3,3,3; A,W,S) Staff**
Each may be repeated twice for credit.
- 581 General Theory of Estimation and Testing Hypotheses (5; W) Staff**
The Neyman-Pearson theory; maximum likelihood statistics; general theory of confidence regions; elements of decision theory. Prerequisite, 484.
- 582 Analysis of Variance and Design of Experiments (5; S) Staff**
Analysis of variance and covariance to determine factors producing variation; use of randomized blocks, Latin squares, and other techniques in planning experiments. Prerequisite, 482.
- 590 Seminar in Probability and Statistics (1-3; AWS) Staff**
Reports by students and staff on contemporary research.
- 591, 592, 593 Special Topics in Statistics (3,3,3; A,W,S) Staff**
Topics may be selected from the following: multivariate analysis, advanced probability, modern theory of estimation, time series, stochastic processes, sequential analysis, decision theory, and discriminatory analysis. Each may be repeated twice for credit.
- 600 Research (*; AWS) Staff**
Prerequisite, permission.
- Thesis (*; AWS) Staff**

MEDICAL TECHNOLOGY

Supervisor: LESTER D. ELLERBROOK, D511 Health Sciences Building

The medical technology program, which leads to a bachelor's degree, is designed to train young men and women to be technicians in laboratories of hospitals or clinics and in research laboratories. It consists of three years of training in chemistry, zoology, physics, physiology, anatomy, histology, and microbiology, followed by eighteen months of full-time didactic and practical work under supervision in University and hospital laboratories. This prescribed curriculum is supervised by the Department of Pathology in the School of Medicine. Courses in biochemistry, microbiology, and pathology are listed with those of other departments in the School of Medicine.

BACHELOR OF SCIENCE IN MEDICAL TECHNOLOGY

Students must choose their electives in the humanities and the social sciences.

FIRST YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Chem. 111 or 115 General.....	5	Chem. 112 General.....	5	Anat. 301 General.....	3
Engl. 101 Composition.....	3	Engl. 102 Composition.....	3	Chem. 113 Qualitative.....	5
Math. 101 Algebra or		Zool. 111 General.....	5	Engl. 103 Composition.....	3
104 Plane Trig.....	5	Electives.....	2	Zool. 112 General.....	5
P.E. 110 or 175 Health.....	2	P.E. Activity.....	1	P.E. Activity.....	1
P.E. Activity.....	1	R.O.T.C.....	2 or 3	R.O.T.C.....	2 or 3
R.O.T.C.....	2 or 3		16-19		17-20
	16-19				

SECOND YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Chem. 221 Quantitative.....	5	Chem. 231 Organic.....	3	Chem. 232 Organic.....	3
Physics 100 Survey or		Chem. 241 Lab.....	2	Chem. 242 Lab.....	2
170 For Nurses.....	5	Electives.....	10	Zool. 208 Physiology.....	5
Zool. 381 Microtechnique.....	2	P.E. Activity.....	1	Electives.....	5
P.E. Activity.....	1	R.O.T.C.....	2 or 3	P.E. Activity.....	1
R.O.T.C.....	2 or 3		16-19	R.O.T.C.....	2 or 3
	15-18				16-19

THIRD YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Biochem. 401 Biochem.....	3	Biochem. 402 Biochem.....	3	Micro. 443 Mycology.....	2
Biochem. 403 Lab.....	3	Biochem. 404 Lab.....	3	Micro. 444 Parasit.....	4
Micro. 441 General.....	6	Micro. 442 Pathogen.....	6	Speech 120 Pub. Speaking.....	5
Psychol. 100 General.....	5	Electives.....	3	Electives.....	4
	17		15		15

Third-year students register for biochemistry and microbiology courses at the Medical School Office. Permission is required. Students take Biochemistry 480 if 402 and 404 classes are filled.

At the conclusion of the third year, students must receive permission to register for the eighteen-month period of instruction in medical technology. During this period they take the full-time courses Pathology 321, 322, 323, 324, 325, and 326 (Medical Technology). In order to make the fees comparable to those of many schools of medical technology, the University grants only 5 credits for Pathology 321 and 6 for 322 through 325, and one-half the regular tuition fee is charged for these courses. Sixteen credits are given for 326, to meet graduation requirements.

MEDICINE, PREPROFESSIONAL PROGRAM

Adviser: VICTORIAN SIVERTZ, 121 Education Hall

This program is designed for students in the College of Arts and Sciences who plan to enter a medical school when their preprofessional training is completed.

The minimum requirement for admission to most medical schools is three years of college training (135 academic quarter credits) with a grade-point average of at

least 2.5. As recommended by the Association of American Medical Colleges, the course should include at least 9 credits of English, 12 credits of inorganic chemistry, 6 credits of organic chemistry, 12 credits of physics, 12 credits of biology, and the required quarters of physical education activity and/or military training. Some schools require a knowledge of a modern foreign language, and a few require a bachelor's degree.

Students who are interested in attending a particular medical school should complete its entrance requirements early in their college work. In general, medical school admissions committees favor a broad program of studies with the inclusion of as much work in the humanities and social sciences as possible. Students who have an aptitude for and an interest in the sciences, especially those who plan to do medical research or to become specialists in certain branches of medicine, are advised to take thorough training in a science such as chemistry, zoology, physics, or microbiology.

Because many premedical students are not admitted to medical school, all students in this program must select a major by the end of their second year. Each student, with an adviser in his major department and the premedical adviser, then plans a program that will enable him to complete the requirements for entrance into medical school by the end of the third year, and to complete the requirements for the bachelor's degree, either through his major department or through the first year's work in medical school (see Basic Medical Science, page 59), at the end of the fourth year.

During the third year the premedical adviser should be consulted about taking a medical aptitude test and applying for admission to medical school.

METEOROLOGY AND CLIMATOLOGY

Executive Officer: PHIL E. CHURCH, 201F Meteorology Building

Professor: P. E. Church.

Associate Professor: R. G. Fleagle.

Assistant Professor: F. I. Badgley.

Acting Assistant Professor: W. L. Schallert.

Lecturer: M. L. Barad.

Acting Instructor: E. P. McClain.

The Department of Meteorology and Climatology offers courses leading to the degrees of Bachelor of Science and Master of Science.

An elective curriculum which includes the branches of synoptic and dynamic meteorology and climatology is offered for undergraduate students working toward the bachelor's degree. This curriculum prepares students to receive the rating of professional meteorologist given by the United States Civil Service Commission.

BACHELOR OF SCIENCE

A minimum of 36 credits in courses numbered 300 or above, mathematics through calculus, Mathematics 281 or the equivalent, and one year of college physics are required. A grade of C or better must be earned in each of the required courses.

All students' courses must be approved by the Department.

ADVANCED DEGREES

Students who intend to work toward advanced degrees must fulfill the requirements of the Graduate School (see page 261).

MASTER OF SCIENCE. The requirements are: 27 credits exclusive of research and thesis, at least 18 in approved meteorology courses and the remainder in minor or supporting courses.

A program leading to the Doctor of Philosophy degree is being developed, with a number of new graduate courses not listed below. Interested students should write directly to Dr. Phil E. Church, Executive Officer of the Department of Meteorology and Climatology.

COURSES FOR UNDERGRADUATES

- 101 **Survey of the Atmosphere (5; AWS)** **Staff**
Composition and structure of earth's atmosphere; relation of earth to sun and consequent geographical temperature distribution; processes within the atmosphere which produce rain, snow, and other condensation phenomena; tropical and extratropical storms, thunderstorms, chinooks, and cold waves.
- 321 **Physical Climatology (5; A)** **Church**
Analysis of effects of latitude, altitude, mountains, ocean currents, wind systems, and various surfaces on the distribution of air temperatures, precipitation, and other climatic elements. Statistical reduction and interpretation of climatic data. Prerequisite, 101.
- 322 **Regional Climatology (5; W)** **Church**
Principles of several climatic classifications. Description of elements of climatic types of continents, emphasizing North America, and adjacent ocean areas based on the Koeppen and Thornthwaite classification systems. Prerequisite, 101.
- 328 **Applied Climatology (5; S)** **Church**
- 329 **Microclimatology (3; S)** **Church**
Climatic characteristics in the lower layers of the atmosphere. Soil temperatures and their relation to temperatures of overlying air. Vertical temperature, moisture, wind speed, and wind direction gradients. Effects of plane, concave, and convex surfaces and vegetal covering on temperature and wind distribution. Prerequisite, 101.
- 340 **Physical Meteorology (5; A)** **Fleagle**
Review of mechanics; atmospheric statics; ideal gases and adiabatic process; real gases and condensation process; growth of liquid droplets and ice crystals in the atmosphere; behavior of acoustic and shock waves in the atmosphere; behavior of light waves, radar waves, and radio waves in the atmosphere. Prerequisite, one year of college physics and Mathematics 307, or permission.
- 341 **Physical Meteorology (5; W)** **Fleagle**
Interchange of thermal radiation between the sun, the atmosphere, and the earth; thermal radiation from "atomic" explosions; electrical and magnetic properties and behavior of the upper atmosphere; structure and composition of the atmosphere. Prerequisite, 340 and Mathematics 308, or permission.
- 342 **Introduction to Atmospheric Motions (5; S)** **Fleagle**
Meteorological forces and the dimensions of atmospheric motions; equations of motion; geostrophic flow; thermal wind; zonal flow; curved horizontal flow; moving streamline systems; equation of continuity; horizontal divergence in wave-shaped streamline systems; vertical component of velocity; mechanism of pressure change; frontal surfaces; circulation theorem; potential vorticity theorem. Prerequisite, 341 and Mathematics 309, or permission.
- 350 **Meteorological Laboratory (5; A)** **Schallert, McClain**
International meteorological codes; plotting of meteorological charts; introduction to analysis of weather maps and allied charts. Prerequisite, 342.
- 360 **Meteorological Instruments and Observations (5; A)** **Badgley**
Accuracy and sensitivity of meteorological instruments and representativeness of meteorological observations; principles of operation and techniques of using common meteorological instruments for measuring precipitation, temperature, pressure, humidity, and wind (including winds aloft); principles of operation of radiosondes. Prerequisite, one year of calculus.
- 414 **Synoptic Meteorology (5; A)** **Schallert, McClain**
Conservative meteorological elements; atmospheric stability and instability and related phenomena; North American air masses; clouds and hydrometers; formation and characteristics of fronts. Prerequisite, 342.
- 415 **Synoptic Meteorology (5; W)** **Schallert, McClain**
The field of motion; frontal characteristics and cyclone structure; displacement and development of pressure systems. Prerequisite, 414.
- 445 **Atmospheric Thermodynamics (3; S)** **Badgley**
Fundamental thermodynamic concepts and their relation to kinetic theory; first and second laws of thermodynamics; change of phase; mixture of gases; nuclei and pseudo-adiabatic processes; theories of precipitation; thermodynamic charts and computations. Prerequisite, calculus and general physics.
- 451 **Meteorological Laboratory (5; W)** **Schallert, McClain**
Continuation of 350. Analysis of current weather maps using teletype data; routine three-dimensional atmospheric analysis utilizing upper air charts, aerological diagrams, and cross sections. Prerequisite, 350.
- 452 **Meteorological Laboratory (5; S)** **Schallert, McClain**
Continuation of 451. Analysis of weather maps and application of practical rules for estimating movement and development of pressure systems. Practice forecasting for selected stations. Prerequisite, 451.
- 462 **Oceanographic Meteorology (6; Summer)** **Fleagle**
Given at Friday Harbor only. Energy exchange between atmosphere and ocean, moisture gradients above water surface, and marine wind structure. Prerequisite, 342 or permission.
- 492 **Readings in Meteorology or Climatology (*; AWS)** **Staff**
Prerequisite, permission.
- 493 **Special Problems in Meteorology or Climatology (*; AWS)** **Staff**
Prerequisite, permission.

1942 Intro. to Atmospheric Motions (5)

- 494 **Meteorological Statistics** (*; AWS) **Staff**
Prerequisite, permission.
- 495 **Climatological Statistics** (*; AWS) **Staff**
Prerequisite, permission.

COURSES FOR GRADUATES ONLY

- 520 **Seminar (2-5; AWS)** **Staff**
- 541 **Dynamic Meteorology (3; A)** **Fleagle**
Elements of complex variable; vector analysis; Eulerian equation in rotating coordinates; hydrodynamic equations in spherical, natural, and Cartesian coordinates; energy equation; effect of changing pressure distribution on velocity field; streamlines and trajectories determined by particle dynamics. Prerequisite, 342 or permission.
- 542 **Dynamic Meteorology (3; W)** **Fleagle**
Particle dynamics applied to diurnal pressure wave, sea breeze, and air drainage; stability criteria for horizontal flow; determination of vertical component of velocity; pressure tendency equations; circulation and potential vorticity theorems; energy of atmospheric motions; motion of divergenceless waves in barotropic atmosphere, effects of friction, effects of baroclinic stratification, and nonlinear solution. Prerequisite, 541.
- 543 **Dynamic Meteorology (3; S)** **Fleagle**
Perturbation equations of motion in Eulerian and Lagrangian form; wave motions in incompressible fluid; wave motions in compressible fluid; Norwegian theory of cyclone formation; theory of long waves in a compressible baroclinic atmosphere; effect of a spherical earth. Prerequisite, 542.
- 546 **Atmospheric Turbulence (3; W)** **Badgley**
Distinction between laminar and turbulent flow; analogy between kinetic theory of gases and turbulence theory; Reynolds method of averaging; mean and eddy motion; mixing length theory; wind profiles in the lower atmosphere. Prerequisite, 342 or permission.
- 547 **Atmospheric Turbulence (3; S)** **Badgley**
Recent "statistical" theories of turbulence applied to the atmosphere. Diffusion of heat and matter in the atmosphere. Prerequisite, 546.
- 551 **Special Methods of Atmospheric Analysis (5, maximum 10; AW)** **Schallert**
Preparation of data and the techniques required for selected advanced nonroutine types of analysis. Analysis of special synoptic situations. Prerequisite, 451.
- 600 **Research** (*; AWS) **Staff**
Thesis (*; AWS) **Staff**

572 Seminar in Polar Meteor. (3)

MICROBIOLOGY

Executive Officer: C. A. EVANS, G305 Health Sciences Building

For students in the College of Arts and Sciences, the Department of Microbiology offers a four-year elective curriculum leading to a bachelor's degree. Microbiology courses are described with those of other departments in the School of Medicine (see page 274).

BACHELOR OF SCIENCE

The requirements are: 36 credits in microbiology courses, including Microbiology 300; 10 credits in botany or zoology; Physics 101, 102, and 103, or 104, 105, and 106 (General); Chemistry 115 and 116, or 111, 112, and 113 (General), 221 or 325 (Quantitative Analysis), 231, 232, 241, 242 or 335, 337, 345, and 346 (Organic); and Mathematics 104 (Plane Trigonometry), 105 (College Algebra), and 106 (Analytic Geometry).

A combined grade-point average of 2.5 in biology and chemistry courses is required for admission to Microbiology 300 and 441; a grade-point average of 2.0 in microbiology courses is required for graduation.

During their third and fourth years most students specialize in either general or medical microbiology.

GENERAL OPTION. Recommended courses are: Microbiology 235, 320, 430, 431, and 499; Biology 451 (Genetics); Botany 461 (Yeasts and Molds); Biochemistry 401 and 402 (Biochemistry); Chemistry 355, 356, and 357 (Physical); and Public Health 477 (Statistical Methods in Biological Assay).

MEDICAL OPTION. Recommended courses are: Microbiology 320, 322, 430 or 431, 441, 442, 443, and 444; Biochemistry 401 and 402 (Biochemistry); Biology 451 (Genetics); Botany 461 (Yeasts and Molds); Anatomy 330 (Microscopic) and 301 (General); and Pathology 231 (General).

MUSIC

Director: STANLEY CHAPPLE, 104 Music Building

Professors: S. Chapple, B. P. Jacobson, H. G. Kinscella, G. F. McKay, K. Munro, A. H. Werner, E. R. Zetlin.

Associate Professors: H. M. Hall, E. D. Harris, D. B. Irvine, C. W. Lawrence, T. F. Normann, M. Terry, J. W. Verrall, W. C. Welke, F. B. Wilson, E. Woodcock.

Assistant Professors: J. M. Beale, I. N. Bostwick, W. A. Eichinger, E. M. Heinitz, R. Hokanson, G. C. Kirchner, J. T. Moore, E. F. Risegari, C. A. Root, V. M. Sokol, A. J. Sorensen.

Instructors: E. J. Geissmar, K. K. Kantner, R. R. Rosinbum.

Acting Instructors: R. H. Allport, K. A. Cloud, D. C. Gibbard, H. A. Graf, F. H. Horsfall, E. Krenz, H. Lind, E. K. Lundgren, L. Martin, C. G. Peterson, R. P. Phillips, A. L. Schardt, T. Welty.

The School of Music offers courses leading to the degrees of Bachelor of Arts, Bachelor of Arts in Music, and Master of Arts in Music. For undergraduate students, the School provides one nonprofessional curriculum, for those who do not want vocational preparation, and four professional curricula, for those who intend to find careers in music composition, performance, or teaching, or in the field of music history and literature. The nonprofessional curriculum leads to the degree of Bachelor of Arts, the professional curricula to the Bachelor of Arts in Music.

In addition, the School offers a basic academic field and a second teaching area for students in the College of Education (see page 202), and courses for students majoring in other fields.

A piano examination is required of all entering music majors. For this examination the student should be able to read at sight music of the difficulty of the average hymn; to recognize and identify keys and key signatures and play all major and harmonic minor scales; and to play a simple piece by Bach, an easy sonatina, and an easy composition by a Romantic or contemporary composer. If the student cannot qualify in piano but can demonstrate proficiency on another approved instrument or in voice, he becomes a conditional music major and enrolls in Music 110A (Class Piano) until this deficiency is removed.

Throughout his four years, the music major is required to participate in two musical organizations, choosing from chorus, choir, orchestra, band, and chamber music ensembles. No credit is granted for this participation during the freshman and sophomore years; thereafter a maximum of 12 credits may be earned. A vocalist shall have one year's work in instrumental ensembles and an instrumentalist shall have one year's work in vocal ensembles.

Each music student shall choose a primary performance field, either voice or instrument. In general, the student must complete three quarters of work in applied music before he receives a grade, but if his work falls below a C average he is given a grade of D or E at the end of the current quarter and is expected to change his major. During his senior year the music student appears in public recital in his performance field, either as a soloist or as a member of a small ensemble.

A grade-point average of 2.5 in music courses is required for graduation.

The work of the first two years is essentially the same in all music curricula except music education.

FIRST YEAR

	CREDITS
Music 101, 102, 103	12
Vocal or Instrumental Instruction	6-9
Music Ensemble	0
Engl. 101, 102, 103 Composition	9
P.E. 110 or 175 Health	2
Electives	10
P.E. Activity	3
R.O.T.C.	6 or 9
	48-54

SECOND YEAR

	CREDITS
Music 201, 202, 203	12
Music 207, 208, 209	6
Vocal or Instrumental Instruction	6-9
Music Ensemble	0
Electives	15
P.E. Activity	3
R.O.T.C.	6 or 9
	48-54

In addition, composition and string majors take Music 124, 125, and 126 (Orchestral Instruments Laboratory) during the second year, and piano and organ majors take Music 131, 132, and 133 (Piano Sight Reading).

Before a student may register for upper-division courses in music, he must take

a comprehensive examination in music theory and music literature. Students in some of the professional curricula must also meet special entrance requirements for their majors.

BACHELOR OF ARTS

In the nonprofessional, elective curriculum, the student is required to earn a minimum of 30 credits in first- and second-year theory and literature; 12 credits in vocal or instrumental instruction; 18 credits in upper-division history and theory; and 15 credits in allied arts and literature.

BACHELOR OF ARTS IN MUSIC

The professional curricula are designed for those who intend to specialize in composition, in vocal or instrumental performance, in music education, or in music history and literature. A major is offered in each of these four fields, and within the curriculum in vocal or instrumental music the student has a choice of applied work in piano, violin or violoncello, voice, organ, or another approved instrument.

CURRICULUM IN COMPOSITION. Upper-division requirements are:

THIRD YEAR		FOURTH YEAR	
	CREDITS		CREDITS
Music 224, 225, 226	3	Music 408, 409	6
Music 301, 302	6	Music 411, 412	6
Music 304	2	Music 461, 462	6
Music 311, 312	6	Music 484, 485, 486	4
Music 361	5	Music 491, 492, 493	6
Music 384, 385, 386	4	Music Ensemble	6
Music 391, 392, 393	9	Electives	11
Music Ensemble	6		
Electives	7		45
	48		

CURRICULUM IN VOCAL OR INSTRUMENTAL MUSIC. To major in vocal or instrumental music, the student must show marked talent for performance. In this curriculum the four years must include 36 credits in vocal or instrumental instruction, of which 30 credits must be in the major instrument or voice, beginning with Music 150, and 6 credits in another instrument or voice. If the major instrument is organ, the 6 credits must be in voice (Music 110C and 120C, or 130).

PIANO. To become a piano major the student must take an examination in which he is required to play three two-part inventions by Bach, one memorized, or three compositions of equal difficulty from the pre-Haydn period; to play one complete sonata by Haydn, Mozart, or Beethoven; to play two short compositions, one each from Romantic and contemporary periods; to read at sight an easy accompaniment; to play all major and all harmonic and melodic minor scales, four octaves, hands together (M. 80, four notes to the beat); and to play major and minor arpeggios, root positions, and inversions. Upper-division requirements are:

THIRD YEAR		FOURTH YEAR	
	CREDITS		CREDITS
Music 304	2	Music 350	9
Music 331, 332, 333	6	Music 380	3
Music 334, 335	6	Music 434, 435, 436	6
Music 337, 338, 339	6	Music History or Theory	6
Music 350	9	Music Ensemble	3
Music Ensemble	6	Electives	18
Electives	10		45
	45		

VIOLIN AND VIOLONCELLO. Upper-division requirements are:

THIRD YEAR		FOURTH YEAR	
	CREDITS		CREDITS
Music 337, 338, 339	6	Music 334	3
Music 350	9	Music 350	9
Music 360	3	Music 360	3
Music 380	3	Music 380	3
Electives	24	Music Theory	5-6
	45	Electives	22
			45-46

ORGAN. Upper-division requirements are:

THIRD YEAR		FOURTH YEAR	
	CREDITS		CREDITS
Music 304	2	Music 350	9
Music 337, 338, 339	6	Music 357	2
Music 350	9	Music History or Theory	6
Music 384	1	Ensemble	6
Music 411, 412	6	Electives	22
Ensemble	6		
Electives	15		45
	45		

VOICE. To become a voice major the student must complete one year of French, or the equivalent, by the end of the sophomore year, at which time he will also take an examination in the playing of simple accompaniments. He will be expected to complete one year of German, or its equivalent, by the end of the junior year. Upper-division requirements are:

THIRD YEAR		FOURTH YEAR	
	CREDITS		CREDITS
Music 304	2	Music 334	3
Music 337, 338, 339	6	Music 350	9
Music 350	9	Music History or Theory	6
Ensemble	6	Ensemble	6
Engl. 257 Poetry	5	Electives	21
Electives	17		45
	45		

CURRICULUM IN MUSIC EDUCATION. Students who wish to emphasize high school teaching will follow the curriculum prescribed below.

Preparatory to entrance to the professional teacher-training courses, an examination in piano, voice, and syllable reading is given at the end of the sophomore year.

PIANO. Students who have offered piano for instrumental entrance requirements shall complete 12 credits in Music 130A of the piano course before graduation. Students who have substituted corresponding proficiency on another instrument shall remove entrance requirements by the end of the freshman year.

VOICE. One year of study, or the ability to demonstrate attainment equal to Music 110C and 120C (6 credits), is required.

All students majoring in music education will be required to meet the following performance standards before being approved for directed teaching: (1) play ten traditional community songs from memory; (2) improvise a suitable accompaniment to a melody in any given key; (3) play singly or in combination parts of a choral or instrumental composition suitable for use in the public schools; (4) transpose simple melodies; (5) perform in a musical manner a group of short compositions suitable for use in the elementary-grade music program.

Students who plan to teach music in the state of Washington must add to this curriculum the following courses: Art 329 (Appreciation of Design); Education 360 (Principles of Education), 370E (Elementary School Methods), 372E (Professional Laboratory Experiences), 374 (Fundamentals of Reading Instruction), and 402 (Child Study and Development); History 464 (History of Washington and the Pacific Northwest); Public Health 461 (School and Community Health Programs); and Speech 100 (Basic Speech Improvement). These courses are required for the provisional general teaching certificate, which is issued through the College of Education (see page 204 for other certification requirements).

FIRST YEAR		SECOND YEAR	
	CREDITS		CREDITS
Music 101, 102, 103	12	Music 110C	3
Instrumental or Vocal Instruction	3-12	Music 124, 125, 126	3
Music Ensemble	0	Music 201, 202, 203	12
Engl. 101, 102, 103 Composition	9	Music 207, 208, 209	6
Psychol. 100 General	5	Instrumental or Vocal Instruction	6
Electives	14-5	Music Ensemble	0
P.E. 110 or 175 Health	2	Education 209 Psychol. and	
P.E. Activity	3	230 State Manual	5
R.O.T.C.	6 or 9	Social science or science electives	5
	48-57	Electives	2
		P.E. Activity	3
		R.O.T.C.	6 or 9
			45-54

THIRD YEAR		FOURTH YEAR	
	CREDITS		CREDITS
Music 120C	3	Music 244	1
Music 224, 225, 226	3	Music 344, 345, 346J	9
Music 304	2	Music Ensemble	3
Music 384, 385, 386	4	Education 371S Directed Teaching	8
Music Ensemble	3	Social science or science electives	10
Education 370, 390	8	Electives	14
Social science or science electives	15		45
Electives	10		
	48		

CURRICULUM IN MUSIC HISTORY AND LITERATURE. To enter the curriculum in music history and literature, the student must show reasonable proficiency in vocal or instrumental performance by the end of the sophomore year. Upper-division requirements are:

THIRD YEAR		FOURTH YEAR	
	CREDITS		CREDITS
Music 407, 408, 409	9	Music History (477, 478, 479 recommended as preparation for graduate study)	9
Music Theory	9	Music Theory	6
French or German	15	Electives	30
Electives	12		45
	45		

COURSES FOR STUDENTS MAJORING IN OTHER FIELDS

Recommended electives are: Music 107, 108, 117, 118, 119, 121, 122, 123, 217, 218, 219, and 317. Performance groups (Music 100, 140, 160, 180, 300, 340, 360, and 380) are also open to nonmajors and may be taken either for credit or as activities. Credit for Music 100A (University Chorus) is granted only upon completion of three consecutive quarters and no new students are admitted during Spring Quarter. All ensemble courses except Music 100 require auditions.

MASTER OF ARTS IN MUSIC

Students who plan to work toward this advanced degree must meet the requirements of the Graduate School (see page 261). The School of Music requires all candidates to demonstrate proficiency in piano, sight reading, and melodic and harmonic dictation.

MAJOR IN COMPOSITION. The requirements are: the equivalent of all music courses now required for the undergraduate major in composition; 24 credits in music courses, including graduate composition comprising works for chorus, chamber music, and full orchestra; and 12 credits in supporting courses.

MAJOR IN MUSIC EDUCATION. The requirements are: the equivalent of all music courses now required for the undergraduate major in music education; two years of approved teaching experience, one of which must precede the graduate courses in music education; 24 credits in music courses, including the seminar in music education; and 12 credits in supporting courses.

MAJOR IN MUSICOLOGY. The requirements are: the equivalent of all music courses now required for the undergraduate major in music history and literature; evidence of proficiency in the techniques of composition and in some branch of performance; 24 credits in music courses, including the seminar in musicology; 12 credits in supporting courses; and a reading knowledge of either French or German.

MAJOR IN MUSIC PERFORMANCE. For organ, piano, violin, or voice, the requirements are: the equivalent of the music courses required for the undergraduate major in vocal or instrumental instruction; at least four full quarters of advanced study; 12 to 18 credits in Music 550; 6 credits in Music 590; public performance in one recital and in chamber music, concerto, opera, or oratorio; 9 credits in seminars; and 12 credits in supporting courses.

For conducting, the requirements are: experience equivalent to Music 124, 125, 126, 224, 225, 226, 130A (piano) or another instrument, 120C, and considerable experience in ensembles; 12 credits in advanced conducting; 6 credits in Music 590; 6 credits in advanced study of voice or an instrument; 9 credits in seminars; and 10 credits in supporting courses.

MAJOR IN OPERA. The requirements are: the equivalent of Music 111, 112, 113, 384, 385, 386, 120C, 487, and 488; 12 credits in Music 564, 565, and 566; 9 credits in seminars; 10 credits in supporting courses; and 12 credits in drama.

COURSES FOR UNDERGRADUATES

- 100 University Singers**
Section A: Chorus (1-1-1, maximum 6; AWS) Chapple
 Study, preparation, and performance of oratorios, cantatas, and other large choral works.
Section B: A Capella Choir (1, maximum 6; AWS) Lawrence
 Prerequisite, permission.
Section C: Men's Group (1, maximum 6; AWS) Lawrence
 Prerequisite, permission.
- 101, 102, 103 First-Year Theory (4,4,4; AW,WS,AS)** Staff
 Intensive training in basic musicianship: sight reading, ear training, keyboard harmony, creative harmony; elements of counterpoint, analysis, and form. Primarily for majors and minors.
 Prerequisite, permission.
- N104 Sight Reading Laboratory (0; AS)** Hall
 For music education students who lack skill in syllable reading; exemption by examination.
- 107 Survey of Music (5; AWS)** Kinscella
 Illustrated lectures with supplementary readings to provide the general student with background for the understanding of common musical forms, idioms, and styles. For nonmajors.
- 108 The Orchestra (2; AWS)** Kinscella
 A general survey of the development of the orchestra and its literature. For nonmajors.
- 110A Class Instruction: Piano (1-1-1; AWS)** Bostwick in charge
 Primarily for majors who cannot meet the entrance requirements in piano. Prerequisite, permission. Fee, \$5.
- 110C Class Instruction: Voice (1-1-1; AWS)** Root in charge
 Primarily for majors. Prerequisite, permission. Fee, \$5.
- 110Y Class Instruction: Piano (1; AWS)** Bostwick in charge
 For elementary education students. Fee, \$5.
- 110Z Class Instruction: Voice (1; AWS)** Root in charge
 For elementary education students. Must be taken concurrently with Education 377X. Fee, \$5.
- 111, 112, 113 Rhythmic Movement (1,1,1; AS,AW,WS)** Rosinbum
 Muscular coordination with musical rhythms.
- 117 Music Appreciation: Symphonic Music; Nineteenth Century (2; AWS)** Kinscella, Sokol
 Illustrated studies to increase the understanding and enjoyment of symphonic music of the 19th century. For nonmajors. Prerequisite, 107 or 108.
- 118 Music Appreciation: Symphonic Music; Seventeenth and Eighteenth Centuries (2; AWS)** Kinscella, Hokanson, Sokol
 For nonmajors. Prerequisite, 107 or 108.
- 119 Music Appreciation: Symphonic Music; Contemporary (2; AWS)** Kinscella, Hokanson, Sokol
 For nonmajors. Prerequisite, 107 or 108.
- 120A Class Instruction: Piano (1-1-1; AWS)** Bostwick in charge
 Primarily for majors. Prerequisite, 110A. Fee, \$5.
- 120C Class Instruction: Voice (1-1-1; AWS)** Root in charge
 Primarily for majors. Prerequisite, 110C. Fee, \$5.
- 121, 122, 123 Elementary Music Theory (2,2,2; A,W,S)** Staff
 Practical information for the amateur on the theoretical background of music. For nonmajors.
- 124, 125, 126 Orchestral Instruments Laboratory (1,1,1; A,W,S)** Kirchner, Sokol
 Class instruction in violin and viola. Primarily for majors.
- 130 Vocal or Instrumental Instruction (2-3 per quarter, maximum 18; AWS)** Staff
 Primarily for majors not specializing in performance. Prerequisite, examination. Fee, \$25 for 2 credits or \$37.50 for 3 credits. For description and teacher designation, see 150.
- 131, 132, 133 Piano Sight Reading Laboratory (1,1,1; A,W,S)** Moore
 For majors specializing in piano and organ; exemption by examination.
- 140 University Band (1 per quarter, maximum 6; AWS)** Welke
 For the improvement of technique. Parallels the University Concert Band.
- 150 Vocal or Instrumental Instruction (2-3 per quarter, maximum 18; AWS)**
 One or two individual half-hour lessons per week; weekly studio class in interpretation. Fee, \$25 for 2 credits or \$37.50 for 3 credits. The teacher is designated by a number subjoined to the section letter; both letter and number must be used in all registration procedure.
 A. Piano. Jacobson (A1), Woodcock (A2), Bostwick (A3), Normann (A4), Geissmar (A5), Moore (A6), Hokanson (A7)
 B. Violin or Viola. Zetlin (B1), Sokol (B2), Kantner (B3)
 C. Voice. Werner (C1), Lawrence (C2), Wilson (C3), Root (C4), Harris (C5)
 D. Violoncello. Kirchner (D1), Heinitz (D2), Martin (double bass, D3)
 E. Organ. Eichinger (E)
 F. Woodwind. Horsfall (flute, F1), Allport (oboe, F2), Phillips (clarinet, F3), Peterson (bassoon, F4)

- G. Brass. Schardt (horn, G1), Krenz (trumpet, G2), Cloud (trombone, G3)
H. Harp. Graf (H1), Beck (H2), Lundgren (H3)
- 160 **University Orchestra** (1 per quarter, maximum 6; AWS) **Chapple**
For the improvement of technique. Parallels the University Symphony Orchestra.
- 180 **Chamber Music** (1 per quarter, maximum 6; AWS) **Staff**
Small instrumental and vocal groups.
Section A. *Piano* Section E. *Organ*
Section B. *String* Section F. *Woodwind*
Section C. *Madrigal* Section G. *Brass*
Section D. *Opera* Section H. *Small vocal ensembles*
- 181 **Music Theory Laboratory** (4; Summer)
Refresher course in basic skills. For students who need a thorough review. Not open to students who have taken 101, 102, and 103.
- 201, 202, 203 **Second-Year Theory** (4,4,4; AW,WS,AS) **Staff**
For majors. Prerequisite, 103.
- 207, 208, 209 **Music Literature (Second Year)** (2,2,2; AW,WS,AS) **Staff**
Periods of music history as exemplified in the works of important composers. For majors. Prerequisite, 103.
- 210A **Class Instruction: Piano** (2 per quarter, maximum 12; AWS) **Bestwick in charge**
Primarily for majors not specializing in performance. Prerequisite, examination. Fee, \$10.
- 210C **Class Instruction: Voice** (2 per quarter, maximum 12; AWS) **Wilson**
Primarily for majors not specializing in performance. Prerequisite, examination. Fee, \$10.
- 211, 212, 213 **Advanced Rhythmic Movement** (1,1,1) **Rosinbum**
Muscular coordination with musical rhythms. Prerequisite, 113.
- 217, 218, 219 **Music Appreciation: The Opera** (2,2,2; A,W,S) **Werner**
Survey of opera. For nonmajors.
- 224, 225, 226 **Orchestral Instruments Laboratory** (1,1,1; AWS,AWS,AWS) **Kirchner, Sokol, Normann, Welke**
Class instruction for majors. 224: violoncello and bass; 225: woodwind; 226: brass.
- 244, 245 **Orchestra Laboratory** (1,1; A,W) **Normann**
May count as ensemble credit. Prerequisite, 6 quarters of instrumental classes.
- 254, 255 **Advanced Orchestral Instruments** (2,2; A,S) **Kirchner, Welke**
String, wind.
- 300 **University Singers**
Section B: **A Capella Choir** (1 per quarter, maximum 6; AWS) **Lawrence**
Prerequisite, permission.
Section C: **Men's Group** (1 per quarter, maximum 6; AWS) **Lawrence**
Prerequisite, permission.
- 301, 302 **Contemporary Idioms** (3,3; A,W) **McKay**
Analytical study of present-day composition techniques.
- 304 **Choral Literature** (2; AW) **Hall, Terry**
Singing and analysis of contrapuntal music; techniques of interpretation. Prerequisite, 203 or permission.
- 307, 308, 309 **Music Literature and History** (3,3,3; A,W,S) **Terry**
307: Classic period; 308: early romantic period; 309: late romantic period. Prerequisites, 203 and 209.
- 311, 312 **Modal Counterpoint** (3,3; A,W) **Risegari**
Studies in sixteenth-century style. Prerequisites, 203 and 209.
- 314 **Music in Broadcasting** (3; WS) **Welty**
Program planning, adaptation and selection of music for various types of broadcasts; development and care of score and record library. Prerequisite, 107.
- 317 **Music Appreciation: Chamber Music** (2; S) **Hoinitz**
Survey of literature for chamber music ensembles. For nonmajors. Prerequisite, 107 or 108.
- 330 **Vocal or Instrumental Instruction** (2-3 per quarter, maximum 18; AWS) **Staff**
For majors not specializing in performance. Fee, \$25 for 2 credits or \$37.50 for 3 credits. For description and teacher designation, see 150.
- 331, 332, 333. **Keyboard Transposition and Improvisation** (2,2,2; A,W,S) **Boale**
Prerequisite, permission.
- 334, 335 **Accompanying** (3,3; A,W) **Woodcock**
Study and performance of music of different types and periods for voice or instrument in combination with piano.
- 337, 338, 339 **Repertoire** (2,2,2; A,W,S) **Staff**
For applied music majors. To be taken concurrently with 350 during the junior year.
Section A. *Piano* Section C. *Song*
Section B. *String* Section D. *Organ*
- 340 **University Concert Band** (1 per quarter, maximum 6; AWS) **Welke**
Prerequisite, audition.
- 344, 345, 346J **Music in the Public Schools** (4,2,3; A,W,S) **Sorenson, Hall, Normann**
The development of the music program in the public schools from grade one through twelve. Not open to students who have taken 324, 326, and Education 337. Prerequisites, 385 and Education 370. 346J offered jointly with the College of Education.

- 347 Music in the Americas (3; A)** Kinscella
Contribution of music to church and society in the western hemisphere during the seventeenth and eighteenth centuries.
- 348 Music in the Americas (3; W)** Kinscella
Study through performance of American composition of the nineteenth and twentieth centuries.
- 350 Vocal or Instrumental Instruction (2-3 per quarter, maximum 18; AWS)**
To be taken concurrently with 337, 338, and 339 during the junior year. Prerequisite, examination. Fee, \$25 for 2 credits or \$37.50 for 3 credits. For description and teacher designation, see 150.
- 354 Band Arranging (2; W)** Welke
Study of tone color, voicing, transposition, and arranging. Prerequisite, 203.
- 356 Instrumental Music in the Schools (2; S)** Normann
Methods of instruction; organization; equipment; instrumentation; rehearsal techniques; materials; technical problems of the various band and orchestra instruments. Prerequisite, 203.
- 357 Church Music (2; W)** Root
Survey of liturgy, chant, hymn, anthem, and solo. Prerequisite, 385.
- 360 University Symphony Orchestra (1 per quarter, maximum 6; AWS)** Chapple
Prerequisite, audition.
- 361 Musical Forms (5; AS)** Woodcock
Analysis of the principal forms of music composition. Prerequisite, 203.
- 380 Advanced Chamber Music (1 per quarter, maximum 6; AWS)** Staff
Selected instrumental and vocal groups. Prerequisite, permission.
- 384, 385, 386 Conducting (1,2,1; A,WS,S)** Munro, Chapple, Kirchner, Welke
Score analysis; musical styles; hand and baton technique. 304 must be taken concurrently with 384.
- 391, 392, 393 Composer's Laboratory. First Year (3,3,3; A,W,S)** Beale
Prerequisite, permission.
- 407, 408, 409 Music Literature and History (3,3,3; A,W,S)** Irvine, Munro, McKay
407: Middle Ages; 408: Renaissance and Baroque; 409: contemporary.
- 411, 412 Counterpoint (3,3; A,W)** Verrall
Polyphonic composition: canon, invention, and fugue.
- 430 Vocal or Instrumental Instruction (2-3, maximum 18; AWS)**
For those not majoring in performance. Fee, \$25 for 2 credits or \$37.50 for 3 credits. For description and teacher designation, see 150.
- 434, 435, 436 Piano Teaching (2,2,2; A,W,S)** Woodcock
Survey and study of teaching material; supervised practice teaching.
- 450 Vocal or Instrumental Instruction (2-3 each quarter, maximum 18; AWS)**
Fee, \$25 for 2 credits or \$37.50 for 3 credits. For description and teacher designation, see 150.
- 460 Sinfonietta (1 per quarter, maximum 9; AWS)** Chapple
Prerequisite, audition.
- 461, 462 Orchestration (3,3; W,S)** Verrall
Technique of writing for orchestra and other large ensembles; analytical and historical approach to problems of organization and sonority. Prerequisites, 312 and 361.
- 467 History of Keyboard Music (3; S)** Kinscella
Development of organ, clavichord, harpsichord, and piano; idioms of corresponding types of keyboard music, and styles of performance. Prerequisite, 361.
- 477, 478, 479 Undergraduate Seminar in Music History (3,3,3; A,W,S)** Irvine
Prerequisite, permission.
- 481 Advanced Studies in Music Analysis (3; Summer)** Beale, Verrall
- 484, 485, 486 Orchestral Conducting (2,1,1; A,W,S)** Chapple, Munro, Welke
Experience with choral and instrumental ensembles.
- 487, 488 History of Opera (3,3; A,W)** Munro, Wilson, Irvine
Periods and styles of opera, with special study of representative works in the light of the co-operative contributions of the voice, orchestra, libretto, scenic design, and acting. 487: Pre-opera through Mozart; 488: since Mozart.
- 491, 492, 493 Composer's Laboratory. Second Year (3,3,3; A,W,S)** McKay, Verrall
- 495 Choral Conducting (3; S)** Munro
Prerequisite, permission.

499 Undergraduate Research (\$ max 6)

COURSES FOR GRADUATES ONLY

- 507, 508, 509 Seminar in Music Literature (3,3,3; A,W,S)** Irvine, Munro
- 524, 525, 526 Seminar in Music Education (3,3,3; A,W,S)** Munro, Sorenson
Selected topics in secondary school music and supervision. Prerequisite, permission.
- 550 Vocal or Instrumental Instruction (3 per quarter, maximum 12; AWS)**
Prerequisite, 36 credits in the same branch of music. Fee, \$37.50. For description and teacher designation, see 150.

- 561 **Problems in Choral and Orchestral Scoring (2-5; S)** Verrall
Studies in special techniques of choral, orchestral, and dramatic composition. Original composition and research, with emphasis on the evolution of ensemble types and forms.
- 564, 565, 566 **Opera Direction and Production (4,4,4; A,W,S)** Rosinbum
Practical experience with problems of the opera theater.
- 577, 578, 579 **Seminar in Musicology (3,3,3; A,W,S)** Irvine
Selected topics in music history, literature, and theory. Prerequisite, permission.
- 590 **Recital (2 per quarter, maximum 6; AWS)** Staff
Public performance in one solo recital and in chamber music, cantata, concerto, opera, or oratorio.
- 591, 592, 593 **Graduate Composition (*; AWS)** McKay, Verrall
Independent composition in larger forms.
- 600 **Research (2-5; AWS)** Irvine, Munro
Individual study. Prerequisite, permission.
- Thesis (*; AWS)** Staff

NURSERY SCHOOL

Acting Director: ELEANOR EVANS, Nursery School Building

Assistant Professors: E. Evans, E. Smith.

Instructors: F. Harris, R. Winn.

For students who plan to be nursery school teachers, a four-year professional curriculum is offered. This program qualifies students to teach in nursery school, although a teaching certificate for that field is not required in the state of Washington.

Students with majors in nursery school teaching take all the courses given in this program and fulfill the requirements for a major in the Division of General Studies (see page 96). The bachelor's degree is given through General Studies.

Students with other majors who are interested in special projects in nursery school work may study, observe, and participate with individual children and small groups of children to the extent necessary for carrying out their programs of child study.

COURSES FOR UNDERGRADUATES

- 305 **Personality Growth of the Preschool Child (3; AWS)** Winn
Developmental trends and age-level expectancies: motor controls, adaptive behavior, communications, and personal-social adjustments. One hour each week between 9 and 12 must be kept free for observation in the nursery school. Prerequisite, Psychology 100.
- 306 **The Child and the Parent (3; AWS)** Smith
Interpretations of common behavior manifestations of individual and group preschool children. Discussion of possible causes and treatment. Parent-child relationships. One hour each week between 9 and 12 must be kept free for observation in the nursery school. Prerequisite, 305.
- 311 **Books and Stories in the Nursery School (2; S)** Winn
Analysis of books and stories based on verbalizations, comprehension, attention span, and age-level differences of young children. Techniques in meeting individual and group needs. One hour each week between 9 and 12 must be kept free for observation in the nursery school. Prerequisite, 306.
- 312 **Music in the Nursery School (2; A)** Harris
Study and analysis of songs and rhythms suitable for the preschool child. Development of techniques for fostering creative expression in young children. One hour each week between 9 and 12 must be kept free for observation in the nursery school. Prerequisite, 306.
- 313 **Creative Play in the Nursery School (5; W)** Winn
The function of play at the nursery school level. Selection and arrangement of toys, equipment, and materials to meet developmental needs. Preparation, presentation, guidance, and interpretation of the child's use of materials; opportunity for student use under similar circumstances. One hour each week between 9 and 12 must be kept free for observation in the nursery school. Prerequisite, 306.
- 320 **Nursery School Practice Teaching (5; AWS)** Staff
Scheduled participation in group guidance of the preschool child. Development of techniques and skills. Individual conferences. Group conferences. Morning schedule for teaching must be arranged with staff before registration. To be taken concurrently with 321 and 322. Prerequisites, 306 and permission.
- 321 **Nursery School Curriculum and Methods (3; AWS)** Smith
A laboratory analysis of the nursery school program. Formulation and adaptation of a program to meet age-level differences, individual and group needs. Teacher rôle. One hour each week between 9 and 12 must be kept free for observation in the nursery school. To be taken concurrently with 320 and 322. Prerequisite, 306.

- 322 Guidance of Individual Children in the Nursery School (2; AWS)** **Evans**
 Procedures and techniques used in studying the behavior of individual children; study of child-parent relationships. Case studies. Attendance at parent group meetings required. To be taken concurrently with 320 and 321. Prerequisite, 306.
- 330 Advanced Nursery School Practice Teaching (3; AWS)** **Staff**
 Program planning, organization, and administration; techniques in working with children; concepts of parent-teacher-child relationships. Individual and group conferences. Morning schedule for teaching must be arranged with staff before registration. To be taken concurrently with 331. Prerequisites, 320 and permission.
- 331 Nursery School Parent Counseling (2; AWS)** **Harris**
 Methods used in parent counseling; case studies. Attendance at parent group meetings required. Weekly conference. To be taken concurrently with 330. Prerequisite, 320.
- 332 Group Guidance of Preschool Children (2; AWS)** **Staff**
 Techniques and skills used in group guidance and management; procedures for meeting individual needs as related to groups and group development. One hour each week between 9 and 12 must be kept free for observation in the nursery school. Prerequisite, 320.
- 350 Field Work in Nursery Education (5; AWS)** **Smith**
 Practice teaching experience in public and/or private nursery schools. Individual and group conferences. Schedule for teaching must be arranged prior to registration. Prerequisites, 330 and permission.
- 351 Organization and Administration of the Nursery School (2; S)** **Harris**
 Discussion of problems in planning programs and operating nursery schools. Special consideration of costs, equipping, staffing. Prerequisite, 330.
- 355 Nursery School Participation and Special Problems (2-5; AWS)** **Staff**
 Individual study and readings with special observations and/or participation in the laboratory school. Scheduled conferences. Prerequisite, permission.

NURSING, PREPROFESSIONAL PROGRAM

Adviser: 121 Education Hall

The prenursing curriculum covers three quarters, during which the student earns 48 credits in the College of Arts and Sciences. It prepares the student for admission to the School of Nursing and provides a general educational background. The elective courses allowed in this program may be chosen in accordance with the student's individual interest.

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Engl. 101 Composition.....	3	Engl. 102 Composition.....	3	Engl. 103 Composition.....	3
P.E. 110 Health	2	Chem. 101 General.....	5	Chem. 102 General	5
Sociol. 110 General or		Electives	7	Psychol. 100 General.....	5
Anthro. 102 Principles..	5	P.E. Activity	1	Electives	2
Electives	5			P.E. Activity	1
P.E. Activity	1				
	<hr/> 16		<hr/> 16		<hr/> 16

OCEANOGRAPHY

Executive Officer: RICHARD H. FLEMING, 202 Oceanographic Laboratories

Professors: R. H. Fleming, T. G. Thompson.
 Associate Professor: C. A. Barnes.
 Assistant Professors: M. Rattray, Jr., E. F. Swan.

The curriculum of the Department of Oceanography is in a state of revision. The new undergraduate and graduate curricula will be printed as a supplement to this *Catalogue*. Interested students should write directly to Dr. Richard H. Fleming, Executive Officer, Department of Oceanography.

PHILOSOPHY

Executive Officer: EVERETT J. NELSON, 264 Savery Hall

Professors: E. J. Nelson, M. M. Rader.

Visiting Professor: Susanne K. Langer.

Associate Professors: A. I. Melden, A. F. Smullyan.

Assistant Professors: W. I. Matson, C. M. Turbayne.

The Department of Philosophy offers courses leading to the degrees of Bachelor of Arts, Master of Arts, and Doctor of Philosophy. Students majoring in other fields will find Philosophy 100, 110, 115, and 120 of particular interest.

BACHELOR OF ARTS

In the elective curriculum, the requirements are: 45 credits in philosophy, including Philosophy 110 or 115, 120, 320-321, and 455-456-457; and 10 credits in each of the following fields of science: biological, physical, and social. Humanities 103 and 203, in the General Education program, may be counted toward a major, but not both Philosophy 100 and Humanities 103.

ADVANCED DEGREES

Students who intend to work toward the degree of Master of Arts or Doctor of Philosophy must meet the requirements of the Graduate School (see page 261).

COURSES FOR UNDERGRADUATES

- 100 Introduction to Philosophy (5; AWS)** Langer, Matson, Melden, Smullyan, Turbayne
Reading and discussion of writings of the great philosophers on issues of lasting importance. Nature and limits of knowledge: the appeals to reason and experience. Relations of science and religion: naturalism and supernaturalism. Conceptions of reality: materialism, idealism, and skepticism. Conceptions of morality: the appeals to duty and happiness. Conflict of social ideals.
- 110 Introduction to Social Ethics (5; W)** Rader
The nature of a good social order and right social action. The rival ideals of aristocracy, fascism, liberalism, and socialism; emphasis upon the nature and ideals of democracy.
- 115 Introduction to Ethics (5; A)** Melden
Systematic study of typical analyses of the distinctions between good and evil, right and wrong. Special attention is directed to the appeals to custom, theology, reason, human nature, and happiness as standards for the solution of moral problems. Readings in Plato, Hume, Kant, Bentham, and Mill.
- 120 Introduction to Logic (5; AWS)** Langer, Melden, Nelson, Smullyan, Turbayne
Deductive and inductive logic; conditions of clear statement and valid reasoning; propositions, contradiction, definition, inference, types of argument, detection and avoidance of fallacies; probability and the methods by which theories and laws are established in daily life and in the sciences. Application of logic to other fields.
- 320-321 History of Philosophy (5-5; A-W)** Matson
The development of Western philosophy from the sixth century B.C. to the late nineteenth century; reading and discussion of the works of the great philosophers, with attention to their historical and cultural background.
- 347 Philosophy in Literature (5; S)** Matson
Study of philosophical ideas expressed in such great literature as Aeschylus' *Prometheus Bound*, *The Book of Job*, Lucretius' *On the Nature of Things*, Dante's *Comedy*, Goethe's *Faust*, Voltaire's *Candide*, and Lewis Carroll's *Alice* books.
- 423 Contemporary Philosophy (5; S)** Turbayne
The revival of the Hegelian philosophy in England and America and the consequent development of pragmatism and positivism, and of realistic tendencies. Readings in Bradley, Peirce, James, Dewey, Russell, Santayana, and Whitehead. Prerequisite, 100.
- 428 Chinese Philosophy (5; W)** Shih
Development of Chinese philosophy from the sixth century to modern times. Emphasis on Confucianism, Mohism, Taoism, Legalism, the Dialecticians, Buddhism, and Neo-Confucianism; and re-evaluation of them in the light of new trends of thought after contact with the West.

- 431 Philosophy of Plato (5; A)** Matson
The social, political, educational, ethical, and metaphysical doctrines in a representative selection of Plato's dialogues. Plato is studied as the first and greatest defender of an outlook—absolutism—that today has influential adherents in all spheres of thought. Prerequisite, 100 or 320, or Humanities 103 or 203, or permission.
- 433 Philosophy of Aristotle (5; not offered 1952-53)**
- 435 Hellenistic Philosophy (5; not offered 1952-53)**
- 436 British Empiricism (5; not offered 1952-53)**
- 437 Philosophy of Hume (5; W)** Melden
Study of the principles and methods employed by Hume in the elaboration of his system of philosophy, comprising his analyses of knowledge, the passions, and morals. Prerequisite, 321 or permission.
- 438 The Philosophy of Kant (5; not offered 1952-53)**
- 440 Advanced Ethics (5; S)** Melden
A critical examination of the concepts and judgments of value, including an analytical treatment of the notions of right and wrong, obligation, good and bad, and the relationship between ethical and aesthetic value. Prerequisite, 110 or 115.
- 445 Philosophy of Art (5; A)** Langer
The principal systems of aesthetics; interpretations of the creative activity of the artist, the work of art, the contemplation and criticism of art objects, and the relationship of art to the social order.
- 450 Epistemology (5; A)** Smullyan
Problems in the theory of knowledge: the nature, possibility, criteria, and limitations of knowledge; critical evaluation of subjectivism and realism, dogmatism and skepticism, intuitionism, pragmatism, empiricism, rationalism, and positivism; theories of meaning, truth, and perception; synthesis of various positions around the scientific method. Prerequisite, 100.
- 453 Semantics (5; A)** Langer
The main theories of the origin and functions of language, including its logical, descriptive, emotive, and expressive uses; attention to semantical problems of the social sciences and of the humanities. Prerequisite, 120.
- 455-456-457 Metaphysics (3-3-3; A-W-S)** Nelson
Nature of existence; appearance and reality; substance, causation, and law; pluralism and monism; universals; space and time; presuppositions of knowledge; realism, naturalism, idealism, positivism. Prerequisite, 100 or 321, or Humanities 103, or permission.
- 460 Introduction to the Philosophy of Science (5; W)** Smullyan
Concepts and methods which are fundamental in mathematics and in the physical and social sciences. The relations of the sciences to each other as well as to art, religion, and philosophy. Speculations on the nature of the world which have been suggested by past and present scientific theories. Operationist tendencies in recent interpretations of science. Prerequisite, 100 or 120.
- 463 Philosophy of Mind (5; A)** Turbayne
Theories of the nature of the mind, the relation between mind and body, the self, memory, the unconscious, introspection, and our knowledge of other minds. Prerequisite, 100.
- 465 Philosophy of History (5; A)** Rader
Analysis of the basic concepts employed in historical interpretation, and an introduction to some of the principal philosophers of history: Plato, Saint Augustine, Hegel, Marx, Spengler, Toynbee, etc.
- 467 Philosophy of Religion (5; S)** Rader
Origin, nature, and types of religion. The grounds of religious belief; mysticism, faith, reason, and evidence. The main religious problems: free will, immortality, the existence and nature of God, the problem of evil, religion as a basis of ethics, and the social implications of religion.
- 470, 471 Advanced Logic (5, 5; W, S)** Nelson
Symbolic logic; deductive systems; types of order; infinity; propositions, classes, and relations; logical paradoxes and theory of types; critical examination of logical doctrine and analytic methods bearing on philosophical questions. Prerequisites, 120 for 470; 470 for 471.
- 484 Reading in Philosophy (1-4 each quarter, maximum 12; AWS)** Staff
Reading of approved philosophical works. Primarily for graduate students, though under special conditions advanced undergraduates are permitted to register for this course. Credit is granted only when a written examination is passed on the reading. Prerequisite, permission of Executive Officer of the Department of Philosophy.

COURSES FOR GRADUATES ONLY

514-515-516 Seminar in Logic (2-4-2-4-2-4; not offered 1952-53)

521-522-523 Seminar in Metaphysics (2-2-2; not offered 1952-53)

600 Research (1-6; AWS)
Prerequisite, permission.

Staff

Thesis (*; AWS)

Staff

520 Seminar in Philos. of Locke (3)
 571 " " " " Art (2)

PHYSICAL AND HEALTH EDUCATION

Executive Officer for Women: RUTH M. WILSON, 105 Hutchinson Hall

Executive Officer for Men: R. K. CUTLER, 210 Edmundson Pavilion

Associate Professors: R. K. Cutler, M. A. de Vries, M. K. Kidwell, N. F. Kunde, H. McLellan, G. S. Reeves, L. H. Rulifson, J. A. Torney, R. M. Wilson.

Assistant Professors: A. A. Auernheimer, M. R. Broer, K. S. Fox, E. Gunn, D. B. Horne, D. G. MacLean, C. A. Mills, C. L. Palmer, C. L. Peek, L. W. Stevens, E. H. Waters.

Instructors: W. B. Brumbach, R. W. Buckley, H. I. Clark, E. L. Kilby, P. Smith, M. S. Waller, V. Wolf.

Acting Instructors: J. Hinrich, E. Hughes, W. Jefferson, E. F. Clark, W. H. H. Dye, C. S. Edmundson, W. Morris, H. H. Odell, A. M. Ulbricksen.

The School of Physical and Health Education functions in three main areas: the physical education activity and health instruction programs, which provide courses required of all undergraduate University students; the program in intramural sports and recreational activities, which provides for organized competition, clubs, and the use of recreational facilities by all students on a voluntary basis; and the professional education programs, which provide four-year curricula in physical education, recreational leadership, prephysical therapy (for women only), and teacher training in both physical and health education. These professional curricula lead to the degree of Bachelor of Arts, and graduate study leads to the degree of Master of Science or Master of Science in Physical Education. Students may take the teacher training programs through either the College of Education (see page 202) or the College of Arts and Sciences.

In addition, the School offers a basic academic field in physical education and second teaching areas in physical and health education for students in the College of Education.

Students majoring in physical and health education may apply for admission to a professional curriculum when they have completed 45 credits.

BACHELOR OF ARTS

GENERAL CURRICULUM IN PHYSICAL EDUCATION. The lower-division requirements are:

MEN		WOMEN	
	CREDITS		CREDITS
P.E. 161, 162, 163, 264, 265, 266		P.E. 110 Health Educ.	2
Activities for Freshman Majors	6	P.E. 115, 121, 157 Archery, Bowling	
P.E. 181, 182, 183, 284, 285, 286		Canoeing	3
Physical Educ. Backgrounds	6	P.E. 176, 177, 178 Physical Educ.	
Anat. 301 General	5	Activities for Freshman Majors	6
Chem. 101, 102 General (or one		P.E. 281, 282, 283, 284 Physical Educ.	
year of high school chemistry)	10	Backgrounds	4
Engl. 101, 102, 103 Composition	9	Anat. 301 General	5
Psychol. 100 General	5	Biol. 101J-102J General (& one year of	
Sociol. 110 Survey	5	high school chemistry), or Zool. 111-	
Speech 100 Basic Speech Improvement	5	112 General (& one year of high	
Zool. 111 General or Biol. 101J General	5	school chemistry), or Chem. 101-102	
Zool. 112 General or Biol. 102J General	5	General	10
Zool. 114 Evolution	2	Engl. 101, 102, 103 Composition	9
Zool. 208 Physiol. (or approved		Physics (approved introductory course)	5
substitute)	5	Psychol. 100 Introduction	5
R.O.T.C.	12 or 18	Sociol. 110 Survey	5
	80 or 86	Speech 100 Basic Speech Improvement	5
		Zool. 208 Physiol. (or	
		approved substitute)	5

The professional requirements are:

MEN

	CREDITS
P.E. 190 Problems in Physical & Health Educ. & Recreation.....	2
P.E. 291 Personal & General Hygiene...	3
P.E. 292 First Aid & Safety.....	3
P.E. 293 Physiol. of Muscular Exercise...	3
P.E. 294 Introduction to Recreation.....	2
P.E. 309 The School Dance Program.....	2
P.E. 324 Playground Program.....	3
P.E. 340 Admin. of Intramural Sports...	3
P.E. 345 Principles of Physical Educ.....	3
P.E. 363 Methods & Materials in Teaching Sports.....	2
P.E. 370 Football Coaching.....	2
P.E. 371 Basketball Coaching.....	2
P.E. 450 The School Physical Educ. Program.....	3
P.E. 465 The School Health Educ. Program.....	3
P.E. 493 Problems in Athletics.....	3
	<hr/> 39

WOMEN

	CREDITS
P.E. 190 Problems in Physical & Health Educ. & Recreation.....	2
P.E. 292 First Aid & Safety.....	3
P.E. 293 Physiol. of Muscular Exercise...	3
P.E. 311 Rhythmic Activities for Small Children.....	2
P.E. 312 Elem. School Athletic Program...	3
P.E. 318 Analysis of Rhythm.....	3
P.E. 344 Organization & Admin. of Camp Programs.....	3
P.E. 345 Principles of Physical Educ.....	3
P.E. 465 The School Health Educ. Program.....	3
Four of the Following:	
P.E. 301 Methods & Materials in Gymnastics, Stunts, & Tumbling.....	3
P.E. 356 Methods & Materials in Teaching Modern Dance.....	2
P.E. 362 Methods & Materials in Teaching Folk, Tap, & Clog Dancing.....	2
P.E. 363 Methods & Materials in Teaching Sports.....	3
P.E. 364 Methods in Teaching Swimming.....	3
Home Ec. 300 Nutrition.....	2

37-38

CURRICULUM IN RECREATIONAL LEADERSHIP. The lower-division requirements are:

MEN

	CREDITS
P.E. 161, 162, 163, 264, 265, 266 Activities for Freshman Majors.....	6
P.E. 181, 182, 183, 284, 285, 286 Physical Educ. Backgrounds.....	6
Art 300 Elem. Crafts.....	2
Engl. 101, 102, 103 Composition.....	9
Biol. 101J-102J General.....	10
Libr. 452 Story Telling.....	3
Psychol. 100 General.....	5
Sociol. 110 Survey.....	5
Speech 100 Basic Speech Improvement.....	5
25 approved credits in sociology, psychology, or humanities.....	25
15 credits of electives from the following:	
P.E. 293; Drama 307, 308, 309 (Puppetry), 434, 435, 436 (Children's Theater), 437 (Creative Dramatics with Children); Forestry 301 (Survey), 356 (Forest Recreation); Music 108 (The Orchestra), 117, 118, 119 (Symphonic), 217 (Opera); Physics 154 (Elementary Photography); Geology 101 (Survey); Astronomy 101 (Astronomy).....	15
R.O.T.C.....	12 or 18

103 or 109

WOMEN

	CREDITS
P.E. 110 Health Educ.....	2
P.E. 115, 121, 157 Archery, Bowling, Canoeing.....	3
P.E. 176, 177, 178 Physical Educ. Activities for Freshman Majors.....	6
P.E. 281, 282, 283, 284 Physical Educ. Backgrounds.....	4
Anat. 301 General.....	5
Art 300 Elem. Crafts or Educ. 376 Art in the Elem. School.....	2 or 5
Biol. 101J-102J General (& one year of high school chemistry), or Zool. 111-112 General (& one year of high school chemistry), or Chem. 101-102 General (or approved substitute).....	10
Drama 437 Creative Dramatics.....	3
Engl. 101, 102, 103 Composition.....	9
Libr. 452 Story Telling.....	3
Psychol. 100 Introduction.....	5
Sociol. 110 Survey.....	5
Speech 100 Basic Speech Improvement.....	5
Zool. 118, 208, or 358 Physiology.....	5-6
5 approved credits from drama, forestry, music, or dance production.....	5
13 approved credits in sociology.....	13

85-89

The professional requirements are:

MEN		WOMEN	
	CREDITS		CREDITS
P.E. 290 Officiating.....	2	P.E. 190 Problems in Physical & Health Educ. and Recreation.....	2
P.E. 291 Personal & General Hygiene...	3	P.E. 292 First Aid & Safety.....	3
P.E. 292 First Aid & Safety.....	3	P.E. 293 Physiol. of Muscular Exercise.....	3
P.E. 294 Intro. to Recreation.....	2	P.E. 301 Methods & Materials in Gymnastics, Stunts, & Tumbling.....	3
P.E. 309 The School Dance Program.....	2	P.E. 311 Rhythmic Activities for Small Children.....	2
P.E. 324 Playground Programs.....	3	P.E. 312 Elementary School Athletic Program.....	3
P.E. 340 Admin. of Intramural Sports...	3	P.E. 318 Analysis of Rhythm.....	3
P.E. 344 Organization & Admin. of Camp Programs.....	3	P.E. 324 Playground Programs.....	3
P.E. 345 Principles of Physical Educ....	3	P.E. 344 Organization and Admin. of Camp Programs.....	3
P.E. 358 Methods in Teaching Apparatus, Tumbling, & Stunts.....	2	P.E. 345 Principles of Physical Educ....	3
P.E. 363 Methods & Materials in Teaching Sports.....	2	P.E. 356 Methods & Materials in Teaching Modern Dance.....	2
P.E. 364 Methods in Teaching Swimming Teaching in Recreation.....	2	P.E. 362 Methods & Materials in Teaching Folk, Tap, & Clog Dancing..	2
P.E. 450 The School Physical Educ. Program.....	3	P.E. 363 Methods & Materials in Teaching Sports.....	3
P.E. 493 Problems in Athletics.....	3	P.E. 364 Methods & Materials in Teaching Swimming.....	3
	38	P.E. 426 Observation & Practice Teaching.....	4
		P.E. 465 The School Health Educ. Program.....	3
		P.E. 466 Coaching (registration for 3 quarters).....	0
			45

CURRICULUM IN PREPHYSICAL THERAPY FOR WOMEN. The lower-division requirements are:

	CREDITS		CREDITS
P.E. 110 Health Educ.....	2	General (& one year of high school chemistry), or Chem. 101-102 General.10	10
P.E. 115, 121, 157 Archery, Bowling, Canoeing.....	3	Engl. 101, 102, 103 Composition.....	9
P.E. 176, 177, 178 Physical Educ. Activities for Freshman Majors.....	6	Physics 170 For Nurses (or approved substitute).....	5
P.E. 281, 282, 283, 284 Physical Educ. Backgrounds.....	4	Psychol. 100 Introduction.....	5
Anat. 301 General.....	5	Psychol. 101 Psychol. of Adjustment.....	5
Biol. 101J-102J General (& one year of high school chemistry), or Zool. 111-112		Psychol. 306 Child Psychol.....	5
		Sociol. 110 Survey.....	5
		Speech 100 Basic Speech Improvement..	5
		Zool. 208 or 358 Physiology.....	5-6
			74-75

The professional requirements are:

	CREDITS		CREDITS
P.E. 190 Problems in Physical & Health Educ. and Recreation.....	2	P.E. 322 Kinesiology.....	3
P.E. 292 First Aid & Safety.....	3	P.E. 345 Principles of Physical Educ....	3
P.E. 293 Physiol. of Muscular Exercise.....	3	P.E. 362 Methods & Materials in Teaching Folk, Tap, & Clog Dancing..	2
P.E. 301 Methods & Materials in Gymnastics, Stunts, & Tumbling.....	3	P.E. 363 Methods & Materials in Teaching Sports.....	3
P.E. 311 Rhythmic Activities for Small Children.....	2	P.E. 364 Methods in Teaching Swimming.....	3
P.E. 312 Elem. School Athletic Program.....	3	P.E. 465 The School Health Educ. Program.....	3
P.E. 318 Analysis of Rhythm.....	3	P.E. 466 Coaching (registration for 3 quarters).....	0
			36

CURRICULUM FOR TEACHER TRAINING IN PHYSICAL EDUCATION. Students who wish to emphasize high school physical education teaching may follow this curriculum. The lower-division requirements are:

MEN		WOMEN	
	CREDITS		CREDITS
P.E. 161, 162, 163, 264, 265, 266		P.E. 110 Health Educ.	2
Activities for Freshman Majors	6	P.E. 115, 121, 157 Archery, Bowling,	
P.E. 181, 182, 183, 284, 285, 286 Physical		Canoeing	3
Educ. Backgrounds	6	P.E. 176, 177, 178 Physical Educ.	
Anat. 301 General	5	Activities for Freshman Majors	6
Chem. 101, 102 General (or one year		P.E. 281, 282, 283, 284 Physical Educ.	
of high school chemistry)	10	Backgrounds	4
Engl. 101, 102, 103 Composition	9	Anat. 301 General	5
Psychol. 100 General	5	Biol. 101J-102J General (& one year of	
Sociol. 110 Survey	5	high school chemistry), or Zool. 111-112	
Speech 100 Basic Speech Improvement	5	General (& one year of high school	
Zool. 111 General or Biol. 101J General	5	chemistry), or Chem. 101, 102 General	10
Zool. 112 General or Biol. 102J General	5	Engl. 101, 102, 103 Composition	9
Zool. 114 Evolution	2	Physics (or approved substitute)	5
Zool. 208 Physiology (or approved		Psychol. 100 Introduction	5
substitute)	5	Sociol. 110 Survey	5
R.O.T.C.	12 or 18	Speech 100 Basic Speech Improvement	5
	80 or 86	Zool. 208 or 358 Physiology	5-6
			64-65

The professional requirements are:

MEN		WOMEN	
P.E. 190 Problems in Physical & Health	2	P.E. 190 Problems in Physical & Health	2
Educ. and Recreation		P.E. 292 First Aid & Safety	3
P.E. 291 Personal & General Hygiene	3	P.E. 293 Physiol. of Muscular	
P.E. 292 First Aid & Safety	3	Exercise	3
P.E. 293 Physiology of Muscular		P.E. 301 Methods & Materials in Gym-	
Exercise	3	nastics, Stunts, & Tumbling	3
P.E. 294 Introduction to Recreation	2	P.E. 311 Rhythmic Activities for Small	
P.E. 309 The School Dance Program	2	Children	2
P.E. 322 Kinesiology	3	P.E. 312 Elem. School Athletic	
P.E. 324 Playground Program	3	Program	3
P.E. 340 Admin. of Intramural Sports	3	P.E. 318 Analysis of Rhythm	3
P.E. 345 Principles of Physical Educ.	3	P.E. 322 Kinesiology	3
P.E. 358 Methods in Teaching		P.E. 344 Organization and Admin. of	
Apparatus, Tumbling, & Stunts	2	Camp Programs	3
P.E. 361 Methods in Teaching Boxing		P.E. 345 Principles of Physical Educ.	3
& Wrestling	2	P.E. 356 Methods & Materials in	
P.E. 363 Methods & Materials in		Teaching Modern Dance	2
Teaching Sports	2	P.E. 362 Methods & Materials in	
P.E. 364 Methods in Teaching		Teaching Folk, Tap, & Clog Dancing	2
Swimming	2	P.E. 363 Methods & Materials in	
P.E. 447 Tests & Measurements	3	Teaching Sports	3
P.E. 450 School Physical Educ.		P.E. 364 Methods in Teaching Swimming	3
Program	3	P.E. 447 Tests & Measurements	3
P.E. 465 The School Health Educ.		P.E. 450 The School Physical Educ.	
Program	3	Program	3
P.E. 493 Problems in Athletics	3	P.E. 466 Coaching	0
Six credits from the following:		P.E. 480 Principles of Movement	3
P.E. 370, 371, 372, 373 Athletic		If not accompanied by a second teaching	
Coaching	6	area in health education add:	
	53	P.E. 453 Methods & Materials in	
		Health Teaching	3
		P.E. 465 The School Health Educ.	
		Program	3
		Home Ec. 300 Nutrition	2
			47-54

Students who plan to teach in the state of Washington must add to this curriculum, or to the health education curriculum below, the following courses: Psychology 306 (Child Psychology), Education 402 (Child Development), or Nursery School 305 (Personality Growth of the Preschool Child); History 464 (Washington and the Pacific Northwest); Music 107 (Survey) or Education 377 (Music for Elementary Teachers) or approved substitute; Art 100 (Introduction) or Education 376 (Art in the Elementary School) or approved substitute; Public Health 461 (School and Community Health Programs); Education 209 (Educational Psychology), 230 (Washington Manual), and 370 (Introduction to Teaching Procedures) concurrently; Education 370E (Elementary School Methods); Education 339 (for men) or 340 (for women);

Education 374 (Fundamentals of Reading Instruction), 390 (Evaluation in Education), 371K, E, X, or S (Directed Teaching), and 360 (Principles of Education). These courses are required for the provisional general teaching certificate, which is issued through the College of Education (see page 204 for other certification requirements).

CURRICULUM FOR TEACHER TRAINING IN HEALTH EDUCATION. Students who wish to emphasize high school health education teaching may follow this curriculum. Those who plan to teach in the state of Washington must add to this curriculum the courses listed in the paragraph above. The lower-division requirements are:

MEN AND WOMEN

	CREDITS		CREDITS
P.E. 110 or 175 Health Educ.	2	Biol. 101J-102J General or Zool. 111,	
P.E. Activities	6	112 General	10
Anat. 301 General & Zool. 208 or 358		Chem. 101, 102 General	10
Physiol., or Conjoint 317-318 Anat. &		Engl. 101, 102, 103 Composition	9
Physiol.	10-12	Psychol. 100 Introduction	5
		Sociol. 110 Survey	5
		Speech 100 Basic Speech Improvement	5

52-64

The professional requirements are:

MEN AND WOMEN

	CREDITS		CREDITS
P.E. 291 Personal & General Hygiene	3	Hygiene or Educ. 408 Mental Hygiene	
P.E. 292 First Aid & Safety	3	for Teachers	2-3
P.E. 345 Principles of Physical Educ.	3	Pub. Health 402 Communicable Disease	
P.E. 453 Methods & Materials in		Control or 301 Causes & Control of	
Health Teaching	3	Communicable Diseases	3
Conjoint 496 Concepts of the Child or		Pub. Health 412 Pub. Health Organiza-	
Educ. 402 Child Study and Develop-		tions & Services	3
ment	3	Pub. Health 464 Pub. Health Educ.	
Home Ec. 300 Nutrition	2	Techniques	3
Micro. (or approved substitute)	5	Sociol. 353 Social Factors in Marriage	
Psychiatry 267 Introduction to Mental		or Home Ec. 356 Family Relationships	3
		Related approved electives	8

44-45

Recommended electives are:

MEN AND WOMEN

	CREDITS		CREDITS
Anthro. 280 Race	2	Psychol. 101 Adjustment	5
Econ. 211 General, or Pol. Sci. 376		Psychol. 135 Applied	2
State & Local Government & Admin. or		Pub. Health 330 Environmental	
475 Municipal Government &		Sanitation	3
Admin.	3 or 5	Pub. Health 460J Field Training in	
Journ. 200 News Writing or 303 Pub.		Health Educ.	5
Relations	5 or 3	Pub. Health 463 Community Organiza-	
Nursing 100 Care & Prevention of		tion for Health Educ.	3
Illness	3	Pub. Health 470 Introduction to Pub.	
Nursing 380 Pub. Health & Community		Health Statistics	2
Nursing	3	Pub. Health 485 Field Practice	4-12
P.E. 293 Muscular Exercise	3	Radio 200 Introduction	5
P.E. 322 Kinesiology	3	Sociol. 270 Contemporary Social	
P.E. 429 Teaching First Aid & Safety	2	Problems	5
P.E. 435 Adapted Activities	3	Sociol. 352 The Family	5
Pol. Sci. 100 Survey	5	Sociol. 364 Rural Community	5
Psychiatry 468 Counseling	2	Speech 232 Group Discussion	3

Additional courses in health education are given in the Schools of Home Economics, Nursing, and Medicine.

ADVANCED DEGREES

Students who intend to work toward the degree of Master of Science or Master of Science in Physical Education must meet the requirements of the Graduate School (see page 261). There is no foreign language requirement for the Master of Science in Physical Education.

For a minor in physical education for the master's degree, the candidate must present a minimum of 26 preparatory credits in physical education, one course in physiology, and at least 12 credits in advanced courses.

COURSES FOR UNDERGRADUATES

Activity and Health Courses

101, 102, 103, 201, 202, 203 Adapted Activities (1,1,1,1,1; A,W,S,A,W,S) MEN

Gymnastics, games, and sports to meet the needs of the individual. For physically handicapped students. **Cutler, Hinrich**

104 Basic (1; A) MEN

Staff

Freshman intercollegiate athletics may be substituted.

105 through 253 Physical Education Activities (1 each) MEN

Staff

105, 205, Pack Forest; 106, 206, handball; 107, 207, basketball; 108, 208, tennis; 109, 209, softball; 110, 210, golf (fee, \$3 Autumn and Spring, \$1.50 Winter); 111, 211, track; 112, 212, crew (class), prerequisite, swimming; 113, 213, fencing; 114, 214, boxing; 115, 215, tumbling; 117, 217, wrestling; 118, 218, volleyball; 119, 219, swimming; 120, 220, soccer; 121, 221, touch football; 122, 222, badminton; 123, 223, archery; 124, 224, calisthenics; 125, 225, skiing (fee, \$15); 126, 226, speedball; 127, 227, bowling (fee, \$3); 128, 228, weight lifting; 129, 229, sailing; 131, 231, folk and square dancing; 141, freshman, 241, varsity basketball; 142, freshman, 242, varsity crew, prerequisite, swimming; 143, freshman, 243, varsity football; 144, freshman, 244, varsity track; 145, freshman, 245, varsity swimming; 146, freshman, 246, varsity baseball; 147, freshman, 247, varsity tennis; 148, freshman, 248, varsity golf; 149, freshman, 249, varsity skiing; 150, freshman, 250, varsity volleyball; 151, freshman, 251, varsity wrestling; 152, freshman, 252, varsity fencing; 153, freshman, 253, varsity handball.

110 Health Education (2; AWS) WOMEN

McLellan, Gunn, Horns, Waters

Health problems of freshman women. Required of all freshmen.

111 through 270 Physical Education Activities (1 each) WOMEN

Staff

111, adapted activities; 113-114, basic activities; 115, archery; 118, badminton; 121, bowling (fee, \$3); 122, field sports; 124, fencing; 126, golf (fee, \$3 Autumn and Spring, \$1.50 Winter); 128, riding (fee); 131, skiing (fee); 133, stunts and tumbling; 135, tennis; 141, basketball; 143, hockey; 144, softball; 145, volleyball; 148, folk and square dancing; 149, European folk dance; 151, modern dance; 154, social dance; 155, tap and clog; 157, canoeing; 160, adapted swimming; 161, beginning swimming; 162, elementary swimming; 215, intermediate archery; 218, intermediate badminton; 221, intermediate bowling (fee, \$3); 222, advanced bowling (fee, \$3); 224, intermediate fencing; 228, intermediate riding; 235, intermediate tennis; 248, intermediate folk and square dancing; 251, intermediate modern dance; 252, advanced modern dance; 257, intermediate canoeing; 263, intermediate swimming; 264, advanced swimming; 265, rhythmic swimming; 266, diving; 267, lifesaving; 268, water safety instruction.

161, 162, 163, 264, 265, 266 Physical Education Activities for Majors (1,1,1,1,1,1; A,W,S, A,W,S) MEN

Staff

175 Personal Health (2; AWS) MEN

Reeves, Staff

Health information that affords a basis for intelligent guidance in the formation of health habits and attitudes. Required of all freshmen; exemption by examination.

176, 177, 178 Physical Education Activities for Freshman Majors (2,2,2; A,W,S) WOMEN

MacLean, Kidwell, Rulifson

Hockey; soccer; speedball; basketball; badminton; tennis; stunts and tumbling.

Professional Courses

181, 182, 183, 284, 285, 286 Physical Education Backgrounds (1,1,1,1,1,1; A,W,S, A,W,S) MEN

Torney, Auernheimer, Cutler, Reeves, Kunde, Stevens, Mills, Smith, Palmer

Fundamental information on methods and materials in swimming, lifesaving, tumbling, apparatus, individual games, boxing, wrestling, recreational games, and group games.

190 Problems in Physical and Health Education and Recreation (2; A) MEN AND WOMEN

Horne, Peek

Orientation to these fields, professional opportunities; problems encountered; qualifications and training for teaching, recreational leadership in communities and organizations, coaching (men), and physical therapy (women).

281, 282, 283, 284 Physical Education Backgrounds (1,1,1,1; S,A,W,S) WOMEN

Broer,

Horne, Kidwell, de Vries, MacLean

Fundamental information for methods and materials in the presentation of gymnastics, tap dance, folk dance, social dance, modern dance, swimming, and lifesaving. Basic skills with emphasis for professional training.

290 Officiating (2; W) MEN

Mills, Stevens

Techniques of officiating football, basketball, baseball, track and field, swimming, tennis, volleyball, softball, speedball, and soccer.

291 Personal and General Hygiene (3; AWS) MEN and WOMEN

Mills, Waters

Advanced course designed for the professional student in health education areas. Prerequisite, 110, 175, or equivalent.

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cated.

- 292 First Aid and Safety (3; AWS) MEN and WOMEN** Reeves, Auernheimer, MacLean, Clark
The student may meet requirements for both Standard and Advanced American Red Cross First Aid Certification. Includes safety education in schools. Prerequisite for men, junior standing.
- 293 Physiology of Muscular Exercise (3; S) MEN and WOMEN** Staff
Muscular efficiency, fatigue, recovery, chemical changes, and neuromuscular control, with special reference to games, sports, corrective work, and body mechanics. Prerequisite, Zoology 118, 208, or 358.
- 294 Introduction to Recreation (2; A) MEN and WOMEN** Kunde
Nature, function, and scope of organized recreation; historical background, philosophy, theories of play; leadership implications; organized play in the United States. Prerequisites, Sociology 110 and Psychology 100.
- 301 Methods and Materials in Gymnastics, Stunts, and Tumbling (3; S) WOMEN** MacLean, Broer
Methods and opportunities for presentation of these activities, including marching tactics. Prerequisites, 292, Anatomy 301, and Zoology 118 or 208 (which may be taken concurrently).
- 304, 305, 306 Officiating (2,2,2; A,W,S) WOMEN** Fox, Horns, Kidwell
Techniques for officiating in field hockey, volleyball, aquatics, basketball, badminton, softball, and tennis; opportunity for national and local ratings. Prerequisite, junior standing or permission.
- 309 The School Dance Program (2; A) MEN and WOMEN** Wilson
Practice in basic skills in folk, square, and social dancing; methods and opportunity for presentation, including "calling"; source materials; organization of coeducational dance program. Prerequisite, junior standing or permission.
- 311 Rhythmic Activities for Small Children (2; S) WOMEN** de Vries
Activities suited to the preschool, kindergarten, and primary child. Educational value, significance in child growth and development, and methods of presentation. Prerequisite, junior standing.
- 312 Elementary School Athletic Program (3; A) WOMEN** Rulifson
Program planning, small group play, and team game activities for elementary grades.
- 318 Analysis of Rhythm (3; S) WOMEN** de Vries, Wilson
Rhythmic form and analysis; relationship to the physical education program; principles of building rhythmic patterns to be used in teaching dancing; relationship of musical form to dance form. Prerequisites, 281 and 283 (which may be taken concurrently), or permission.
- 322 Kinesiology (3; A) MEN and WOMEN** Cutler
Analysis of leverage in body movement and problems of readjustment in relationship to body mechanics and to physical education activities. Prerequisites, 293 and Anatomy 301.
- 324 Playground Programs (3; W) MEN and WOMEN** Kunde
Lectures, demonstrations, and reading assignments for orientation in recreation skills and techniques suitable for various age groups; classifying, adapting, directing, experiencing, and utilizing recreation program materials. Prerequisites, 292, 294, and 6 credits in physical education major activities or the equivalent.
- 334 Management and Operation of Playgrounds and Recreation (2; S) MEN** Kunde
Practices and procedures in management and operation of areas and facilities. Duties and responsibilities, personnel regulations, and staff organization. Motivating and conducting a diversified program. Prerequisite, 324.
- 336 Athletic Training and Conditioning (1; S) MEN** Clark
Prerequisite, 292 or permission.
- 340 Administration of Intramural Sports (3; W) MEN** Stevens
- 344 Organization and Administration of Camp Programs (3; S) MEN** Kunde
The educational and social significance of camping; organization of activities and problems of administration. Prerequisites, junior standing, Psychology 100, and Sociology 110, or permission.
- 344 Organization and Administration of Camp Programs (3; S) WOMEN** McLellan
The educational and social significance of camping; organization of activities and problems of administration. Prerequisites, junior standing, Psychology 100, and Sociology 110, or permission.
- 345 Principles of Physical Education (3; A) MEN and WOMEN** Peek
Social, biological, and educational foundations; its place in the school program. Prerequisites, Zoology 118, 208, or 358; Sociology 110; and Psychology 100.
- 355 Dance Composition (2; S) WOMEN** de Vries
Practice in modern dance; analysis of choreography; creative work. Prerequisites, 151 and 318.
- 356 Methods and Materials in Teaching Modern Dance (2; A) WOMEN** de Vries
Sources of materials; their selection and organization; methods of presentation; music and types of accompaniment. Prerequisites, 283 and 318, or permission.
- 358 Methods in Teaching Apparatus, Tumbling, and Stunts (2; W) MEN** Auernheimer
Prerequisites, 162 and 182, or permission.
- 361 Methods in Teaching Boxing and Wrestling (2; A) MEN** Mills, Stevens
Prerequisites, 264, 284, or permission.
- 362 Methods and Materials in Teaching Folk, Tap, and Clog Dancing (2; S) WOMEN** Wilson
Methods and materials and opportunities for presentation of these activities as well as social dancing. Prerequisites, 281, 282, and 318 (which may be taken concurrently).

PHYSICAL AND HEALTH EDUCATION

143

- 363 Methods and Materials in Teaching Sports** (men, 2, S; women, 3, A) **MEN and WOMEN**
Rulifson, MacLean, Peek
 Program planning; methods in teaching team and individual sports, including volleyball, basketball, field hockey, soccer, speedball and other field games, softball, tennis, and badminton. Prerequisites for men, 163, 183, 264, 265, 266, 284, 285, and 286, or permission; for women, 176, 177, 178, and 312.
- 364 Methods and Materials in Teaching Swimming** (men, 2, S; women, 3, W) **MEN and WOMEN**
MacLean, Torney
 Diving, lifesaving, and direction of camp waterfront program. Prerequisites for men, 161, 162, 163, 181, 264, 265, and 266, or permission; for women, 157 and 284, or permission.
- 370 Methods in Teaching Football** (2; W) **MEN**
Odell
- 371 Methods in Teaching Basketball** (2; A) **MEN**
Dye
- 372 Methods in Teaching Track and Field** (2; A) **MEN**
Edmundson
- 373 Methods in Teaching Baseball** (2; S) **MEN**
Tappin
- 424 Observation and Practice Teaching (In Recreation)** (2; AWS) **MEN**
Kunde
 Forty hours of observation and participation in organized recreation for different age groups. Prerequisite, recreation major, senior standing, or permission.
- 424 Observation and Practice Teaching (In Recreation)** (4; S) **WOMEN**
McLellan
 Forty hours of observation and participation in organized recreation for different age groups. Prerequisite, recreation major, senior standing, or permission; camp or recreation experience for one summer.
- 429 Methods in Teaching First Aid and Safety** (2; AWS) **MEN and WOMEN**
Reeves
 The student may meet requirements for American Red Cross Instructor's First Aid Certification. Prerequisite, 292.
- 435 Adapted Activities** (3; W) **MEN and WOMEN**
Waters, Cutler
 Program for a typical case from the standpoint of individual needs. Prerequisites, 293; 322; and Zoology 118, 208, or 358.
- 447 Tests and Measurements** (3; W) **MEN and WOMEN**
Cutler
 Their place in health and physical education; criteria for selection; formulation of a testing and measuring program.
- 450 The School Physical Education Program** (men, 3; women, 2; W) **MEN and WOMEN**
Torney, Wilson
 Problems of organization and administration. Prerequisites for men, 345, senior standing, or permission; for women, 362, 363, 364, and senior standing.
- 453 Methods and Materials in Health Teaching** (3; A) **MEN and WOMEN**
McLellan
 Health instruction in elementary, junior and senior high schools, including subject matter, source material, and method. Prerequisites, 345; Public Health 461; and Zoology 118, 208, or 358.
- 459-460 Dance Production** (2-2; A-W) **WOMEN**
de Vries
 Thematic materials for dance in education, writing dance scenario, mechanics of presenting a dance program, choreography, selection of music, music augmentation, costuming, staging, production management. Laboratory experience. Prerequisite, 151 and 251, or 283.
- 465 The School Health Education Program** (3; W) **MEN and WOMEN**
Reeves
 Schoolroom construction; lighting, heating, ventilation; sanitation of spaces; selection and location of equipment; medical inspection and supervision; communicable disease; the school lunch; fatigue, rest, and play. Prerequisite, 345.
- 466 Coaching** (0; AWS) **WOMEN**
Fox, Staff
 Prerequisite, permission.
- 480 Principles of Movement** (3; S) **WOMEN**
Broer
 The interpretation of the physical principles which make for efficient movement through the integration of physics, anatomy, kinesiology, and sport and dance techniques. Prerequisites, 301, 322, 356, 363, 364, Anatomy 301, and Physics 100, or permission.
- 493 Problems in Athletics** (3; S) **MEN**
Torney
 The place of interschool athletics in education. Control, finance, eligibility, safety measures, publicity, and public relations. Qualifications and duties of coaches, managers, and officials. Prerequisites, 345 and 450.

COURSES FOR GRADUATES ONLY

- 501 Seminar in Physical Education** (3; A) **MEN and WOMEN**
Broer, Cutler, Kunde, Torney
 Prerequisites, 345 and 450.
- 503 Seminar in Health Education** (3; S) **MEN and WOMEN**
Waters
 Prerequisites, 345, 453, and 465.
- 504 Administration of Recreation** (5; S) **MEN and WOMEN**
Kunde
 Prerequisites, 324, 345, or permission.
- 506 The Curriculum** (3; W) **MEN and WOMEN**
Kunde
 Selection and organization of program content in relation to characteristics and needs of pupils and local conditions. Prerequisites, 345 and 450.
- 524 Seminar in Community Resources and Organization for Recreation** (3; AWS) **MEN**
Kunde
 Functional analysis of integrated community resources and organization for recreation services. Experience in recreation fact finding, analysis, and evaluation. Study of pertinent problems and needs in the field. Prerequisite, 504.

600 Research (2 to 5; AWS) MEN and WOMEN

A. Physical Education.

B. Tests and Measurements.

C. Physiology of Exercise.

D. Health Education.

E. Recreation.

Staff**Thesis (*; AWS) MEN and WOMEN****Staff****PHYSICS****Executive Officer: JOHN H. MANLEY, 215 Physics Hall**

Professors: J. E. Henderson, J. H. Manley, E. A. Uehling, C. L. Utterback.

Associate Professors: R. W. Kenworthy, S. H. Neddermeyer

Assistant Professors: K. C. Clark, G. W. Farwell, R. Geballe, P. M. Higgs, B. A. Jacobsohn, L. A. Sanderman, F. H. Schmidt, J. F. Streib.

The Department of Physics offers courses leading to the degrees of Bachelor of Science, Bachelor of Science in Physics, Master of Science, and Doctor of Philosophy. For undergraduate students it offers an elective curriculum, which provides a basic introduction to physics and allows a wide choice of electives in other fields, and a prescribed curriculum, which provides intensive study in preparation for a professional career. Each of these curricula leads to a bachelor's degree.

In addition, the Department offers a first teaching area for students in the College of Education (see page 202).

A curriculum leading to the degree of Bachelor of Science in Engineering Physics is being planned for initiation in 1952-53. The proposed four-year program would combine preparation in basic engineering with full training in physics. Interested students should write directly to Dr. John H. Manley, Executive Officer of the Department of Physics.

Students who are majoring in physics and have had a year of high school physics take Physics 121, 122, and 123 in their freshman year. The following less detailed courses are offered for other students: Physics 101, 102, and 103 for those who have had high school physics, and Physics 104, 105, and 106 for those who have had plane geometry but no physics. Physics 100, a survey course, is recommended as an elective for nontechnical students. Courses of specialized emphasis are provided for architecture, engineering, home economics, music, nursing, and speech students.

A good background in mathematics is of great value in learning physics. High school trigonometry and senior-year algebra will be found very useful; students showing adequate knowledge of either of these will be allowed to proceed more rapidly with further mathematics courses, as specified in the announcement of the Department of Mathematics (see page 117).

BACHELOR OF SCIENCE

In the elective curriculum, 42 credits in physics are required. Courses must include: Physics 121, 122, 123 (or 101, 102, 103; or 104, 105, 106), 321, 322, 323, 325, 326, 360, and 361.

BACHELOR OF SCIENCE IN PHYSICS

The total requirements for the prescribed curriculum are:

		FIRST YEAR			
FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Physics 121	5	Physics 122	5	Physics 123	5
Chem. 105 or 111 General. .	3	Chem. 106 or 112 General. .	3	Chem. 107 General or 113	
Math. 100 Math. Thinking. .	2	Engl. 101 Composition....	3	Elem. Qual. Analysis... 3	or 5
Math. 104 Plane Trig.....	3	Math. 105 Algebra.....	5	Engl. 102 Composition....	3
P.E. 110 or 175 Health....	2	P.E. Activity	1	Math. 106 Analyt. Geom....	5
P.E. Activity		R.O.T.C.	2 or 3	P.E. Activity	
R.O.T.C.	2 or 3			R.O.T.C.	2 or 3
	16-19		17-20		17-20

SECOND YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Physics 321.....	3	Physics 322.....	3	Physics 323.....	3
Engl. 103 Composition.....	3	Physics 340.....	3	Physics 350.....	3
Math. 307 Calc.....	5	Math. 308 Calc.....	5	Math. 309 Calc.....	5
Electives.....	5	Electives.....	5	Electives.....	5
P.E. Activity.....	1	P.E. Activity.....	1	P.E. Activity.....	1
R.O.T.C.....	2 or 3	R.O.T.C.....	2 or 3	R.O.T.C.....	2 or 3
	17-20		17-20		17-20

THIRD YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Physics 325.....	3	Physics 326.....	3	Physics 354.....	4
Chem. 355 Physical.....	3	Physics 360.....	3	Physics 361.....	3
Math. 423 Calc. & Vector		Chem. 356 Physical.....	4	Math. 422 Diff. Equations..	3
Analysis.....	3	Math. 421 Diff. Equations..	3	Electives.....	6
Mech. Engr. 203 Metal		Electives.....	3		16
Machining.....	1		16		
Electives.....	6				
	16				

FOURTH YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Physics 491.....	4	Physics 492.....	4	Physics 485.....	4
Physics 495.....	3	Physics 496.....	3	Math. 429 Applied Analysis	3
Math. 427 Applied Analysis	3	Math. 428 Applied Analysis	3	Electives.....	10
Electives.....	5	Electives.....	6		17
	15		16		

German or French is recommended as an elective in the second year. Senior students who are candidates for Physics Honors take Physics 499 as an elective in the last quarter of the fourth year.

Students who do not intend to enter graduate work in physics may replace Mathematics 427, 428, and 429 (Topics in Applied Analysis) with three courses selected from Electrical Engineering 420 (Vacuum Tubes and Electronics), 440 (Vacuum Tube Circuits), 457 (Industrial Control), and 461 (Vacuum Tube Circuits); otherwise these engineering courses are suggested as electives.

In special circumstances minor changes in the list of prescribed courses may be approved by the Department.

ADVANCED DEGREES

Students who intend to work toward the advanced degree of Master of Science or Doctor of Philosophy must meet the requirements of the Graduate School (see page 261).

The graduate student who is majoring in physics is expected to have an undergraduate preparation in physics equivalent to that given by the prescribed curriculum. He should have an undergraduate scholastic average of B or better and this average must be maintained if he is to continue his graduate work. A good reading knowledge of French and German is of considerable value, and deficiencies in this respect should be made up at an early date.

In addition to other requirements, the student working toward an advanced degree will satisfactorily complete a basic program of graduate studies; acquire a general understanding of the problems of current research in physics as described in the current literature and at the numerous meetings of physical societies; and complete a selected research program leading to a definite contribution to knowledge.

Students majoring in other fields who wish to complete work leading to a graduate minor in physics for a master's degree must fulfill the following requirements: 18 credits beyond general physics selected from Physics 321, 322 (or 455), 325, 326, 340, 350, 360, 361, 485, 491, 492, 495, and 496; and at least one graduate course in physics. A minor for a doctor's degree requires the equivalent of the undergraduate elective curriculum and three graduate courses selected from Physics 505, 509, 510, 517, 524, 550, 552, 558, and 564.

COURSES FOR UNDERGRADUATES

100 Survey of Physics (5; A)

A nontechnical treatment of the various fields in physics.

Staff

101, 102, 103 General Physics (5,5,5; AWS,WS,AS)

101: mechanics and sound. Prerequisite, one year of high school physics. 102: electricity and magnetism. Prerequisite, 101. 103: heat and light. Prerequisite, 101.

Staff

- 104, 105, 106 General Physics (5,5,5; AWS,WS,AS)** **Staff**
Prerequisite, plane geometry; 104 for 105 and 106.
- 112, 113 Physics for Architecture Students (5,5; W,S)** **Sanderman**
General physics with special emphasis on acoustics, heating, ventilating, and illumination. Prerequisite, 101 for 104.
- 121, 122, 123 General Physics (5,5,5; A,W,S)** **Kenworthy**
For physical science students. 121: mechanics and sound. Prerequisite, one year of high school physics. 122: electricity and magnetism. Prerequisite, 121. 123: heat and light. Prerequisite, 121.
- 150 Sound and Music (5; S)** **Staff**
For speech and music students.
- 154 Elementary Photography (4; AS)** **Higgs**
Principles and practice of elementary photographic processes. Laboratory experience in fundamental photographic procedures. Prerequisite, high school physics or chemistry.
- 170 Physics for Nurses (5; AS)** **Sanderman**
Selected physical theories and principles and their applications to various nursing situations and to hospital equipment.
- 190 Selected Topics in Physics for Home Economics Majors (5; W)** **Sanderman**
Application of certain phases of physics to daily life and to the various commercial fields open to home economists.
- 217, 218, 219 Physics for Engineers (4,4,4; AWS,AW,WS)** **Henderson**
Basic principles of physics with practice in their application to the solution of a large number of problems. Derivation of necessary relationships from first principles is emphasized rather than simple substitution in formulas. This course can be used in place of 121, 122, and 123 as a physics prerequisite. Prerequisites, one year of high school physics; Mathematics 151, 152, and 153; and, concurrently, Mathematics 251, 252, and 253, or Civil Engineering 290, 291, and 292.
- 229 Pyrometric Measurements (2; W)** **Utterback**
Prerequisite, 103, 106, or 123.
- 315 Photography (4; W)** **Higgs**
Photographic processes; photographic optics; lighting, and color photography; application of photography to the sciences and arts. Laboratory. Prerequisites, 154 or equivalent, and permission.
- 321, 322 Introduction to Modern Physics (3,3; A,W)** **Utterback**
Concepts of the particles of modern physics; the atomic character of electricity; the photon character of radiation; the positron; the neutron; the meson; the existence of isotopes; the nature of cosmic rays; natural radioactivity. Prerequisite, 103, 106, or 123.
- 323 Introductory Nuclear Physics (3; S)** **Manley**
A study of nuclear reactions, including fission, particle accelerators, and nuclear instrumentation; cosmic rays; astrophysics; applications of nuclear phenomena in atomic energy; use of tracers, etc.
- 325, 326 Electricity (3,3; A,W)** **Streib**
Elementary theory of direct, transient, and alternating currents in circuits involving resistance, capacitance, inductance, and nonlinear elements. Elementary electrostatic theory; field intensity and potential; Gauss's Law; dielectrics; capacitance. Elementary electromagnetism; Ampere's Law; the magnetic field; Faraday's Law; magnetic materials; inductance. Laboratory use of galvanometers, potentiometers, simple bridges, electrostatic instruments, thermal rectifying elements, photoelectric elements, magnetic instruments, and vacuum tube devices. Prerequisites, 103, 106, or 123, and calculus. Concurrent enrollment in Mathematics 423 is recommended.
- 340 Sound (3; W)** **Kenworthy**
The sources of sound, transmission in different media, and elements of acoustics. Laboratory. Prerequisite, 103, 106, or 123.
- 350 Heat and Introduction to Thermodynamics and Kinetic Theory (3; AS)** **Utterback**
Concepts of heat and energy changes; experimental laws of heat and thermal reactions; ideas of reversibility, entropy, etc.; application of general principles to specific cases. Laboratory. Prerequisite, 103, 106, or 123.
- 354 Low- and High-Frequency Measurements (4; S)** **Uehling**
Measurement of frequency and of impedance as a function of frequency; production, amplification, propagation, and detection of electromagnetic oscillations at low and high frequencies; analysis of electromagnetic circuit and field conditions. Laboratory. Prerequisites, 326 and calculus.
- 360, 361 Optics (3,3; W,S)** **Clark**
Thick lenses and lens combinations; wave motion; interference and diffraction; propagation in moving media; polarization; dispersion; introduction to the electromagnetic and the discrete character of light. Laboratory. Prerequisites, 103, 106, or 123, and calculus.
- 367, 368, 369 Special Problems (*; AWS)** **Staff**
Prerequisite, permission.
- 370 Spectrometry (3; A)** **Staff**
Theory and use of spectroscopic equipment; qualitative and quantitative spectrum analysis. Laboratory. Prerequisite, 360 or permission.
- 380 History of Physics (2; S)** **Staff**
Prerequisite, 103, 106, or 123.

- 455 Introduction to Modern Physics for Electrical Engineers (3; AS)** **Schmidt**
The electrical nature of matter: electrolysis, gaseous discharges, discovery of the electron, and the electronic charge. Atomic and nuclear structure: the Einstein mass-energy relation, atomic and nuclear binding energies, Rutherford scattering, and nuclear sizes. Quantum theory: Planck radiation law, photoelectric effect, X-ray production, Compton effect, pair production, and Bohr theory of the hydrogen atom. Wave character of matter: deBroglie hypothesis and electron and neutron diffraction. Nuclear physics: radioactivity, nuclear reactions, the cyclotron, and chain reactions. Prerequisite, senior standing in engineering, or permission.
- 485 Nuclear Physics (4; S)** **Noddormayer**
Natural radioactivity; alpha, beta, and gamma spectra; nuclear energy states; energy-mass conservation. Properties of the radiations; stopping power and range for charged particles; absorption of gamma rays by photoelectric and Compton effects and by pair production. Accelerators, artificial disintegrations, example of reactions, and measurement of reaction energy. Induced radioactivity. Nuclear structure and systematics of the stable nuclei. Laboratory. Prerequisite, 323.
- 491, 492 Theoretical Mechanics (4,4; A,W)** **Goballe**
Statics; dynamics of a particle and system of particles, including rigid bodies, accelerated reference frames, and oscillations. Vector methods are used. An introduction to generalized coordinates and Lagrange's equations. Prerequisites, Mathematics 253 or 309, and 30 credits in physics.
- 495, 496 Experimental Atomic Physics (3,3; A,W)** **Higgs**
Phenomena representative of modern experimental atomic physics. Laboratory. Prerequisite, 30 credits in physics.
- 499 Undergraduate Research (2-5; AWS)** **Staff**
Supervised individual research leading to Physics Honors award. Prerequisite, permission.

COURSES FOR GRADUATES ONLY

- 505, 506 Mechanics (*, maximum 6, *, maximum 6; A,W)** **Staff**
Dynamics of a particle and of rigid bodies; generalized coordinates and Lagrangian theory; variational principles. Hamilton's equations of motion, vibration, and normal coordinates.
- 509, 510 Atomic, Molecular, and Nuclear Structure (*, maximum 6, *, maximum 6; S,A)** **Staff**
Energy-level systems of nuclear, atomic, and molecular aggregates of elementary particles studied primarily on the vector model and other phenomenological modes of description; radioactive transitions and selection rules; atomic and molecular spectra; nuclear interactions and transitions.
- 513, 514, 515 Electricity and Magnetism (*, maximum 6, *, maximum 6, *, maximum 6; A,W,S)** **Staff**
The properties of electric and magnetic fields as boundary value problems; application of harmonic function and conformal representation; electrodynamics and electromagnetic waves in empty space and material media.
- 517, 518, 519 Quantum Mechanics (*, maximum 6, *, maximum 6, *, maximum 6; A,W,S)** **Staff**
Prerequisites, 513 for 518, and 519.
- 520 Seminar (1-2; AWS)** **Staff**
- 524 Thermodynamics (*, maximum 6; W)** **Staff**
- 525 Statistical Mechanics (*, maximum 6; S)** **Staff**
Prerequisite, 517.
- 528 Current Problems in Physics (*, maximum 6; A)** **Staff**
Discussion of several active research fields: survey of the background of each field; discussion of generally accepted concepts and those at variance with experiment or untested; detailed study of at least one recent paper in the field.
- 529 Current Problems in Physics (*, maximum 6; not offered 1952-53)**
- 550 X-rays (*, maximum 6; not offered 1952-53)**
- 552 Conduction Through Gases (*, maximum 6; not offered 1952-53)**
- 554 Hydrodynamics (5; not offered 1952-53)**
- 556 Mathematical Theory of Sound (5; not offered 1952-53)**
- 558 Cosmic Rays (*, maximum 6; not offered 1952-53)**
- 560 Nuclear Physics (*, maximum 6; S)** **Staff**
Prerequisites, 510 and 518.
- 562 Theory of Spectra (*, maximum 6; S)** **Staff**
Prerequisites, 509 and 519.
- 564 Relativity (*, maximum 6; not offered 1952-53)**
- 566 Theory of Collisions (*, maximum 6; W)** **Staff**
Prerequisite, 518.
- 568 Theory of Solids (*, maximum 6; A)** **Staff**
Prerequisite, 518.
- 570 Radiation Theory (*, maximum 6; W)** **Staff**
Prerequisite, 519.
- 572 Foundations of Statistical Mechanics (5; not offered 1952-53)**

574 Atomic and Molecular Interaction (5; not offered 1952-53)

576 Selected Topics in Experimental Physics (*, maximum 6; not offered 1952-53)

578 Selected Topics in Theoretical Physics (*, maximum 6; A)

Prerequisite, permission.

600 Research (*; AWS)

Thesis (*; AWS)

Staff

Staff

Staff

POLITICAL SCIENCE

Acting Executive Officer: KENNETH C. COLE, 206 Smith Hall

Professors: W. B. Ballis, H. A. Bone, K. C. Cole, L. A. Mander, C. E. Martin, F. H. Michael, G. A. Shipman, D. H. Webster.

Visiting Professor: K. Hsiao.

Associate Professors: D. G. Hitchner, J. M. Maki.

Assistant Professor: A. Gottfried.

Acting Assistant Professors: W. L. Riley, W. E. Sanborn.

Lecturer: G. H. Sheehe.

Instructor: W. H. Harbold.

Acting Instructor: O. A. Coleman.

The Department of Political Science offers courses leading to the degrees of Bachelor of Arts, Master of Arts, and Doctor of Philosophy. For undergraduate students, it offers three elective curricula leading to the bachelor's degree. The general curriculum provides a flexible liberal arts program; the preprofessional program in international relations is for students who are preparing to enter the Foreign Service, the State Department, or international agencies; and the preprofessional program in public administration is for those who plan careers in other branches of government service.

In addition, the Department offers first and second teaching areas for students in the College of Education (see page 202).

The Bureau of Governmental Research and Services, maintained by the Political Science Department, provides research and consultative services for state and local agencies and conducts the annual Institute of Government. Other organizations functioning through the Department include the Bureau of International Relations, the Institute of Public Affairs, the Institute of International Affairs, and the Institute of National Security.

BACHELOR OF ARTS

GENERAL CURRICULUM. The requirements are: Political Science 100; one course from 210, 220, 221, 260, and 270; 411 or 418; 328, 336, or 427; three courses from 445, 450, 460, and 470; and 15 credits in a field of political science that is of special interest to the student.

CURRICULUM IN INTERNATIONAL RELATIONS. The requirements are: Political Science 100, 210; 260 or 270; 411 or 418; 445, 460, 470; at least four courses from 321, 322, 328, 336, and 427; at least three courses from 323, 324, 429, 430, and 432; Economics 200 (Introduction); Geography 100 (Survey); Law 441 (International Law); and Sociology 110 (General).

A reading and translating knowledge of at least one modern foreign language is essential. To develop the necessary language proficiency, not less than 30 University credits in one language, or the equivalent in high school and University work combined, will be needed.

CURRICULUM IN PUBLIC ADMINISTRATION. The requirements are: Political Science 100, 260, 376, 412, 427, 445, 450, 460, 470, 471, 472, 473, 475; 370 or 451; Accounting 150 and 151 (Fundamentals); Business Statistics 201 (Statistical Analysis) or Mathematics 281 (Elements of Statistical Method); Economics 200 (Introduction), 301 (National Income Analysis), 350, and 451 (Public Finance and Taxation I and II); History 241 (Survey of U. S. History); and Psychology 100 (General).

ADVANCED DEGREES

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School (see page 261). Candidates for these degrees must have completed an undergraduate major or the equivalent.

Candidates must acquire mastery of the field of specialization in which the thesis is prepared and of additional supporting fields. These fields are as follows: political theory; international law and relations; comparative government; public law; public administration; American government and politics; and state and local government. Combinations of some of the above fields may be required. Candidates may be permitted to offer a special regional political science field (United Kingdom, Western Europe, Far East, Middle and Near East, or U.S.S.R.). With permission, a related field in history, economics, sociology, psychology, geography, or regional studies may be substituted for one of the political fields. The field of political theory is required in all programs.

Not less than two-thirds of the courses included in the degree programs must consist of those numbered 500 or above. Courses 511, 512, and 513 are required.

MASTER OF ARTS. A total of 45 credits is required, including 9 allowed for the thesis. In exceptional cases, a candidate's committee may approve up to 18 credits for the thesis, reducing the course work accordingly. The candidate must present a field of specialization and two supporting fields.

If the field of specialization is Far Eastern and Russian studies, the requirements are the same, except that one supporting field must be a specialized field in the political science of the Far East or Russia or a related field of Far Eastern or Russian subjects other than political science, and the candidate must have a reading knowledge of the appropriate language (Chinese, Japanese, or Russian).

MASTER OF PUBLIC ADMINISTRATION. The Institute of Public Affairs offers a two-year professional curriculum leading to this degree. The purpose is to prepare students for administrative positions in the public service, rather than to train technical specialists, teachers, or research technicians. The program consists of instruction in six fields: the administrative process, the development of American institutions, the economics of public activity, public law, public management, and administrative problems. Three fields are studied each year, and students undertake the analysis of various problems in each field. Every student is expected to complete an approved internship during the summer between the first and second years.

The public administration curriculum is limited to a small group of graduate students who show special promise of success in the public service. A broad educational background in the social sciences is desirable.

DOCTOR OF PHILOSOPHY. The candidate must present a field of specialization and four supporting fields, totaling at least 100 credits.

For specialization in Far Eastern and Russian studies, the candidate must have a specialized field of Far Eastern regional political science and a related field of Far Eastern subjects other than political science, or specialized Russian regional political science and a related Russian subject field other than political science. A minimum of 60 credits is required in the three general political science fields and a minimum of 40 credits in the specialized and related fields. One of the foreign languages offered must be the appropriate regional one (Chinese, Japanese, or Russian).

COURSES FOR UNDERGRADUATES

- | | | |
|-----|---|------------------------|
| 100 | Survey of Political Science (5; AWS) | Bone, Mander, Hitchner |
| | Principles and problems of government. The state in theory, law, politics, and administration. | |
| 210 | American Political Institutions (5; S) | Harbold |
| | American political ideas as formalized into institutions; major principles of the American governmental system, historical and contemporary. Prerequisite, 100. | |
| 220 | International Relations (5; A) | Sanborn |
| | Rise of modern states; alliances, imperialism, and the League of Nations; present and future problems. Prerequisite, 100. | |
| 221 | Power and the State (5; not offered 1952-53) | |
| 260 | Introduction to Public Law (5; W) | Cole |
| | Legal construction of political organization; the state and the individual; leading concepts in constitutional, international, and administrative law. Prerequisite, 100. | |
| 270 | Government in Action (5; A) | Gottfried |
| | Problems of political leadership; public opinion and political organization; bureaucratic control. Prerequisite, 100. | |

300 Contemporary European Politics (3)
 201 Modern Gov't. (5)
 202 American Gov't. & Politics (5)

- Law 345 International Law (H)*
- 321 **American Foreign Policy (3; W)** **Martin**
Major policies as modified by recent developments; international cooperation. Prerequisite, 100.
- 322 **The Foreign Service (3; W)** **Riley**
Department of State; diplomatic and consular services; American diplomatic practice and procedure. Prerequisite, 100.
- 323 **International Relations of the Western Hemisphere (5; A)** **Staff**
The Monroe Doctrine; Pan-Americanism; special interests in the Caribbean; hemisphere solidarity; the "Good Neighbor" policy; Latin America and World War II. Prerequisite, 100.
- 324 **Contemporary International Relations in Europe (5; S)** **Hitchner**
European diplomacy and international relations between the two world wars; recent and contemporary developments. Prerequisite, 100.
- 328 **The United Nations and Specialized Agencies (5; S)** **Mander**
The structure and functions of the United Nations and specialized agencies; accomplishments; proposals for strengthening. Prerequisite, 100.
- 335J **Japanese Foreign Policy in Asia (3; S)** **Maki**
Analysis of modern Japanese expansion in Asia; Japanese political, diplomatic, and economic impact on Asia; the "Greater East Asia Co-Prosperity Sphere." Offered jointly with the Far Eastern and Russian Institute. Prerequisite, 100 or permission.
- 336 **National Power and International Politics (5; W)** **Sanborn**
Geographical, economic, and political foundations of the major powers as factors in international relations of the world. Prerequisite, 100.
- 337 **The Balkans in Politics and Diplomacy (5; not offered 1952-53)**
- 338 **Foundations of National Power (5; not offered 1952-53)**
- 341 **The Authoritarian State (5; not offered 1952-53)**
- 342 **Comparative Governments of the Far East (5; not offered 1952-53)**
- 343 **Modern British Government (5; W)** **Hitchner**
Contemporary British government and politics; current problems of the parliamentary system. Prerequisite, 100.
- 344 **Chinese Government (5; A)** **Michael**
Imperial government; transition period; national government; present forms of local government; constitutional draft; present political situation. Prerequisite, 100.
- 345J **Japanese Government (3; W)** **Maki**
Premodern Japanese government; characteristics of Japanese government from 1868 to 1945; governmental changes since 1945. Offered jointly with the Far Eastern and Russian Institute. Prerequisite, 100 or permission.
- 346 **Governments of Western Europe (5; A)** **Hitchner**
Modern government and politics of France, Germany, and Switzerland.
- 347 **Governments of Eastern Europe (5; S)** **Ballis**
Survey of the Soviet model; the Eastern European reproductions: Hungary, Rumania, Bulgaria, and Albania; the Eastern European variants: Czechoslovakia, Poland, Yugoslavia, and Eastern Germany.
- 350 **Government and Interest Groups (5; S)** **Bone**
Agrarian, labor, professional, business, and ethnic interests in politics; impact on representative institutions and governmental processes. Prerequisite, 100.
- 351 **The American Democracy (5; A)** **Gottfried**
Nationalization and federalism; regionalism; the presidency; the representative system; judicial institutions; reconciliation of policy and administration. Prerequisite, 100.
- 353 **Theory and Practice of Government in the State of Washington (3; W)** **Bone**
For nonmajors.
- 360 **The American Constitutional System (3; S)** **Webster**
Fundamental principles, function, evolution, and unwritten constitution; recent tendencies. Prerequisite, 100.
- 370 **Government and the American Economy (5; W)** **Gottfried**
Government regulation, promotion, and services affecting general business, public utilities, agriculture, banking, investments, and social welfare. Prerequisite, 100.
- 376 **State and Local Government and Administration (5; A)** **Webster**
Structure, functions, procedures, and suggested reorganization, with special reference to the state of Washington and its units of local government. Prerequisite, 100.
- 378 **Rural Government (5; S)** **Webster**
Structure of rural local government: nature and legal status of counties, townships, special districts, and other governmental units. Problems of metropolitan areas: powers and functions; relationship to state and federal governments; revenue; analysis of proposals for reform and reorganization. Prerequisite, 100.
- 398 **Honors Course for Seniors (5; S)** **Staff**
Open to qualified majors in the last quarter of the senior year. Prerequisite, 100.
- 411 **The Western Tradition of Political Thought (5; A)** **Harbold**
Origin and evolution of the major political concepts of the Western world; nineteenth-century modifications. Prerequisite, 100.
- 412 **American Political Thought (5; W)** **Harbold**
Major thinkers and movements from the Colonial period to the present. Prerequisite, 100.

362 Intro. to Public Law (5)

- 413 Contemporary Political Thought (5; W)** **Harbold**
Changing political ideas since the French and Industrial Revolutions as a basis for contemporary philosophies of democracy, communism, and fascism. Prerequisite, 100.
- 414 Oriental Political Thought (5; S)** **Staff**
Theories of the Oriental state as exhibited in the writings of statesmen and philosophers. Prerequisite, 100.
- 415 Analytical Political Theory (5; S)** **Harbold**
Analysis of the major concepts of political theory, such as state, authorities, sovereignty, law, liberty, rights, and equality, from a nonhistorical viewpoint. Prerequisite, 100.
- 416J Introduction to Roman Law (5; S)**
Importance, sources, and civil procedure; classic law of persons, property, contracts, torts, and succession in the light of modern research. Open to qualified sophomores. Offered jointly with the Department of History. Prerequisite, 100.
- 418 The Evolution of Western Political Institutions (5; A)** **Harbold**
The conflict between law and force in conditioning the character of modern government. Prerequisite, 100.
- 420 Foreign Relations of the Soviet Union (5; W)** **Ballis**
Nature and objectives of Soviet foreign policy; ideological and strategic factors; Bolshevism versus fascism; Comintern and Cominform; League of Nations and United Nations; East-West conflict. Prerequisite, 100.
- 427 International Government and Administration (5; A)** **Hitchner**
Law and organization in international affairs; regional and general international institutions. Prerequisite, 100.
- 429 International Relations in the Far East (5; A)** **Maki**
China, Japan, Russia, and the Philippines; the Western powers and the Orient; the Far East in world politics. Prerequisite, 100.
- 430 International Relations in the Middle and Near East (5; W)** **Mander**
Egypt, Turkey, and Afghanistan; mandates; critical problems today. Prerequisite, 100.
- 432 American Foreign Policy in the Far East (5; W)** **Michael**
Relationship to diplomacy, trade, and internal politics. Prerequisite, 100.
- 433J Europe 1914-1945 (5; W)** **Emerson**
The politics and society of Europe in the age of the concentration camp. Offered jointly with the Department of History. Prerequisite, 100.
- 435 Comparative Colonial Policies and Administration (5; not offered 1952-53)**
- 440J Political Institutions of the Russian Empire (3; not offered 1952-53)**
- 441 Political Institutions of the Soviet Union (5; A)** **Ballis**
Dynamics of Soviet political theory; Leninism and Stalinism; forms and functions of governmental and party institutions; Soviet constitutionalism, federalism, and legal and administrative agencies. Prerequisite, 100.
- Law 441 International Law (3-3; A-W)** **Martin**
World law as developed by custom and agreement and as exhibited in decisions of international tribunals and municipal courts. Prerequisite, 100.
- 445 Comparative Political Institutions (5; S)** **Martin**
Analytical study of doctrines, forms, functions, processes, and controls of all governmental systems, without regard to region or country. Prerequisite, 100.
- 450 Political Parties and Elections (5; AS)** **Bone**
Organization and methods; the nature and future of party government. Prerequisite, 100.
- 451 The Legislative Process (5; W)** **Bone**
Organization and procedure of legislative bodies, with special reference to the theory and practice of representative government, lobbying, and bicameralism. Prerequisite, 100.
- 452 Political Processes and Public Opinion (3; S)** **Bone**
Organization and implementation of opinion in controlling government, and public opinion as a force in the development of public policy; public relations activities of government agencies. Prerequisite, 100.
- 460 Introduction to Constitutional Law (5; S)** **Cole**
Growth and development of the United States Constitution as reflected in decisions of the Supreme Court; political, social, and economic effects. Prerequisite, 100.
- 470 Introduction to Public Administration (5; AS)** **Shipman, Gottfried**
Includes relationship of administration to other agencies of government. Prerequisite, 100.
- 471 Administrative Management (5; W)** **Shipman**
Introduction to problems of public service, emphasizing managerial supervision and control, personnel administration, budgetary and fiscal administration, administrative analysis, and program planning and reporting. Prerequisite, 100.
- 472 Introduction to Administrative Law (5; S)** **Shipman**
Creation of administrative authorities, scope of limitations on their powers, remedies, and judicial control of administrative action. Prerequisite, 100.
- 473 Comparative Administrative Systems (5; W)** **Gottfried**
Principles and practice of administration under foreign governments, especially in Europe and the British Commonwealth. Prerequisite, 100.

- 475 **Problems of Municipal Government and Administration (5; W)** Webster
The city charter; relationship to the state and other local units; municipal functions and services, with reference to municipalities in the state of Washington. Prerequisite, 100.
- 499 **Individual Conference and Research (2-5; AWS)** Staff
Prerequisite, 100 or permission.

COURSES FOR GRADUATES ONLY

- 506, 507, 508 **Graduate Seminar (3,3,3; A,W,S)** Martin
Oral and written studies in contemporary problems, domestic and foreign.
- 511, 512, 513 **Seminar in Readings in Political Science (3,3,3; A,W,S)** Cole
Important writings of the masters in political science; the political classics.
- 514 **Seminar in Problems of Political Theory (3-5; A)** Staff
Selected topics, historical and conceptual, national, regional, and universal.
- 515 **Methods and Research in Political Science (3-5; W)** Staff
Political science and the social sciences; methods of research; bibliography of general and special fields.
- 521 **Seminar in the Theory of International Relations (3; S)** Mander
The principal theories underlying interstate relations; the sovereign state as a unit in the community of states; the theory of the state and the theory of the society of nations.
- 522, 523, 524 **International Government and Organization (3,3,3; A,W,S)** Mander
Constitutional organization and administrative procedures, with particular reference to the United Nations, specialized agencies, and other recent developments.
- 525, 526, 527 **Seminar in Foreign Policy (3,3,3; A,W,S)** Martin
The European states system; foreign policies of the major European powers; alliances and the balance of power; leading principles of American foreign policy; current problems in American diplomacy; international practice and procedure; international conferences; foreign offices.
- 528, 530 **Seminar in Regional Foreign Policy (3,3; A,S)** Mander, Staff
Regionalism in the world order and economy; the "region" as a basis of foreign policy; foreign interests and policies of the major regions of the world: the U.S.S.R., Central Europe, Western Europe, the British Empire, the Middle and Near East, the Far East, and Latin America.
- 540J **Seminar on the Soviet Union: Government and Diplomacy (4, maximum 8; AS)** Ballis
Offered jointly with the Far Eastern and Russian Institute.
- 545J **Seminar on Japanese Government and Diplomacy (3; S)** Maki
Offered jointly with the Far Eastern and Russian Institute.
- 550, 551, 552 **Seminar in Politics (3,3,3; A,W,S)** Bone
Topical and regional studies of political associations in the United States; leading principles and motivations of political action and leadership; legislative processes; methodology and bibliography.
- 560 **Seminar in Roman Law (3; W)** Staff
Modern research. Readings in Justinian's *Institutes* and *Digest* in English translation.
- 562-563-564 **Public Law (3-3-3; A-W-S)** Cole
Constitutional and legal concepts governing governmental authority and institutions and the conduct of governmental activities. Prerequisite, admission to graduate curriculum in public administration or special approval.
- 570-571-572 **The Administrative Process (3-3-3; A-W-S)** Shipman
Forms and characteristics of administrative activity, organization, and function; the executive; administrative discretion; administrative legislation and adjudication; responsibility and control.
- 573-574-575 **Public Management (3-3-3; A-W-S)** Shipman
Methods and problems of managing public activities, emphasizing work supervision and control, management staff problems, personnel administration, budgetary and fiscal administration, organization and methods analysis, reporting techniques, program planning, and control. Prerequisite, admission to graduate curriculum in public administration or special approval.
- 576-577-578 **Administrative Problems (3-3-3; A-W-S)** Shipman
Supervised analysis of selected administrative problems in local, state, and national government and the preparation of action reports. Prerequisite, admission to graduate curriculum in public administration.
- 580 **Seminar in State and Local Government (3; A)** Webster
Critical analysis of governmental structure: areas of administration, functions, limitations on state and local authority, regionalism, and forms of regional control.
- 581 **Seminar in Public Policy in Planning (5; W)** Webster
Planning theory; law and administration; legal basis of governmental planning, with emphasis upon state, local and regional government; the planning agency in government; general scope and limitations of powers and functions; policy determination and public relations; coordination with administrative departments; drafting enabling legislation, planning regulations, and zoning and subdivision ordinances.
- 600 **Research (2-5; AWS)** Staff
- Thesis (*; AWS)** Staff

543 Seminar in British Gov't (3)

PSYCHOLOGY

Executive Officer: ROGER B. LOUCKS, 335 Savery Hall

Professors: S. W. Bijou, A. L. Edwards, E. A. Esper, E. R. Guthrie, A. P. Horst, R. B. Loucks, C. R. Strother, W. R. Wilson.

Associate Professors: G. P. Horton, B. B. McKeever.

Assistant Professors: S. S. Culbert, E. E. Dudek, L. B. Heathers, T. G. Hermans, A. Katcher, M. M. Levin, M. H. Smith.

The Department of Psychology offers courses leading to the degrees of Bachelor of Science, Master of Science, and Doctor of Philosophy. In addition, it offers first and second teaching areas for students in the College of Education (see page 202).

BACHELOR OF SCIENCE

In this elective curriculum, at least 36 credits in psychology are required. Courses must include: Psychology 100, 101, 200, 301, 400 (or 427), and .11 credits in psychology electives. Students majoring in psychology must maintain a grade-point average of 2.5 in all psychology courses.

ADVANCED DEGREES

Students who intend to work toward the degree of Master of Science or Doctor of Philosophy must meet the requirements of the Graduate School (see page 261). Admission to graduate study requires formal approval by the Department of Psychology as well as admission to the Graduate School.

COURSES FOR UNDERGRADUATES

- | | |
|--|----------------------------------|
| 100 General Psychology (5; AWS)
Introduction to the principles of human behavior. | McKeever, Staff |
| 101 Psychology of Adjustment (5; AWS)
Application of psychological principles to the problems of everyday life. Prerequisite, 100. | Wilson |
| 135 Applied Psychology (2; S)
Psychological approaches to human efficiency and happiness, with emphasis upon vocational, industrial, advertising, and consumer problems and their application to legal and medical fields. Prerequisite, 100. | Dudek |
| 200 Advanced General Psychology (5; AWS)
Fundamental principles and experimental methods of psychology, with laboratory demonstrations. For majors only. Prerequisite, 100. | Hermans |
| 236 Industrial Psychology for Architects (3; not offered 1952-53) | |
| 245 Individual Differences (2; not offered 1952-53) | |
| 301 Statistical Methods (5; AS)
Application of statistical methods to psychological problems; description of psychological data in terms of averages, measures of variability, and measures of relationships; problems of prediction; frequency distributions and elementary sampling theory. Prerequisite, 200 or permission. | Edwards, Smith |
| 305 Abnormal Psychology (5; AS)
Origin and mechanism of behavior that interferes with proper adjustment; physiological pathology; psychotherapy. Prerequisite, 15 credits in psychology, including 101. | Strother |
| 306 Child Psychology (5; AWS)
Individual and social development and their causes, from infancy to adult age. Prerequisite, 100. | Bijou, Katcher |
| 307 Psychology of Adolescence (3; W)
A survey of the physical and personality development of the adolescent. Prerequisite, 306. | Katcher |
| 335 Industrial Psychology (3; S)
Applications of psychological principles and methods of investigation to problems of industrial relations: employee selection, training, and motivation; factors influencing morale and employee productivity; criteria of job proficiency. Prerequisite, 100. | Dudek |
| 336 Industrial Psychology for Engineers (3; AWS)
Important psychological problems in business and industry, stressing awareness of psychological problems rather than techniques of solving them. Primarily for engineers. Prerequisite, Humanistic-Social Studies 263 or 265. | Culbert |
| 337 Vocational Psychology (3; W)
Employment trends; analysis and classification of occupations and of worker characteristics; principles of personnel selection and individual guidance. Prerequisite, 100. | Dudek |
| 345 Social Psychology (3; AWS)
Psychology of human institutions. Prerequisite, 100. | Culbert, Edwards, Guthrie |

- 400 **Psychology of Learning (5; AW)** Smith
Theories and experimental research in the field of human learning. Prerequisite, 301.
- 401 **History of Psychology (5; WS)** Esper
Experimental and theoretical backgrounds of modern psychology, especially in the nineteenth century. Prerequisite, 200 or permission.
- 402 **Modern Viewpoints in Psychology (5; not offered 1952-53)**
- 403 **Psychology of Motivation (3; S)** Smith
Theories and experimental research concerning the role of organic conditions and of social rewards and punishments in determining the direction and efficiency of effort. Prerequisite, 400.
- 406 **Experimental Psychology (5; AS)** Loucks
Practice in planning, conducting, and reporting laboratory research. Prerequisite, permission.
- 413 **Tests and Measurements (5; A)** Dudek
Standard group psychological tests and their theoretical and statistical bases; practice in administering and scoring group tests. Prerequisite, 301.
- 416 **Animal Behavior (3; A)** Loucks
Principles of animal behavior in relation to human behavior, with special emphasis upon the principles underlying the organism's mode of adjusting to its environment. Prerequisite, permission.
- 421 **The Neural Basis of Behavior (5; AS)** Esper
Anatomical and physiological principles underlying the integrative action of the nervous system, and the relationship of these principles to the problems of behavior. Prerequisites, 10 credits in biology and permission.
- 422 **Physiological Psychology (5; W)** Loucks
The physiological process in attention, emotion, fatigue, and sleep; recent research on muscle potentials and brain waves. Prerequisite, 421 or permission.
- 423 **Sensory Basis of Behavior (5; S)** Horton
Sensory and perceptual phenomena; sensory equipment; theories of sense-organ function. Prerequisite, 200 or 421 or permission.
- 425 **Advanced Experimental Psychology (5; not offered 1952-53)**
- 426 **Animal Laboratory (5; W)** Smith
Supervised training in experimental work with animals. Prerequisite, 400 or permission.
- 427 **Conditioning (5; W)** Loucks
Experimental work on conditioning, with emphasis on specific research techniques; significance for the several fields of psychology. Prerequisite, 400 or permission.
- 435 **Applied Experimental Psychology (3; not offered 1952-53)**
- 436 **Occupational Analysis (3; not offered 1952-53)**
- 437 **Employment Psychology (3; not offered 1952-53)**
- 438 **Psychological Principles of Industrial Training (3; not offered 1952-53)**
- 439 **Industrial Efficiency (2; not offered 1952-53)**
- 444 **Psychology of Exceptional Children (3; S)** Bijou
Behavior patterns of exceptional children, such as the mentally retarded, the physically handicapped, and superior children. Prerequisites, 100, 101, and 306.
- 446 **Public Opinion Analysis (5; not offered 1952-53)**
- 449 **Psychology of Social Movements (3; W)** Culbert
The establishment of roles and stereotypes during the socialization of the individual; group organization, membership and leadership; social drift and control; conflict, crisis, change, and resistance to change. Prerequisite, 345.
- 462 **Readings in Psychology (1-3, maximum 3; AWS)** Staff
Reading in special interest areas under supervision of staff members. Discussion of reading in conference with instructor. The name of the staff member with whom research will be done should be indicated in registration. Prerequisite, permission.
- 499 **Undergraduate Research (1-3, maximum 9; AWS)** Staff
The name of the staff member with whom research will be done should be indicated in registration. Prerequisite, permission.

COURSES FOR GRADUATES ONLY

- 501 **Theoretical Problems in Psychology (3; W)** McKeeover
Analysis of the scientific method in the field of psychology and review of types of psychological constructs and major theoretical approaches. Prerequisite, permission.
- 507 **Psychological Development of the Child (2; S)** Katcher
Sequences and factors in the psychological development of the average child from preschool through the adolescent ages. Prerequisites, permission and registration in postgraduate dental education.
- 509 **Advanced Child Psychology (3; A)** Bijou
Critical analysis of current theories and major research in the field of child behavior and development. Prerequisites, 306 and permission.

514 *Experimental Design (3)*

History (3)
407
408

- 515 Experimental Design (5; AW)** **Edwards**
Planning research problems; formulation of hypotheses; techniques of equating groups; sampling problems; factorial design and analysis of variance; interpretation of data. Prerequisite, 301 or permission.
- 516 Introduction to Multivariate Psychological Measurement (5; A)** **Horst**
Special quantitative techniques essential to understanding of multivariate psychological measurement theory. Elementary principles of matrix algebra basic to this theory and efficient computational routines are emphasized. Prerequisites, 301 and 413, or permission.
- 517 Factor Analysis (5; W)** **Horst**
Mathematical and theoretical foundations; alternative methods of analysis; computational procedures; applications to psychological problems. Prerequisite, 516 or permission.
- 518 Test Construction (5; S)** **Horst**
Correlational analysis; statistical bases of test construction and of the use of test batteries; practice in test construction. Prerequisite, 517 or permission.
- 520 Seminar (2; AWS)** **Staff**
May be repeated. Prerequisite, permission.
- 521 Seminar in Statistics (2; W)** **Staff**
May be repeated. Prerequisite, permission.
- 522 Seminar in General (2; A)** **McKeever**
May be repeated. Prerequisite, permission.
- 523 Seminar in History (2; W)** **Esper**
May be repeated. Prerequisite, permission.
- 524 Seminar in Physiological (2; WS)** **Horton, Loucks**
May be repeated. Prerequisite, permission.
- 525 Seminar in Genetic and Comparative (2; A)** **Horton**
May be repeated. Prerequisite, permission.
- 526 Seminar in Applied (2; S)** **Staff**
May be repeated. Prerequisite, permission.
- 527 Seminar in Social (2; WS)** **Edwards**
May be repeated. Prerequisite, permission.
- 528 Seminar in Experimental (2; S)** **Hermans**
May be repeated. Prerequisite, permission.
- 529 Seminar in Clinical (2; S)** **Bijou**
May be repeated. Prerequisite, permission.
- 530 Seminar in Theory (2; W)** **Staff**
May be repeated. Prerequisite, permission.
- 531 Seminar in Learning and Motivation (2; S)** **Guthrie**
May be repeated. Prerequisite, permission.
- 535 Proficiency Evaluation (2; not offered 1952-53)**
- 536 Motivation and Morale in Industry (2; not offered 1952-53)**
- 545 Psychology of Social Attitudes (5; AW)** **Edwards**
Theory and techniques of attitude-scale construction; scaling by the methods of equal-appearing intervals and of summated ratings; scale analysis; applications of attitude scales in education, industry, and the social sciences; determinants of attitudes and experimental studies of attitude change. Prerequisite, 301 or permission.
- 546 Personality (3; W)** **Staff**
The theories of personality development. The psychodynamics of personality organization. Prerequisite, permission.
- 547 Psychology of Language (3; A)** **Esper**
Psychological principles applied to linguistic development and organization; relation of symbolism to human behavior. Prerequisite, permission.
- 551 Perception (5; AW)** **Culbort**
Lectures and supervised individual experiments. Prerequisites, 421, 423, and permission.
- 581 Individual Testing (Children) (5; S)** **Heathers**
Construction, administration, and scoring of individual mental tests used with children. Prerequisites, 306, 413, and permission.
- 582 Individual Testing (Adults) (5; W)** **Heathers**
Construction, administration, and scoring of clinical psychological tests used with adults. Prerequisites, 305, 413, and permission.
- 583 Individual Testing (Infant and Preschool) (5; not offered 1952-53)**
- 584 Laboratory in Child Behavior (3; W)** **Katcher**
Practice in designing experiments with children involving the use of a variety of measuring techniques; methods of analyzing and evaluating such data; handling of children as subjects for psychological research. Prerequisite, permission.
- 585 Psychology of Physically Handicapped Children (3; not offered 1952-53)**
- 588 Psychopathology (3; A)** **Bijou**
Major historical and contemporary theories of psychopathology and research in the main categories of the behavior disorders. Prerequisite, 501.

- 589 Survey of Psychotherapies (5; A)** **Strother**
Evaluation of current theory, problems, and techniques in nondirective, directive, psychoanalytic, hypnotherapeutic, narcosynthetic, supportive, and other psychotherapies. Prerequisites: 588 and 595.
- 591 Projective Personality Tests (3; A)** **Strother**
Theory of projective tests; practice in scoring and interpreting projective tests, with emphasis on the Rorschach. Prerequisite, 583 or permission.
- 592 Projective Personality Tests (5; W)** **Strother**
Training in interpretation of normal Rorschach records; review of literature on the use of the Rorschach in psychopathology. Prerequisite, 591 or permission.
- 595 Psychological Diagnosis (5; S)** **Strother**
Selection, administration, and interpretation of diagnostic psychological tests. Open only to Ph.D. candidates specializing in clinical psychology. Prerequisite, permission.
- 596 Field Work in Clinical Psychology (1-5 per quarter; AWS)** **Staff**
Field training in clinics and institutions for students in clinical psychology. May be repeated. Prerequisite, permission.
- 599 Survey of Clinical Psychometrics (2; W)** **Strother**
The nature, development, and clinical application of psychological tests. Prerequisite, permission and registration in the Graduate School of Social Work.
- 600 Research (*; AWS)** **Staff**
The name of the staff member with whom research will be done should be indicated in registration. Prerequisite, permission.
- Thesis (*; AWS)** **Staff**

PUBLIC HEALTH AND PREVENTIVE MEDICINE

Executive Officer: LELAND E. POWERS, E301 Health Sciences Building

The Department of Public Health and Preventive Medicine, within the School of Medicine, offers a four-year elective curriculum leading to a bachelor's degree for students in the College of Arts and Sciences. Options are available in sanitary science, public health education, and public health statistics. In addition, the Department offers a basic academic field in health education for students in the College of Education (see page 202). Public health courses are described with those of other departments in the School of Medicine (see page 274).

BACHELOR OF SCIENCE

Credits in public health, including field work, must total at least 36. An additional 36 science credits are required; ordinarily these should be completed during the first two years. For the sanitary science option and the public health statistics option, 9 credits in mathematics should be included in the 36 required science credits.

Upon completion of the first 90 credits or upon transfer from another institution, the student's record is examined by a departmental committee which judges his ability to continue in the curriculum.

While specific courses are not prescribed in the third and fourth years, students choose principally public health and supporting courses related to their options. They must maintain a 2.5 grade-point average in all professional courses.

RADIO-TELEVISION

(See School of Communications, page 68)

ROMANCE LANGUAGES AND LITERATURE

Executive Officer: HOWARD L. NOSTRAND, 202 Denny Hall

Professors: J. C. Chessex, C. Garcia-Prada, C. Goggio, H. L. Nostrand, W. C. E. Wilson.

Professors Emeriti: P. J. Frein, C. L. Helmlinge.

Associate Professors: L. V. Simpson, A. Vargas-Baron.

Assistant Professors: A. E. Creore, J. F. David, J. M. Guiguet, A. C. Keller, W. B. Whittlesey, C. M. Wilson.

Instructors: R. Cardona, E. Chang-Rodríguez, J. P. Keller, J. F. Lynch.

The Department of Romance Languages and Literature offers courses leading to the degrees of Bachelor of Arts, Master of Arts, and Doctor of Philosophy. For undergraduate students, it offers an elective curriculum with a major in French, Italian, or Spanish, as well as courses in Portuguese and literature courses in English. It also offers first and second teaching areas in French and Spanish for students in the College of Education (see page 202). Curricula in Latin American Studies and in an area study of France are provided by the Division of General Studies (see page 96).

The first two high school years of French or Spanish correspond to courses 101-102, and 103; the third high school year corresponds to courses 201, 202, and 203; and a fourth high school year, if devoted to advanced composition and conversation, corresponds to courses 301, 302, and 303. Students who have had one high school semester of French should begin with 101; two or three semesters, 103; four semesters, 201. Students who have had one high school semester of Spanish should begin with 101; two semesters, 121-201; three semesters, 103 or 121-201; four semesters, 201.

Students who are uncertain about proper placement in beginning courses may take a departmental language test. Any of the prerequisites for these courses may be waived at the instructor's discretion, and students with A or high B standing are encouraged to skip one or more quarters between 101 and 301.

The Department may grant terminal credit for courses numbered 101, but not 121, to students not majoring in language.

BACHELOR OF ARTS

The general requirements for graduation with a major in a Romance language are proficiency in the language and knowledge of the literature and culture of France, Spain, or Italy, as outlined in syllabi obtainable from the Department.

In all curricula, credits may be arranged for study abroad, preferably during the junior year, subject to the regulations governing transfer credit and provided the student's plan is approved in advance by the Registrar's Office and by the departments in which he is studying. Summer study abroad is encouraged and the Department of Romance Languages and Literature sponsors one set of study tours.

The Department recommends that students majoring in a Romance language elect the natural and social science sequences in the General Education program to fulfill group requirements, and the art and philosophy sequences in that program to acquire a background for literature courses.

FRENCH MAJOR. Forty-five credits in French are required, including courses 201, 202, and 203 (or a third high school year of French); 301, 302, and 303 (or a fourth high school year of French); 304, 305, and 306; either 327, 328, 329, or 330; 341, 358, and 359; and 12 elective credits, of which 3 may be from courses 334, 335, and 336, and 5 must be in courses numbered above 400. Some directed reading is also required.

ITALIAN MAJOR. A program of studies is made for each student. The programs are similar to those in French and Spanish, but include more supervised study and courses offered in English, supplemented by reading and conferences in Italian and by work in the language laboratory.

SPANISH MAJOR. Forty-five credits in Spanish are required, including courses 201, 202, and 203, 212, 213, or 214; 301, 302, and 303; 304, 305, and 306; 358 and 359; and 15 elective credits, of which 3 may be from 334, 335, and 336, and 11 must be in courses numbered above 400. Some directed reading is also required.

ADVANCED DEGREES

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School (see page 261). A knowledge of Latin and an acquaintance with masterpiece of other literatures are strongly recommended for all candidates. The Department requires that every thesis be submitted at least four weeks before the end of the quarter in which the degree is to be granted.

MASTER OF ARTS. The requirements are: at least 36 credits divided between major and minor subjects, 20 of which must be in courses numbered 500 or above; a knowledge of representative literary works such as those listed in syllabi obtainable from the Department (the M. A. and B. A. syllabi for an M. A. major and the B. A. syllabus for an M. A. minor); and oral proficiency in the major language.

DOCTOR OF PHILOSOPHY. The requirements are: at least 90 credits, 35 of which must be in the major subject, 30 in the first minor, and 15 in the second minor (two-

thirds of these credits must be in courses numbered 500 or above); a knowledge of the history of two Romance languages (this requirement may be fulfilled by completion of Romance Linguistics 505, 506, and 507, supplemented by French 512 and 513, Spanish 511, 512, and 513, or Italian 512 and 513); a history of three Romance literatures as outlined in at least the B. A. syllabus; a knowledge of representative literary works such as those listed in the syllabi (the Ph.D., M.A. and B.A. syllabi for the Ph.D. major, the M.A. and B.A. syllabi for the first minor, and the B.A. syllabus for the second minor); and oral proficiency in the major language.

When a Romance language is used as a minor for the doctoral degree, the requirements are at least the same as for the undergraduate major in that language and literature.

An interdepartmental major in Latin American Studies for the doctorate is offered. It comprises courses in Spanish and Portuguese languages, Latin American literature, and supporting courses in the various departments.

COURSES FOR UNDERGRADUATES

French

- 101-102, 103 Elementary (5-5, 5; AWS-AWS,AWS)** **Staff**
Prerequisite for 103 is 102, or two or three high school semesters, or equivalent.
- 101-102 Elementary (10; not offered 1952-53)**
- 105-106 Elementary (5-5; AW-WS)** **Staff**
Designed for the rapid acquisition of a reading knowledge of French. No auditors. Prerequisite, graduate standing or permission. See 207.
- 130 Conversational French (1-2; Summer)** **Staff**
For participants in the French House. Prerequisite, 103.
- 201, 202, 203 Intermediate (3,3,3; AWS,AWS,AWS)** **Staff**
Modern texts, composition, and functional grammar. Prerequisite for 201 is 103, or four high school semesters, or equivalent.
- 207 Reading in the Humanities and Social Sciences (3; AS)** **Creore**
Class reading in contemporary French periodicals and books, with individual reading and conferences. No auditors. Prerequisite, 106 and graduate standing, or permission.
- 210, 211 Elementary French Conversation (2,2; AWS,AWS)** **Staff**
Prerequisites, 103 or equivalent for 210; 210 or permission for 211.
- 237, 238 Lower-Division Scientific French (3,3; A,W)** **Whittlesley**
Class reading with emphasis on constructions and scientific terms. Prerequisite, 201 or equivalent.
- 301, 302, 303 Advanced Composition and Conversation (2,2,2; A,W,S)** **Staff**
The first half of 301 is an intensive review of grammar at the intermediate level. Prerequisite, 203 or equivalent.
- 304, 305, 306 Survey of French Literature (3,3,3; A,W,S)** **Chessex**
Masterpieces from the seventeenth century to the present. Lectures in French on French literature and civilization from the beginning. Prerequisite, 203 or equivalent.
- 307, 308 Themes (2,2; W,S)** **Staff**
Writing of original compositions. Prerequisite, 302 or equivalent.
- 327, 328, 329 Advanced Conversation (2,2,2; A,W,S)** **Chessex, David**
For majors and others admitted by the instructor. Prerequisite, 301 or equivalent.
- 330 Conversational French (1-2; Summer)** **Staff**
For participants in the French House. Prerequisite, 203.
- 337, 338, 339 Upper-Division Scientific French (2,2,2; A,W,S)** **Whittlesley**
Individual conferences; students read material in their own fields. Prerequisite, 237, 238, or 239 with grade of B, or permission.
- 341 Phonetics (3; AS)** **Creore**
Analysis of sounds, intonation, rhythm; training in correct and natural pronunciation. Prerequisite, 103 or equivalent.
- 358-359 Advanced Syntax (2,2; W,S)** **Staff**
Syntax from the teacher's standpoint. Should precede Education 329. Prerequisite, 303 or 307.
- 390 Supervised Study (2-5, maximum 20; AWS)** **Staff**
Prerequisite, permission of executive officer.
- 421, 422, 423 Prose (3,3,3; A,S,W)** **Staff**
421: Renaissance and classical prose; *romans précieux* and psychological novel; *mémoires*; 422: eighteenth-century and Romantic prose; short story and psychological novel; 423: contemporary prose; short story and novel. Prerequisite, 203 or equivalent.
- 424, 425, 426 Modern Prose Fiction (3,3,3; not offered 1952-53)**
- 431, 432, 433 Lyric Poetry (2,2,2; A,W,S)** **Staff**
431: Renaissance and classical period; 432: eighteenth century and Romanticism; 433: Parnassians, Symbolists, and contemporary poetry. Prerequisite, 203 or equivalent.

- 441, 442, 443 Drama (3,3,3; S,W,A) **Staff**
 441: medieval, Renaissance, and classic drama; miracles, mysteries; Garnier, Rotrou, Corneille, Racine; 442: eighteenth century and Romantic drama; Lesage, Voltaire, Beaumarchais, Hugo; 443: modern drama, Becque, Rostand, Courteline, Porto Riche, Claudel, Romain, Camus. Prerequisite, 203 or equivalent.
- 444, 445, 446 Drama (3,3,3; offered alternate years, not offered 1952-53)
- 451, 452, 453 Moralists and Essayists (2,2,2; offered alternate years, not offered 1952-53)
- 482 French Literary Criticism (2; not offered 1952-53)

Italian

- 101-102, 103 Elementary (5-5, 5; AW-WS,S) **Staff**
- 210, 211 Elementary Italian Conversation (2,2; A,W) **Goggio**
 Prerequisites, 103 or permission for 210; 210 for 211.
- 311, 312, 313 Modern Italian Literature (2-3,2-3,2-3; A,W,S) **Goggio**
 Prose and poetry of the eighteenth and nineteenth centuries; composition. Prerequisite, 103 or 102 with a grade of B, or permission.
- 321, 322, 323 Masterpieces of Italian Literature (2,2,2; offered alternate years, not offered 1952-53)
- 390 Supervised Study (2-5, maximum 20; AWS) **Staff**
 Prerequisite, permission of executive officer.

Portuguese

- 101-102, 103 Elementary (5-5,5; A-W,S) **Staff**
- 201, 202, 203 Intermediate (3,3,3; A,W,S) **Staff**
 Modern texts, composition, and functional grammar. Prerequisite, 103 or permission.
- 390 Supervised Study (2-5, maximum 20; AWS) **Staff**
 Prerequisite, permission of executive officer.

Romance Linguistics and Literature

- 301 Romance Linguistics (3; A) **Staff**
 The origin and development of the Romance languages, with particular emphasis on their contribution to English. The main principles of linguistics as applied in the Romance languages. Prerequisite, junior standing and the equivalent of one college year of at least one Romance language or Latin.
- 334, 335, 336 Comparative Literature of Franco, Italy, and Spain in English (3,3,3; A,W,S)

Goggio
 The influence of each literature upon the others and the contribution of each to human thought. May be counted as an elective in either French, Italian, Spanish, or English. May be entered any quarter.

Spanish

- 101-102, 103 Elementary (5-5,5; AWS-AWS,AWS) **Staff**
 Prerequisite for 103 is 102 with a grade of not less than C, or three high school semesters, or equivalent.
- 101-102 Elementary (10; not offered 1952-53)
- 105-106 Elementary (5-5; A-W,W,S) **Staff**
 Designed for the rapid acquisition of a reading knowledge of Spanish. No auditors. Prerequisite, graduate standing or permission.
- 121- Basic Grammar Review (5; AWS) **Staff**
 Refresher course; should be taken instead of 103 by students who have received a grade lower than C in 102 and by students with two semesters of Spanish in high school. No student may receive credit for both 103 and 121; nor will credit be granted for 121 until 201 or equivalent has been completed.
- 130 Conversational Spanish (1-2; Summer) **Staff**
 For participants in the Spanish House. Prerequisite, 103.
- 201, 202, 203 Intermediate (3,3,3; AWS,AWS,AWS) **Staff**
 Modern texts, composition, and functional grammar. Prerequisite for 201 is Spanish 103 or 121, or four semesters in high school, or equivalent.
- 210, 211 Elementary Spanish Conversation (2,2; AWS,AWS) **W. Wilson, J. Keller**
 Prerequisites, 103 or 121 or equivalent for 210; 210 or permission for 211.
- 212, 213, 214 Modern Readings (2,2,2; A,W,S) **Staff**
 Intensive reading of modern prose and drama; acquisition of an extensive passive vocabulary. Prerequisite, 203 (which may be taken concurrently).
- 301, 302, 303 Advanced Composition and Conversation (3,3,3; A,W,S) **W. Wilson**
 Prerequisite, 203 or equivalent.
- 304, 305, 306 Survey of Spanish Literature (2,2,2; A,W,S) **J. Keller**
 From early times to the present. Prerequisite, 212 (which may be taken concurrently with 304).

315 Survey of Latin Amer. Lit. & Its Background (2)
 316 " " " " " " " " (2)

- 327, 328, 329 **Advanced Conversation (2,2,2; A,W,S)** **Staff**
Prerequisite, 302 or permission.
- 330 **Conversational Spanish (1-2; Summer)** **Staff**
For participants in the Spanish House. Prerequisite, 203 or equivalent.
- 358, 359 **Advanced Syntax (2,2; AS,W)** **W. Wilson**
Elementary principles of philology and their application to teaching; difficulties of Spanish grammar from the teacher's point of view. Prerequisite, 302 or equivalent.
- 390 **Supervised Study (2-5, maximum 20; AWS)** **Staff**
Prerequisite, permission of executive officer.
- 441, 442, 443 **Drama (3,3,3; A,W,S)** **Staff**
Historical development of the drama in Spain from its beginnings down to the present time. Selected texts; collateral reading and reports. Prerequisite, 203 or equivalent.
- 451, 452, 453 **Spanish Literature Since 1700 (3,3,3; offered alternate years, not offered 1952-53)**
- 461, 462, 463 **Spanish Literature of the Golden Era (3,3,3; offered alternate years; not offered 1952-53)**
- 471, 472, 473 **Individual Spanish Authors (3,3,3; A,W,S)** **Staff**
Each course will be devoted to one representative Spanish author of any period, according to the needs of the students. Prerequisite, 306 or equivalent.
- 481, 482, 483 **Spanish-American Literature (3,3,3; offered alternate years, not offered 1952-53)**
- 484 **The Romantic Movement in Spanish-American Literature (3; offered alternate years, not offered 1952-53)**
- 485 **The Costumbrista Movement in Spanish-American Literature (3; A)** **Garcia-Prada**
A study of the leading Costumbrista writers of Spanish America (1860-1900). Prerequisite, 203 or equivalent.
- 486 **The Modernista Movement in Spanish-American Literature (3; W)** **Garcia-Prada**
A study of the leading poets, essayists, and novelists of Spanish America (1890-1920). Prerequisite, 203 or equivalent.
- 487 **The Contemporary Spanish-American Novel (3; S)** **Garcia-Prada**

Courses in English

FRENCH

- 318, 319, 320 **Survey of French Literature and Its Background (2,2,2; A,W,S)** **Chessex**
Development and universal significance of French literature as seen through masterpieces studied in English translation. Does not count as credit toward a major in French.

ITALIAN

- 481, 482 **Dante in English (2,2; A,W)** **Goggio**
The thought and expression of the *Divine Comedy* against its background of medieval philosophy and art. May be counted as an elective in an English major.
- 484 **Renaissance Literature of Italy in English (2; S)** **Goggio**
Lectures and collateral reading. May be counted as an elective in an English major or minor.

PORTUGUESE

- 415, 416, 417 **Brazilian Literature and Culture in English (2,2,2; offered alternate years, not offered 1952-53)**

ROMANCE LINGUISTICS AND LITERATURE

- 334, 335, 336 **Comparative Literature of France, Italy, and Spain in English (3,3,3; A,W,S)** **Goggio**
The influence of each literature upon the others and the contribution of each to human thought. May be counted as an elective in either French, Italian, Spanish, or English. May be entered any quarter.

SPANISH

- 315, 316, 317 **Survey of Latin-American Literature and Its Background (2,2,2; A,W,S)**
315: the Pre-Hispanic and Colonial periods; 316: the nineteenth century; 317: the contemporary period.

COURSES FOR GRADUATES ONLY

French

- 501, 502, 503 **French Renaissance Literature (2,2,2; offered alternate years; not offered 1952-53)**
- 512 **Old French Reading (3; W)** **Staff**
Reading of material illustrative of phonological and morphological principles.
- 513 **Old French Literature (3; S)** **Simpson**
Literary backgrounds; reading and discussion of selected texts.

- 531 Literary Problems (2-5, maximum 20; AWS)** **Staff**
 Work to be done through conference. Field must be indicated in registration
 A. Middle Ages D. Eighteenth Century
 B. Renaissance E. Nineteenth Century
 C. Classic period F. Twentieth Century
- Special group projects for 1952-53 are: The Concept of Intelligence in French Literature between the Two World Wars (F, 2-5 credits, Autumn Quarter, David). The Evolution of the Poetic Style of Ronsard (B, 2-5 credits, Winter Quarter, Creore). Seminar on the history of ideas which have conditioned attitudes of moderation in France; term papers within historical period chosen individually (A-F, 2-5 credits, Spring Quarter, Nostrand).
- 600 Research (2-5, maximum 20; AWS)** **Staff**
Thesis (*; AWS) **Staff**

Italian

- 512 Old Italian Reading (3; W)** **Staff**
 Reading of material illustrative of phonological and morphological principles. Supplements Romance Linguistics 505, 506, and 507.
- 513 Old Italian Literature (3; S)** **Goggio**
 Literary backgrounds. Reading and discussion of selected texts. Supplements Romance Linguistics 505, 506, and 507.
- 521, 522, 523 Italian Literature of the Twelfth to Fifteenth Centuries (2-5,2-5,2-5; A,W,S)**
- 531, 532, 533 History of Old Italian Literature (2-5,2-5,2-5; offered alternate years, not offered 1952-53)**
- 600 Research (2-5, maximum 20; AWS)** **Staff**
Thesis (*; AWS) **Staff**

Provençal

- 534 Old Provençal (3; AWS)** **Simpson**

Romance Linguistics and Literature

- 505, 506, 507 Romance Linguistics (2,2,2; A,W,S)** **Politzer**
 Linguistics as a physical and social science. Brief history of the Romance languages and present-day problems of Romance linguistics.
- 581, 582, 583 Problems and Methods of Literary History (2,2,2; offered alternate years, not offered 1952-53)**
- 584, 585, 586 Seminar in Romance Culture (3,3,3; A,W,S)** **Staff**
 Individual and collective research in the evolution of concepts common to Romance literature. Open to graduates of this and other departments.
- 590 Research in Comparative Romance Literature (2-5, maximum 20; AWS)** **Staff**
599 Research in Romance Linguistics (2-5, maximum 20; AWS) **Staff**
Thesis (*; AWS) **Staff**

Spanish

- 511 The Poema de Mio Cid (3; A)** **Staff**
 An intensive study of the *Poema de Mio Cid*.
- 512 Epic Poetry (3; W)** **Staff**
 The epic material in old Spanish literature and its later treatment in poetry and drama. Special investigations and reports.
- 513 The Spanish Ballad (3; S)** **Staff**
 The origin and evolution of the Spanish ballad.
- 521 The Renaissance in Spain (5; offered alternate years, not offered 1952-53)**
- 531 Literary Problems (2-5, maximum 20; AWS)** **Staff**
 Work to be done through conference. Field must be indicated in registration.
 A. Middle Ages E. Nineteenth Century
 B. Renaissance F. Twentieth Century
 C. Golden Age G. Spanish Colonial Literature
 D. Eighteenth Century H. Latin America
- Special group projects for 1952-53 are: The Spanish Concept of the State (A-H, 2-5 credits, Autumn Quarter, Garcia-Prada). The "Perfect Caballero" in Spanish Literature (A-H, 2-5 credits, Winter Quarter, Wilson). The Counterpart of the "Perfect Caballero": the "Picaro" in Spanish Literature (A-H, 2-5 credits, Spring Quarter, Vargas).
- 600 Research (2-5, maximum 20; AWS)** **Staff**
Thesis (*; AWS) **Staff**

SCANDINAVIAN LANGUAGES AND LITERATURE

Executive Officer: SVERRE ARESTAD, 210 Denny Hall

Professor Emeritus: E. J. Vickner.

Associate Professors: S. Arestad, W. G. Johnson.

Acting Instructor: D. C. Jahnson.

The Department of Scandinavian Languages and Literature offers courses leading to the degrees of Bachelor of Arts and Master of Arts. For undergraduate students, it offers an elective curriculum with a major in Danish, Norwegian, or Swedish, as well as courses in Icelandic and literature courses in English.

In all Scandinavian languages, courses 100-101 and 102 may be taken with 104-105 and 106 to make 5-credit courses. If the 104-105 and 106 series is not taken concurrently, no credit is given until 100-101 and 102 are completed.

BACHELOR OF ARTS

At least 36 credits in the major language are required, of which 15 must be in upper-division courses.

DANISH MAJOR. Required courses are: Danish 100, 101, 102, 104, 105, 106, 220, 221, 222, 300, 301, 302, and 490.

NORWEGIAN MAJOR. Required courses are: Norwegian 100, 101, 102, 104, 105, 106, 220, 221, 222, 300, 301, 302, and 490.

SWEDISH MAJOR. Required courses are: Swedish 100, 101, 102, 104, 105, 106, 220, 221, 222, 226, 227, 228, 300, 301, 302, and 490.

MASTER OF ARTS

Students who intend to work toward this advanced degree must meet the requirements of the Graduate School (see page 261). To meet the language requirement, French or German is recommended. Candidates must obtain 20 credits in courses numbered 500 and above.

COURSES FOR UNDERGRADUATES

Danish

- | | |
|--|---------|
| 100-101, 102 Elementary Danish (3-3,3; A-W,S) | Staff |
| Fundamentals of oral and written Danish. | |
| 104-105, 106 Danish Reading (2-2,2; A-W,S) | Staff |
| 220, 221, 222 Introduction to Danish Literature (2,2,2; A,W,S) | Arestad |
| Modern drama and prose fiction. Prerequisite, 102 or ability to read easy Danish. | |
| 300, 301, 302 Modern Danish Literature (3,3,3; A,W,S) | Arestad |
| Reading of representative works from nineteenth- and twentieth-century Danish literature. Prerequisites, 220, 221, and 222, or a fair reading knowledge of Danish. | |
| 490 Supervised Reading (*, maximum 5; AWS) | Arestad |
| Prerequisite, 302 or permission. | |

Icelandic

- | | |
|---|-------|
| 100-101, 102 Elementary Modern Icelandic (3-3,3; A-W,S) | Staff |
| Fundamentals of oral and written modern Icelandic. | |
| 104-105, 106 Reading Icelandic (2-2,2; A-W,S) | Staff |

Norwegian

- | | |
|--|-----------|
| 100-101, 102 Elementary Norwegian (3-3,3; AW-WS,S) | Arestad |
| Fundamentals of oral and written Norwegian. | |
| 104-105, 106 Norwegian Reading (2-2,2; AW-WS,S) | Kjeldstad |
| 220, 221, 222 Introduction to Norwegian Literature (2,2,2; A,W,S) | Arestad |
| Modern drama and prose fiction. Prerequisite, 102 or ability to read easy Norwegian. | |
| 223, 224, 225 Conversational Norwegian (2,2,2; A,W,S) | Kjeldstad |
| Prerequisite, 102 or equivalent. | |
| 226, 227, 228 Norwegian Composition (1,1,1; A,W,S) | Kjeldstad |
| Prerequisite, 102 or equivalent. | |

- 300, 301, 302 Modern Norwegian Literature** (*, maximum 3 each; A,W,S) **Arestad**
Reading of representative works of Ibsen, Bjørnson, Lie, Garborg, Hamsun, Bojer, and others. Prerequisite, 222 or equivalent.
- 303, 304, 305 Advanced Conversational Norwegian** (2,2,2; A,W,S) **Kjeldstad**
Prerequisite, 225 or equivalent.
- 306, 307, 308 Advanced Norwegian Composition** (1,1,1; A,W,S) **Kjeldstad**
Prerequisite, 228 or equivalent.
- 450 History of Norwegian Literature** (3; W) **Arestad**
Prerequisite, 222 or equivalent.
- 490 Supervised Reading** (*, maximum 5; AWS) **Arestad**
Prerequisite, 302 or permission.

Swedish

- 100-101, 102 Elementary Swedish** (3-3,3; AW-WS,S) **Johnson**
Fundamentals of oral and written Swedish.
- 104-105, 106 Swedish Reading** (2-2,2; AW-WS,S) **Johnson**
- 220, 221, 222 Introduction to Swedish Literature** (2,2,2; A,W,S) **Johnson**
Modern Swedish drama and prose fiction. Prerequisite, 102 or ability to read easy Swedish.
- 223, 224, 225 Conversational Swedish** (2,2,2; A,W,S) **Johnson**
Prerequisite, 102 or equivalent.
- 226, 227, 228 Swedish Composition** (1,1,1; A,W,S) **Johnson**
Prerequisite, 102 or equivalent.
- 300, 301, 302 Modern Swedish Literature** (2,2,2; A,W,S) **Johnson**
Representative works of Strindberg, Fröding, Heidenstam, Lagerlöf, Söderberg, and other recent and contemporary writers. Prerequisite, 222 or equivalent.
- 303, 304, 305 Advanced Conversational Swedish** (2,2,2; A,W,S) **Johnson**
Prerequisite, 225 or equivalent.
- 306, 307, 308 Advanced Swedish Composition** (1,1,1; A,W,S) **Johnson**
Prerequisite, 228 or equivalent.
- 409 Recent Swedish Literature** (2; W) **Johnson**
Reading in Swedish. Prerequisite, 102.
- 450 History of Swedish Literature** (3; A) **Johnson**
Prerequisite, 222 or equivalent.
- 455 History of the Swedish Language** (3; W) **Johnson**
Prerequisite, 222 or equivalent.
- 490 Supervised Reading** (*, maximum 5; AWS) **Johnson**
Prerequisite, 302 or permission.

Courses in English

- 230 Scandinavian Culture and Institutions** (2; WS) **Arestad**
- 299 Outline of Modern Scandinavian Culture** (1; A) **Arestad**
- 309, 310, 311 The Scandinavian Novel** (2,2,2; A,W,S) **Arestad, Johnson**
From the sagas through representative novels of Hans Christian Andersen, Kielland, Strindberg, J. P. Jacobsen, Hjalmar Bergman, Hamsun, Undset, Nexö, Lagerlöf, and Gunnarsson.
- 380 Ibsen and His Major Plays** (2; A) **Arestad, Johnson**
- 381 Strindberg and His Major Plays** (2; W) **Johnson**
- 382 Recent and Contemporary Scandinavian Drama** (2; S) **Johnson**
Outstanding twentieth-century plays, with introductory consideration of Ibsen and Strindberg.

COURSES FOR GRADUATES ONLY

- 501 Old Icelandic** (*, maximum 5; A) **Johnson**
- 507 Ibsen** (*, maximum 5; A) **Arestad**
- 508 The Scandinavian Novel** (*, maximum 5; W) **Arestad**
- 510 Strindberg** (*, maximum 5; W) **Johnson**
- Thesis** (*; AWS) **Staff**
- 503 Problems in Scand. Lit. (* max 5)*

SOCIAL WORK, PREPROFESSIONAL PROGRAM

Adviser: WILLIAM H. McCULLOUGH, 500 Thomson Hall

Students planning to apply for admission to the Graduate School of Social Work should confer with the pre-social work adviser as soon as they have decided to prepare for this field. Prospective applicants should gain a well-rounded preparation in the social sciences, and it is recommended that a course in elementary statistical method

and in physiology or biology be included in undergraduate work. A number of social work courses are available to upper-division students. These courses are intended for students who have a general interest in the study of social welfare services as well as those who are interested in employment in social agencies.

Seniors planning to enter the School of Social Work should make application early in the *spring* preceding the fall in which they wish to begin their professional training, because enrollment is limited (see page 314 for admission requirements).

SOCIOLOGY

Executive Officer: GEORGE A. LUNDBERG, 108A Smith Hall

Professors: S. C. Dodd, R. E. L. Faris, N. S. Hayner, G. A. Lundberg, C. F. Schmid.

Professors Emeriti: J. F. Steiner, H. B. Woolston.

Associate Professors: D. C. Miller, R. W. O'Brien.

Assistant Professors: C. E. Bowerman, J. D. Cohen, J. A. Jahn, S. F. Miyamoto, G. Sabagh, C. C. Schrag.

Acting Instructor: A. Wendling.

The Department of Sociology offers courses leading to the degrees of Bachelor of Arts, Master of Arts, and Doctor of Philosophy. In addition, it offers first and second teaching areas for students in the College of Education (see page 202).

The Washington Public Opinion Laboratory, involving a state-wide staff of trained interviewers who survey samples of the population, is available to graduate students and faculty in the Department. Its projects are primarily in long-term basic research. Faculty advisers from the Departments of Anthropology, Business Statistics, Economics, Political Science, Psychology, and Speech, the Division of Journalism, and the Graduate School of Social Work participate in these projects.

The Office of Population Research is designed to expand the research and student-training programs in the fields of demography and human ecology. As a part of the training program, laboratory facilities and research fellowships are available to qualified students.

BACHELOR OF ARTS

In this elective curriculum, at least 36 credits in sociology are required. Courses must include: Sociology 110 (or 310), 223, 230 (or 430), 240, and 352 (or 450). Students should choose sociology electives from among the following fields of specialization: sociological theory; research methods and social statistics; ecology and demography; social interaction; social institutions; social organization; and social disorganization.

ADVANCED DEGREES

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School (see page 261). The Department of Sociology requires all graduate students to complete undergraduate requirements for a major in sociology before becoming candidates for these degrees. Students whose undergraduate work in sociology seems inadequate may be required to pass a qualifying examination before admission to graduate courses.

Requirements for both advanced degrees include work in some of these fields of specialization: sociological theory; research methods and social statistics; ecology and demography; social interaction; social institutions; social organization; and social disorganization.

MASTER OF ARTS. Candidates must complete an approved program in advanced sociology courses and a minor in a related field. At least 10 of the sociology credits must be in courses numbered 500 and above. Candidates must take a final examination in two fields of sociology and a separate examination in the minor given by the department in which the minor-courses are given. The master's thesis must be submitted seven weeks before the degree is to be granted.

The requirement for a minor for a master's degree is 36 graduate and undergradu-

ate credits, of which at least half must be in advanced work, including 6 credits in courses numbered 500 and above.

DOCTOR OF PHILOSOPHY. Candidates must complete a program that includes a minimum of 60 credits in advanced sociology courses. The rest of the course work must include a minor in a related field, for which requirements are determined by the department in which the work is taken. At least 20 of the sociology credits must be in courses numbered 500 and above. The thesis must be submitted seven weeks before the degree is to be granted. Upon recommendation of the Department, another foreign language may be substituted for French or German, but those two languages are the usual requirement. The language requirement must be met at least nine months before the degree is to be granted.

Candidates take a preliminary written examination covering four fields of specialization, of which one must be research methods and social statistics. A preliminary oral examination may be given at the discretion of the major or minor department. A final oral examination is given on the thesis and related subjects.

COURSES FOR UNDERGRADUATES

- 110 Survey of Sociology (5; AWS)** **Schrag, Staff**
Basic principles of social relationships. Primarily for freshmen and sophomores. Not open to students who have taken 310.
- 223 Social Statistics (5; AWS)** **Cohen, Bowerman, Miyamoto, Sabagh**
Methods and sources for quantitative investigation. Prerequisite, 110 or 310.
- 230 Introduction to Human Ecology (5; W)** **Cohen, Sabagh, Schmid**
Factors and forces which determine the distribution of people and institutions. Primarily for freshmen and sophomores. Not open to students who have taken 430. Prerequisite, 110 or 310.
- 240 Group Behavior (5; AWS)** **Bowerman, Miyamoto**
Socialization of the individual; social processes; and interactions of persons in groups. Prerequisites, 110 or 310, and Psychology 100.
- 255 American Housing Problems (5; WS)** **Cohen**
Housing needs, conditions, production, problems, and policies, with emphasis upon the relationship between the house, the neighborhood, and the community. Primarily for architecture students, but open to others.
- 270 Survey of Contemporary Social Problems (5; AWS)** **Faris, Staff**
Analysis of the processes of social and personal disorganization and reorganization in relation to poverty, crime, suicide, family disorganization, mental disorders, and similar social problems. Prerequisite, 110 or 310.
- 310 General Sociology (5; AWS)** **Schrag, Staff**
Major concepts and the scientific point of view in dealing with social phenomena. Primarily for juniors and seniors. Not open to students who have taken 110.
- 324 Machine Techniques in Research (3; A)** **Staff**
Theory and practice of mechanical and electronic tabulating and calculating machines in statistics and research. Prerequisite, 10 credits in statistics.
- 331 Population Problems (5; AS)** **Sabagh**
Major quantitative and qualitative problems of population in contemporary society. Prerequisite, 110 or 310.
- 352 The Family (5; AWS)** **Bowerman, Miyamoto**
The family as a social institution; personality development within the family; marriage adjustment; changing family patterns; disorganization and reorganization. Prerequisite, 110 or 310.
- 353 Social Factors in Marriage (3; A)** **Bowerman**
Courtship and marriage; marital adjustments; specific problems of marriage and family life. Prerequisite, 352.
- 362 Race Relations (5; AWS)** **O'Brien**
Interracial contacts and conflicts. Prerequisite, 10 credits in social science.
- 364 Rural Community (5; AS)** **O'Brien**
Social and economic problems. Prerequisite, 110 or 310
- 365 Urban Community (5; S)** **Cohen**
Comparative and analytic study of organization and activities of urban groups. Prerequisite, 110.
- 371 Criminology (5; AWS)** **Schrag**
Individual and social factors in delinquency; history and methods of criminal justice. Field trips to local penal institutions. Prerequisite, 110 or 310.
- 389 Reading in Selected Fields (2-5, maximum 15; AWS)** **Staff**
Open only to qualified undergraduate students by consent of instructor.
- 410 History of Sociological Thought (5; A)** **Sabagh**
Background and trends in sociological thought from Comte to the present. Prerequisite, 110 or 310.
- 411, 412 Systematic Sociology (3; not offered 1952-53)**

- 414 **Sociological Theory (5; WS)** **Lundberg**
Modern scientific theory applied to social behavior; sociology as a natural science. Prerequisite, 20 credits in social science.
- 420 **Methods of Sociological Research (5; A)** **Faris**
Investigation of communities, institutions, and social conditions. Field and laboratory work. Prerequisite, 223 or equivalent.
- 421 **Methodology: Case Studies and Interviewing (3; not offered 1952-53)**
- 423 **Advanced Social Statistics (5; A)** **Staff**
Application of statistical methods to the analysis of sociological data. Prerequisite, 223.
- 425 **Graphic Techniques in Sociology (3; A)** **Schmid**
Theory and practice of constructing maps and graphs used in sociological research and exhibits. Prerequisite, 223 or equivalent.
- 426 **Methodology: Quantitative Techniques in Sociology (3; S)** **Bowerman**
Measures of relationships among variables and among attributes; calculation techniques; application to typical sociological problems; interpretation. Prerequisites, 223 and 420 (or 423), or equivalents.
- 427 **Statistical Classification, Measurement, and Prediction (3; W)** **Staff**
Application of statistical principles and methods to problems of classification, measurement, and prediction in social research. Prerequisite, 423 or equivalent.
- 428 **Sampling and Experimentation (5; S)** **Staff**
Application of statistical principles and methods to problems of sampling and experimentation in social research. Prerequisite, 423 or equivalent.
- 430 **Human Ecology (5; AWS)** **Schmid, Cohen, Sabagh**
Factors and forces which determine the distribution of people and institutions. Primarily for juniors and seniors. Not open to students who have taken 230. Prerequisite, 110 or 310.
- 432 **Human Migration (5; W)** **Sabagh**
Determining factors and problems in human migration. Prerequisite, 110 or 310.
- 440 **Primary Interaction and Personal Behavior (5; W)** **Faris**
Social sources of cooperative motives; social basis of the self; nature of primary groups; institutional roles; exceptional and unconventional roles; methodology. Prerequisite, 240 or equivalent.
- 442 **Public Opinion (3; W)** **Staff**
The nature of public opinion; formation and measurement of public opinion; the operation of public opinion polls. Prerequisite, 240 or equivalent.
- 443 **Mass Communication (3; AS)** **Staff**
Control, structure, and functioning of mass media of communication as a force in social life; methods of research. Prerequisite, 240 or equivalent.
- 445 **Social Movements (3; S)** **Miyamoto**
Social movements as collective enterprises to establish new social orders; types, formation, and organization of movements. Prerequisite, 240 or equivalent.
- 446 **Social Adjustment of the Worker (3; W)** **Miller**
Adjustments made during the span of work life; cultural background of work values; transition from school to work. Prerequisite, 240 or equivalent.
- 447 **Social Control (5; not offered 1952-53)**
- 450 **Contemporary American Institutions (5; A)** **Miller**
Origins and developments of major social institutions. Sociology of economic structure, political organization, religion, education, recreation, and other institutionalized patterns. Prerequisite, 110 or 310.
- 451 **Social Change and Trends (5; W)** **Miller**
Forces causing social change; basic trends in American life. Prerequisite, 15 credits in social science.
- 455 **Housing in the American Community (5; not offered 1952-53)**
- 456 **Latin American Social Institutions (3; not offered 1952-53)**
- 457 **Japanese Social Institutions (3; not offered 1952-53)**
- 458 **Institutional Forms and Processes (5; S)** **Faris**
The process of institutionalization and the general nature of institutions; relationship of institutions to persons; institutions and social control; social change and institutional disorganization. Prerequisite, 110 or 310.
- 460 **Social Differentiation (3; W)** **O'Brien**
Analysis of societal organization based on sex, age, residence, occupation, community, class, caste, and race. Prerequisite, 110 or 310.
- 463 **American Negro Community (3; W)** **O'Brien**
Internal structure of class and caste patterns; resultant personality and institutional development. Prerequisite, 110 or 310.
- 466 **Industrial Sociology (5; AWS)** **Miller**
Analysis of work plants such as factory, office, and store; work group processes and applied problems. Laboratory practice. Prerequisite, 110 or 310.
- 467 **Industry and the Community (3; not offered 1952-53)**
- 472 **Juvenile Delinquency (5; S)** **Schrag**
Family and community backgrounds; institutional treatment; juvenile court and probation; programs for prevention. Prerequisite, 371 or equivalent.

425 J Graphic Techniques in Social Sciences (5)

SOCIOLOGY**167**

- 473 **Penology (5; W)** **Schrag**
Social treatment of adult offenders. Prerequisite, 371 or equivalent.
- 499 **Undergraduate Research (2-5, maximum 15; AWS)** **Staff**
Open only to qualified undergraduate students by consent of instructor.

COURSES FOR GRADUATES ONLY

- N510, N511, N512 **Departmental Seminar (0; once each month, AWS)** **Staff**
Reports on independent research by graduate students and staff members.
- 517 **Systematic Sociology Seminar (3; not offered 1952-53)**
- 521, 522 **Seminar in Methods of Sociological Research (3,3; AW,S)** **Lundberg**
Prerequisites, 223, 414, and 420, or equivalents.
- 530 **Advanced Human Ecology (3; S)** **Schmid**
Prerequisites, 230 or 430, and 15 credits in social science.
- 531 **Demography (3; W)** **Schmid**
Research problems in population and vital statistics. Prerequisites, 331, and 15 credits in social science or permission.
- 532 **World Migration (3; not offered 1952-53)**
- 543 **Communications Seminar (2; not offered 1952-53)**
- 550, 551, 552 **Marriage and the Family (3,3,3; A,W,S)** **Bowerman**
Analysis of marriage and family patterns and problems, with initial emphasis on research findings and methods. Individual research on selected projects. Prerequisite, 352 or equivalent.
- 556 **Seminar on Sociological Problems of Latin America (3; not offered 1952-53)**
- 562 **World Survey of Race Relations (3; A)** **O'Brien**
Prerequisite, 25 credits in social science.
- 566, 567 **Industrial Sociology Seminar (3,3; W,S)** **Miller**
Research training in industrial sociology. Readings and field projects. Prerequisite, 466 or equivalent.
- 572 **Analysis of Criminal Careers (3; W)** **Schrag**
Personal and social factors in criminal maturation and reformation. Prerequisite, 371 or equivalent.
- 599 **Readings in Selected Fields (2-5, maximum 15; AWS)** **Staff**
Open only to qualified graduate students by consent of instructor.
- 600 **Research (2-5; AWS)** **Staff**
Original field projects carefully planned and adequately reported. Certain projects can be carried on in connection with the Public Opinion Laboratory or the Office of Population Research. Open only to qualified graduate students by consent of instructor.
- Thesis (*; AWS)** **Staff**

SPEECH**Executive Officer: HORACE G. RAHSKOPF, 209 Parrington Hall**

Professors: J. A. Carrell, H. G. Rahskopf.

Professor Emeritus: F. W. Orr.

Associate Professors: W. W. Bird, A. L. Franzke.

Assistant Professors: P. E. Baisler, B. Baskerville, L. I. Crowell, F. W. Hile, O. W. Nelson, O. L. Pence, W. R. Tiffany.

Acting Assistant Professor: E. E. Fleischman.

Visiting Lecturer: J. W. Phillips.

Instructors: M. Hogan, A. R. Holliday, E. M. Jenks, W. L. Lashley, W. F. McGrath, J. L. Miller, G. A. Munford, T. R. Nilsen, C. Raymond, J. M. Starr.

Acting Instructors: D. A. LaRusso, G. V. Ranck, W. R. Witkin.

The Department of Speech offers courses leading to the degrees of Bachelor of Arts and Master of Arts. In addition, it offers first and second teaching areas and a basic academic field for students in the College of Education (see page 202).

The main purposes of the Department are to improve the use of speech for individual, social, and professional purposes, and to provide a broad understanding of the nature of speech. In addition to courses which give basic general training and an over-all view of the field, the work is organized in the following areas: voice and phonetics, public address, argument and discussion, oral interpretation, teaching of speech, radio speech, speech correction, and hearing.

Related courses are given in many other parts of the University. Courses in drama, communications, education, English, biology, psychology, and sociology are of particular importance to speech students.

BACHELOR OF ARTS

In this elective curriculum, at least 50 credits in approved speech courses are required. These must include: Speech 100, 110, 120, 400, 498, and one of the workshop courses (339, 349, 369, 474, or 484). In addition, the student takes approved courses in humanities, social sciences, and natural sciences. During the junior and senior years he may specialize in one or more of the areas of speech study.

MASTER OF ARTS

Students who intend to work toward this advanced degree must meet the requirements of the Graduate School (see page 261).

COURSES FOR UNDERGRADUATES

General

- 100 Basic Speech Improvement (5; AWS)** **Rahskopf in charge**
Training in the fundamentals of good speech, such as orderly thinking, emotional adjustment, adequate voice, distinct articulation, and effective oral use of language. Speech as man's primary means of social interaction, with emphasis on the more informal uses of speech in daily life. Frequent conferences with instructor.
- 400 Backgrounds in Speech (5; A)** **Rahskopf**
The nature of speech as an activity of daily life and as a field of study.
- 495 Anatomy of the Vocal Organs and Ear (5; S)** **Tiffany**
The structure and function of the organs concerned with phonation, articulation, and hearing. Prerequisite, 5 credits in anatomy, physiology, or zoology.
- 498 Senior Seminar in Speech (2; AS)** **Rahskopf, Nelson**
- 499 Undergraduate Research (2-5; AWS)** **Staff**
Prerequisite, permission. Field must be indicated in registration.
A. Voice and Phonetics C. Oral Interpretation
B. Public Address D. Radio Speech
E. Speech Correction and Hearing

Voice and Phonetics

- 110 The Speaking Voice (5; AWS)** **Tiffany in charge**
Training in voice and articulation.
- 410 Advanced Voice and Phonetics (5; W)** **Tiffany**
Continuation of 110, with emphasis on the physiology of voice production, the sound system of English, and the improvement of articulation. Prerequisite, 110 or permission.
- 412 Experimental Methods in Voice and Phonetics (5; W)** **Tiffany**
Experimental methods and findings. Lectures and demonstrations.

Public Address

- 120 Introduction to Public Speaking (5; AWS)** **Franzke in charge**
Audience analysis, choice and organization of material, oral style, and delivery. Frequent speeches before the class, followed by conferences with instructor.
- 220 Public Speaking (5; W)** **Franzke**
Continuation of 120, with emphasis on organization and delivery. Practice in preparation and presentation of a variety of types of public speeches based on study of their structure and form. Prerequisite, 120.
- 327 Extempore Speaking (3; S)** **Franzke**
Primarily for engineering students. Not open to students in the College of Arts and Sciences, nor to students who have taken 120.
- 420 Advanced Problems in Speaking (5; A)** **Baskerville**
Purposes, proof, organization, style, and delivery in public address, with emphasis on the speaker's personal problems and on psychological factors in public speaking. Prerequisite, 120.
- 425 Public Speaking in America (5; S)** **Baskerville**
Historical and critical study of principal speakers and speeches from 1765 to 1907 and of their relationship to American political, social, and intellectual life.

Argument and Discussion

- 230 Essentials of Argument (5; AWS)** **Pence**
Argument as a technique in the investigation of social problems; evidence, proof, refutation, persuasion; training in argumentative speaking.

- 235 Parliamentary Procedure (3; W)** **Staff**
Methods of organizing and conducting public meetings, based on *Robert's Rules of Order*.
- 332 Principles of Group Discussion (3; AWS)** **Crowell**
Discussion as an everyday community activity, with emphasis on the informal, cooperative problem-solving methods of committee, conference, and round-table groups. Prerequisite, 100, 230, or permission.
- 339 Public Discussion Workshop (1-3, maximum 9; AWS)** **Staff**
Discussion of selected public questions before audiences on and off campus. No more than 3 credits may be earned in one year. Prerequisite, permission.
- 430 Advanced Argument (5; W)** **Pence**
Continuation of 230. Prerequisite, 230.
- 436 Methods of Public Discussion (5; S)** **Franzko**
Various types of public discussion and practice in their use. Prerequisite, 120 or 230.

Oral Interpretation

- 240 Oral Interpretation (5; AWS)** **Staff**
Development of fundamental techniques for analysis and reading aloud of prose and poetry. Includes projects in directed listening to artists' speech recordings.
- 349 Oral Interpretation Workshop (2, maximum 6; AWS)** **Staff**
Selection, integration, and presentation of materials for specific occasions, purposes, and audiences with performance before audiences on and off campus. No more than 2 credits may be earned in one year. Prerequisites, 240 and permission.
- 440 Advanced Oral Interpretation (5; S)** **Staff**
Problems of interpretation peculiar to various types of literature. Needs and interests of specific audiences, and definite themes or points of view. Includes directed listening projects. Prerequisite, 240 or permission.
- 445 Oral Interpretation of Dialects (3; W)** **Staff**
Phonetic, vocal, and dictional changes in the common dialects of English found in America and the British Isles; practice in the interpretation of poetic, dramatic, and narrative material employing them. Prerequisites, 110 and 240, or permission.

Teaching of Speech

- 352 Introduction to the Teaching of Speech (2; AS)** **Nelson**
Viewpoints, methodology, and curricula of speech education. Observation of teaching procedures.
- 355 Choral Speaking (2½; Summer)** **Jenks**
Group speaking as a classroom method in teaching speech and literature; selection and use of prose and poetry materials for group utterance.
- 357 Debate and Discussion Problems in High School (2½; Summer)** **Pence**
Evaluation of debate and discussion in high school and consideration of methods of directing them; specific consideration of debate questions in current use; bibliographies, analyses, and briefs.
- 359 Speech in the Classroom (5; W)** **Jenks**
The place of speech in education and the use of speech projects in teaching. Primarily for nonmajors and minors. Not open to students who have taken Education 1440.

Radio Speech

- 260 Radio Speech (3; AWS)** **Bird, Hogan**
Basic microphone techniques, reading of scripts, announcing, interviews, and talks. Special attention to voice and diction. Prerequisite, 110 or 240.
- 361 Advanced Radio Speech (3; WS)** **Bird, Hogan**
Analysis of audience situations, group discussions, and audience participation programs. Prerequisite, 260.
- 369 Radio Speech Workshop (2, maximum 6; AWS)** **Bird, Hogan**
Radio speech performance, with an opportunity for supervised experience in actual broadcasting. No more than 4 credits may be earned in one year. Prerequisites, 261 and permission.
- 462 Radio Production Methods (3; AS)** **Bird**
Sound effects, music in broadcasts, studio setup, timing, cutting of scripts, and direction of programs. Prerequisites, 260 and 361.
- 463 Radio Program Building (3; WS)** **Bird**
Adaptation of literary, informational, and persuasive material for radio. Prerequisites, 260 and 361.

Speech Correction

- N79 Speech Clinic (0; AWS)** **Staff**
A. Articulation Problems C. Stuttering
B. Foreign Dialect D. Voice Problems
E. Hearing Problems
- 470 Introduction to Speech Correction (5; AS)** **Carroll**
Nature and etiology of speech disorders.

- 471 **Methods of Speech Correction (5; W)** Carrell
Prerequisite, 470.
- 473 **Diagnostic Methods in Speech Correction (2; S)** Staff
- 474 **Clinical Training in Speech Correction (1-5, maximum 15; AWS)** Staff
Total undergraduate credits in 474 and 484 together cannot exceed 20. Prerequisites, 471 and 473 (473 may be taken concurrently).
- 475 **Stuttering (2; W)** Carrell
Nature, etiology, and treatment of stuttering. Prerequisite, 470 or permission.

Hearing

- 480 **Introduction to Hearing (5; A)** Staff
Description of normal audition; elementary structure and functioning of the hearing mechanism; types of deficient hearing and their effects on speech; considerations of hearing education.
- 481 **Methods in Aural Rehabilitation (5; W)** Raymond
Prerequisite, 480.
- 484 **Clinical Practice in Aural Rehabilitation (1-3, maximum 9; AWS)**
Total undergraduate credits in 474 and 484 together cannot exceed 20. Prerequisites, 480, 481.
- 485 **Medical Background for Audiology (2; S)** Phillips
Diseases and injuries of the ear resulting in reduced audition.
- 489 **Audiometry (2; W)** Staff
Theory and practice of audiometry and other methods of measuring hearing.

COURSES FOR GRADUATES ONLY

- 501 **Introduction to Graduate Study in Speech (2; A)** Crowell
- 521 **Studies in Greek and Roman Rhetoric (5; W)** Rahskopf
Critical analysis of writings on rhetoric by Plato, Aristotle, Cicero, Quintilian, and others.
- 522 **Studies in Modern Rhetoric (5; S)** Pence
Critical analysis of writings on rhetoric by Cox, Wilson, Bacon, Campbell, Blair, Whately, and others. Prerequisite, 521.
- 571 **Organic Disorders of Speech (5; not offered 1952-53)**
- 600 **Research (*; AWS)** Staff
Thesis (*; AWS) Staff

ZOOLOGY

Executive Officer: ARTHUR W. MARTIN, 142 Johnson Hall

Professors: M. H. Hatch, A. W. Martin, A. Svihla.

Professor Emeritus: T. Kincaid.

Associate Professors: W. T. Edmondson, W. S. Hsu.

Assistant Professors: R. L. Fernald, Paul Illg, K. L. Osterud, D. L. Ray, R. C. Snyder, A. H. Whiteley.

The Department of Zoology offers courses leading to the degrees of Bachelor of Arts, Bachelor of Science, Master of Science, and Doctor of Philosophy. Undergraduate students working toward a bachelor's degree are offered two curricula: an elective curriculum, for those who want a broad liberal arts education; and a prescribed curriculum, for those who are preparing for graduate study or a professional career. In conjunction with the Department of Botany a first teaching area in biology is offered for students in the College of Education, in addition to a second teaching area in zoology (see page 202).

Biology 101J-102J and Zoology 114, 118, and 208 are given to meet the needs of other students and will not be counted toward departmental majors. All biology courses except 101J and 102J may be used for zoology credit. Fisheries 401, 402, and 403 may be used for zoology credit upon request.

BACHELOR OF ARTS

In the elective curriculum, at least 36 credits in zoology are required. Courses must include: Zoology 111, 112, 453-454 or 456, 400, and Biology 351 (Human Genetics) or 451 (Genetics). Additional requirements are: a year of college chemistry; a year of college-grade foreign language; and 15 credits in social science.

BACHELOR OF SCIENCE

In the prescribed curriculum, at least 45 credits in zoology are required. Courses must include: Zoology 111, 112, 400, 433, 434, 453-454, and 456; Biology 451 (Genetics); Botany 112 (Elementary); a year of college physics; Chemistry 115, 116 (General), 231, 232, 241, 242 (Organic); and a year of college French or German.

A year of college mathematics and a reading knowledge of a second modern foreign language are highly recommended.

Students in this curriculum must present an over-all grade-point average of 2.5 and a 3.0 grade-point average in all courses in zoology.

ADVANCED DEGREES

Students who intend to work toward the advanced degree of Master of Science or Doctor of Philosophy must meet the requirements of the Graduate School (see page 261).

COURSES FOR UNDERGRADUATES

Biology.

- Surv. Physiol Lab. (1)*
- 101J-102J General Biology (5-5; A-W)** **Staff**
Principles of biology applying to all living forms, illustrated by representatives of major plant and animal groups; man's place in nature. Offered jointly with the Department of Botany. Recommended for education students and those not majoring in the biological sciences.
- 351 Human Genetics (3; W)** **Roman**
Genetics of man for premedical students and those majoring in anthropology, psychology, and related fields dealing with human variation. Prerequisites, Botany 111, Zoology 111, or equivalent, and junior standing.
- 401 Cytology (3; W)** **Hsu**
Structure and function of the cell. Prerequisite, permission.
- 401L Cytology Laboratory (2; W)** **Hsu**
Must be accompanied by 401.
- 408 Cellular Physiology (3; A)** **Whiteley**
Functional aspects of protoplasmic structures. Prerequisite, Zoology 400 or permission.
- 408L Cellular Physiology Laboratory (2; A)** **Whiteley**
Must be accompanied by 408. Prerequisite, permission.
- 451 Genetics (3 or 5; S)** **Roman**
The principles underlying inheritance in animals and plants. Prerequisite, 10 credits in biological science.
- 452 Cytogenetics (3 or 5; A)** **Roman**
Chromosomal behavior in relation to genetics. Prerequisites, 451 and permission.
- 453 Topics in Genetics (2, maximum 6; S)** **Roman**
Current problems and research methods. Prerequisites, 451, organic chemistry, and permission.
- 454 Evolutionary Mechanisms (3; S)** **Kruckeberg**
Mutation, isolation, and natural selection as determinants of evolutionary change; emphasis on plants. Prerequisites, 451 and permission.
- 457, 457L Biochemical Genetics (2,1; not offered 1952-53)**
- 472 Principles of Ecology (3; S)** **Edmondson**
Population biology, competition, predation, symbiosis, sociality, and relationship of community to environment. Prerequisite, 10 credits in upper-division zoology or botany, or permission.
- 472L Ecology Laboratory (2; S)** **Edmondson**
Must be accompanied by 472.
- 473 Limnology (5; A)** **Edmondson**
Biological, physical, and chemical features of lakes. Prerequisites, Botany or Zoology 111 and 112, and one year of college chemistry.
- 573 TOPICS IN LIMNOLOGY (2)*
Zoology
- 111, 112 General Zoology (5,5; AW,WS)** **Staff**
Physical basis of life; structure, function, inheritance, evolution, and ecology of animals. 111: cellular biology, invertebrate phyla through molluscs. 112: annelids, arthropods, echinoderms, chordates. Prerequisite, 111 or equivalent.
- 114 Evolution (2; A)** **Hatch**
A general survey of the evolution of animals, including man. For nonmajors.
- 118 Survey of Physiology (5; A)** **Snyder**
Elementary human physiology.
- 208 Elementary Human Physiology (5; S)** **Staff**
Each organ system is described and its function illustrated in the laboratory. Prerequisite, freshman chemistry.
- Zool. 118 L*

- 406 Systematics*
403 Comparative Vertebrate Histology (5)
4 Evolution (2)
- 303 Introduction to Histology (5; S)** Hsu
Microscopic anatomy of the tissues and organs of vertebrates. Prerequisite, 112.
- 330 Natural History of Marine Invertebrates (5; S)** Illg
A field and laboratory course emphasizing the habits, habitats, identification, and inter-relationships of marine animals. Prerequisites, 112 or 10 credits in biological sciences, and permission.
- 358 Vertebrate Physiology (6; W)** Martin
Introductory course in vertebrate physiology for majors in biological sciences. Prerequisites, 112 or Biology 102J, and high school or college chemistry.
- 381 Microtechnique (4; A)** Hsu
Critical evaluation of each step in microslide preparation. Only a few good slides will be expected of each student. Prerequisites, 112 and permission.
- 383 Museum Technique (3; W)** Flahaut
Preparation of museum specimens. Prerequisite, permission.
- 400 General Physiology (5; A)**
Cell environment, metabolism and growth, irritability, general phenomena of organ function. Prerequisites, Chemistry 232, Physics 106 (or high school physics), and 10 credits in biological sciences.
- 402 History of Zoology (3; A)** Hatch
Prerequisite, 20 credits in zoology or permission.
- 416, 417 Chemical Embryology (3,3; offered alternate years, not offered 1952-53)**
- 416L, 417L Chemical Embryology Laboratory (2,2; offered alternate years, not offered 1952-53)**
- 423 General Protozoology (5; S)** Osterud
Introduction to the morphology, nutrition, classification, and life histories of the Protozoa. Prerequisite, 112 or permission.
- 433, 434 Invertebrate Zoology (5,5; A,W)** Illg, Ray
Morphology and phylogeny of invertebrates exclusive of terrestrial arthropods. Prerequisites, 111 and 112.
- 435 Parasitology (5; offered alternate years, not offered 1952-53)**
- 438 Comparative Invertebrate Physiology (3; S)** Staff
Adaptation of animals to the physical properties of the environment and mechanisms of adjustment to changes in the environment. Prerequisites, 400 and 434.
- 438L Comparative Invertebrate Physiology Laboratory (2; S)** Staff
Must be accompanied by 438.
- 444 Entomology (5; S)** Hatch
Structure, classification, and economic relationships of insects. Prerequisite, 112 or permission.
- 453-454 Comparative Anatomy of Chordates (5-5; W-S)** Snyder
Phylogeny of the chordates and evolution of their organ systems. Structural modifications are correlated with function. Prerequisites, 111, 112, and 456, or permission.
- 456 Vertebrate Embryology (5; AS)** Fernald
A descriptive and comparative study of development of chordates. Prerequisite, 112.
- 457 Experimental Morphogenesis (3; W)** Fernald
An experimental analysis of mechanics of development on the morphological level. Prerequisite, 456.
- 457L Experimental Morphogenesis Laboratory (2; S)** Fernald
Prerequisite, permission
- 463 Natural History of Amphibia and Reptiles (5; S)** Svihla
Systematics, distribution, and speciation. Prerequisites, 111 and 112.
- 464 Natural History of Birds (Ornithology) (5; offered alternate years, not offered 1952-53)**
Prerequisites, 111 and 112.
- 465 Natural History of Mammals (5; A)** Svihla
Methods of field observation; classification, behavior, ecology, and speciation. Prerequisites, 111 and 112.
- 475 Vertebrate Zoogeography (3; W)** Svihla
Principles governing animal distribution, morphology, and physiology. Prerequisite, 3 credits in natural history or permission.
- 498 Special Problems in Zoology (3-5; AWS)** Staff
Prerequisites, 30 credits in zoology and permission.

499 Under graduate Research ()*

COURSES FOR GRADUATES ONLY

Biology

- 501 Advanced Cytology (5; offered alternate years, not offered 1952-53)**

Zoology

- 506 Topics in Experimental Embryology (6, maximum 12; Summer)** Staff
Given at Friday Harbor only. Prerequisite, permission.

- 520, 521, 522 Seminar (1,1,1; A,W,S) **Staff**
- 528 **Experimental Protozoology (4; A)** **Osterud**
Cultivation; identification; cytology; physiology and genetics; general literature and current research in protozoology. Prerequisite, 423 or equivalent.
- 533 **Advanced Invertebrate Zoology (6; Summer)**
The rich and varied invertebrate fauna of the San Juan Archipelago, emphasizing systematics and ecology; opportunity for developing individual research problems. Given at Friday Harbor only. Prerequisite, 10 credits in invertebrate zoology or equivalent.
- 536 **Advanced Invertebrate Embryology (6; Summer)**
Morphological and experimental studies of development of selected types of marine invertebrates. Given at Friday Harbor only. Prerequisites, 433, 434, and 456.
- 538 **Advanced Invertebrate Physiology (6; Summer)**
Physiological bases of ecology, evolution, and tolerance to stress, as illustrated by many diverse forms. Given at Friday Harbor only. Prerequisites, chemistry through organic and 10 credits in invertebrate zoology or equivalent.
- 558 **Comparative Vertebrate Physiology (6; S)** **Martin**
Advanced studies with particular reference to cold-blooded vertebrates and to birds. Prerequisite, 400 or equivalent.
- 600 **Research (*; AWS)** **Staff**
Thesis (*; AWS) **Staff**

COLLEGE OF BUSINESS ADMINISTRATION

Dean: AUSTIN GRIMSHAW, 210 Commerce Hall

THE College of Business Administration, a member of the American Association of Collegiate Schools of Business, offers courses leading to the degrees of Bachelor of Arts in Business Administration, Master of Arts, Master of Business Administration, and Doctor of Commercial Science. The elective curriculum for undergraduate students is designed to combine an education in arts and sciences with training in the principles and procedures of business administration and in the fundamentals of economics. Specialization in a particular field of business is provided during the junior and senior years. In all major fields, the basic principles of management are emphasized, with the objective of providing programs of study that will lead to responsible positions in business.

The College offers majors in these fields of specialization: accounting; business education; business statistics; finance and banking; foreign trade; insurance; marketing; office management; personnel; production; real estate; secretarial training; and transportation. A major in general business is provided for students who want a broad, nonspecialized training in business administration. Students in any of these fields ordinarily take a substantial number of courses in other fields.

In addition to these major fields, courses are offered by the Departments of Business Communications, Business Law, Human Relations in Business, and Policy and Administration to integrate and supplement the specialized study.

A preprofessional program in law is offered for students who wish to emphasize business subjects in their prelegal work. This program leads to the degree of Bachelor of Arts in Business Administration after three years of study in the College and one year of study in the School of Law.

Many of the courses offered by the College of Business Administration are open to undergraduate and graduate students in other colleges and schools of the University.

ADMISSION

The University requirement for entrance is 16 high school units with a minimum 2.0 grade-point average (see page 15 for other admission regulations). The College of Business Administration requires that the 16 units include 1 unit of United States history, or 1 unit of United States history and civics; and 2 units of mathematics, including elementary algebra and plane geometry or advanced algebra. Students should make every possible effort to complete this list of required subjects before entering the College. Under certain circumstances, however, and with the approval of the Dean of the College, deficiencies in admission requirements may be removed after entrance.

SCHOLARSHIP

The University scholarship requirement is the maintenance of a 2.0 cumulative grade-point average. Continuation in the College of Business Administration will depend upon compliance with the following scholarship regulations:

1. All students, except freshmen, whose current grade-point average is below 2.0 in any quarter are placed on probation the following quarter, regardless of their cumulative average (except that probation for a student with a cumulative average of 2.5 or higher is left to administrative discretion).
2. Freshmen are not placed on probation until after the second quarter. In the case of second- and third-quarter freshmen, a 1.8 current average applies rather than a 2.0.
3. Any student on probation who fails to obtain a current grade average of at least 1.66 in the subsequent quarter is dismissed from the College.
4. Any student on probation whose current grade average falls below 2.0 in each of three consecutive quarters is dismissed from the College. (In the case of second- and third-quarter freshmen, a grade average of 1.8 applies rather than 2.0.)

5. Any student on probation whose current grade average in any subsequent quarter is 2.0 or above is taken off probation, so far as this college is concerned, regardless of his cumulative average.
6. Any senior entering his last quarter is put on probation if his cumulative grade average is below 2.0.
7. A student in any course in the College of Business Administration who withdraws after the first thirty calendar days of the quarter with a grade of D or E at the time of withdrawal is considered to be doing failing work and is given an EW.
8. Nothing in the above will prevent immediate dismissal of any student at the end of any quarter in which his work is of such unsatisfactory caliber that continuation in the College is unjustified.

BACHELOR OF ARTS IN BUSINESS ADMINISTRATION

The graduation requirements of the University are 180 academic credits, including Physical Education 110 or 175; the required quarters of physical education activity and/or military training; the senior year spent in residence; 60 upper-division credits; and a cumulative grade-point average of 2.0 (see page 28 for more detailed information about these requirements).

Additional requirements of the College of Business Administration are: 72 credits earned in courses in business administration; 72 credits in courses which are not business administration (economic principles and economic history may be counted in either the business or nonbusiness groups); and no more than 18 credits in advanced R.O.T.C. subjects applied toward graduation, except in the case of students in the Supply Corps.

The lower-division curriculum is the same for all students, except that students majoring in accounting take Accounting 250 in place of 255, and take Accounting 310 in their sophomore year. During the first two years, students have 30 elective credits. These must include 10 credits in one of the following: mathematics (except Mathematics 281, Elements of Statistical Method); laboratory science (botany, chemistry, geology, physics, or zoology); or foreign language. The remaining 20 credits must be chosen from psychology, political science, sociology, anthropology, or philosophy. It is recommended that 10 credits, but no more than 10, be taken in each of two fields. Requirements for the first two years are as follows:

	CREDITS		CREDITS
Acctg. 150, 151 Fundamentals.....	7	Econ. 200 Introduction.....	5
Gen. Bus. 101 Introduction.....	5	Econ. 201 Principles.....	5
Econ. 160 American Economic History.....	5	Geog. 207 Economics.....	5
Engl. 101, 102, 103 Composition.....	9	P.E. 110 or 175 Health.....	2
Acctg. 255 Basic Acctg. Analysis.....	3	Electives.....	30
Bus. Law 201 Business Law.....	5	P.E. Activity.....	6
Bus. Stat. 201 Stat. Analysis.....	5	R.O.T.C.	6 or 9
Fin. 201 Banking and Business.....	5		
			97-106

Before the beginning of his junior year, the student chooses a field of specialization. In addition to the requirements for his major, every student must complete the following courses before graduation:

	CREDITS		CREDITS
Fin. 301 Corporation Finance.....	5	Hum. Rel. 460 Human Relations in	
Mktg. 301 Principles.....	5	Industry and Business.....	5
Prod. 301 Principles.....	5	Gen. Bus. 439 Business Fluctuations.....	5
			25

ADVANCED DEGREES

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School (see page 261).

Graduate training is given in business policy and business administration and in these fields of specialization: accounting; business education; finance and banking; foreign trade; insurance; marketing; personnel and industrial relations; production; research and statistical control; and transportation.

As background for candidacy for a graduate degree, a student must either have a bachelor's degree in business administration from an approved school, or present not less than 45 quarter credits earned in accounting, business fluctuations, business law, business statistics, corporation finance, economics, human relations, production, and marketing. Candidates for the Master of Business Administration or the Doctor of Commercial Science degree who are offering credits in the above subjects as background must include at least 9 credits in accounting and some credits in business statistics, corporation finance, human relations, production, and marketing.

MASTER OF ARTS. This degree is primarily for students preparing for teaching positions in business administration. The requirements are: a major in one of the fields of graduate study; a minor taken outside the College; and a minimum of 15 credits in courses numbered 500 or above, of which at least 10 must be in business administration courses.

MASTER OF BUSINESS ADMINISTRATION. This degree is primarily for students preparing for administrative positions in business. The requirements emphasize business policy, business administration, and report preparation. Some specialization is possible, however, because of the substantial allowance of elective courses. Some work outside the College may be permitted. No foreign language is required.

The program, with the minimum number of quarter credits required, is:

	CREDITS		CREDITS
Pol. Admin. 560, 561 Policy Determination and Administration.....	6	Acctg. 591 Seminar in Administrative Controls.....	3
Bus. Comm. 571 Business Studies.....	4	Electives, of which at least 6 credits must be in courses numbered 500 or above....	22
Pol. Admin. 590 Seminar in Admin.....	5		40

DOCTOR OF COMMERCIAL SCIENCE. This professional degree is primarily for students preparing for teaching and research positions in business administration, and for administrative and policy-making positions in business.

The candidate must pass oral and written examinations in business policy (including economics), business administration (including business controls), and at least three other fields of graduate study, one of which may, with permission, be selected from outside the College. The final examination is an oral examination primarily on the thesis and the field of the thesis. Reading knowledge of a foreign language is not required for the degree.

The candidate must earn as a minimum the indicated number of credits in courses numbered 500 or above in each of the following categories:

	CREDITS		CREDITS
Business administration	8	Marketing	6
Business policy	8	Production	3
Finance	3	Social science (at least 10 in economics) ..	15
			43

Candidates for graduate degrees in other colleges who elect a minor in the College of Business Administration must have as background 15 credits in acceptable courses in business administration. The minor field must be selected from those offered for graduate study by the College. For a minor for a master's degree, 15 credits in approved upper-division and graduate courses are required. Doctoral candidates' requirements will be determined at the conference for admission to candidacy.

RESEARCH

To facilitate and coordinate faculty and graduate student research in economic and business problems, the College maintains the Bureau of Business Research. The Bureau looks upon the Pacific Northwest and particularly the state of Washington as its special field of study, and the analysis of commercial and industrial trends in the Pacific Northwest is emphasized. The scope of research activity, however, is not restricted geographically. *Pacific Northwest Industry*, a monthly journal devoted to business, economic, and industrial conditions in the Pacific Northwest, is published by the Bureau.

ACCOUNTING

Executive Officer: DONALD H. MACKENZIE, 203 Commerce Hall

Professors: A. M. Cannon, W. E. Cox, A. N. Lorig, D. H. Mackenzie.

Professor Emeritus: J. M. McConahey.

Associate Professors: K. O. Hanson, J. A. Roller.

Assistant Professors: K. B. Berg, L. M. Walker.

Acting Assistant Professor: H. R. Anton.

Lecturers: F. H. Hamack, F. O. Johnson.

Students who major in accounting may choose one of two options: professional or public accounting; and administrative accounting or comptrollership. The professional option is more exhaustive, since it provides background not only for public accounting and the C. P. A. examination but for almost any accounting career. The major in administrative accounting, or comptrollership, is for students who intend to obtain accounting positions with business firms or in government service, and for those who take accounting simply as general training for business.

PROFESSIONAL OR PUBLIC ACCOUNTING OPTION. The requirements are: Accounting 310, 320, 330, 340, 360, 420, 470, 471, 480, 485, 486, and Business Law 202 (Business Law) and 420 (Law in Accounting Practice).

ADMINISTRATIVE ACCOUNTING OR COMPTROLLERSHIP OPTION. The requirements are: Accounting 310, 320, 330, 340, 360, 450, 470, 485, and 6 credits elected from upper-division accounting courses, except Accounting 305.

COURSES FOR UNDERGRADUATES

- | | | |
|-----|--|--------------------------|
| 150 | Fundamentals of Accounting (4; AWS)
Basic principles, financial statements, double-entry principles, capital and revenue expenditures, depreciation, etc. | Cannon, Mackenzie |
| 151 | Fundamentals of Accounting (3; AWS)
Elements of manufacturing, partnership, and corporation accounting. Prerequisite, 150. | Walker |
| 250 | Accounting Techniques (3; AWS)
Special journals and ledgers, voucher register, payrolls, social security taxes. For majors. Prerequisite, 150. | Schrader |
| 255 | Basic Accounting Analysis (3; AWS)
Financial and cost analysis and interpretation. For nonmajors. Prerequisite, 150. | Mackenzie |
| 305 | Office Management (5; AWS)
Office organization; supervision of office functions; office personnel problems. Prerequisite, Production 301. | Hamack |
| 310 | Intermediate Accounting (5; AWS)
Advanced theory on inventory valuation, depreciation, etc.; analysis of profit variations. Prerequisite, 250 or 255. | Walker, Anton |
| 320 | Income Tax I (3; AWS)
Federal revenue acts and their application to tax returns. Prerequisite, 310. | Roller |
| 330 | Cost Accounting (5; AWS)
Economics of cost accounting; industrial analysis; production control through costs; types of cost systems; burden application. Prerequisite, 250 or 255. | Berg, Walker |
| 340 | Accounting Systems I (3; AWS)
System design and installation, with special emphasis upon internal control. Prerequisite, 310. | Cannon, Wing |
| 341 | Systems for Mass Production (2; S)
Design of systems for accounting and statistical control to meet problems of mass production, involving use of tabulating equipment. Prerequisite, 310. | Hamack |
| 360 | Advanced Accounting (5; AWS)
Continuation of 310. Prerequisite, 310. | Anton, Hamack |
| 371 | Auditing Internship (2; W)
One quarter's work with a certified public accounting firm. Prerequisite, 370. | Mackenzie |
| 420 | Income Tax II (3; AWS)
Special problems in income tax, including fiduciaries and corporate reorganizations; appeals; estate and gift taxes. Prerequisite, 320. | Roller |

- 440 Accounting Systems II (3; S)** **Staff**
Practice problems and report writing for systems. Prerequisite, 340.
- 450 Comptrollership (3; S)** **Mackenzie**
The comptroller's position in planning and control; budgets, expense analysis, reports, and investigations for management. Prerequisites, 310 and 330.
- 470 Auditing I (3; AWS)** **Cox, Johnson**
Auditing procedures and techniques, including practice set. Prerequisites, 340 and 360.
- 471 Auditing II (3; AWS)** **Johnson**
Releases of the American Institute of Accountants and the Securities and Exchange Commission; special problems and theory in professional auditing. Prerequisite, 370.
- 480 Government Accounting I (3; AWS)** **Lorig**
Principles of fund accounting. Prerequisite, 360.
- 481 Government Accounting II (2; S)** **Lorig**
Treasurer's accounts, financial reporting, etc. Prerequisite, 370.
- 485 Consolidations and Mergers (3; AWS)** **Mackenzie, Johnson**
Consolidated balance sheets; statements of profit and loss; domestic and foreign branches. Prerequisite, 360.
- 486 Fiduciary Accounting (2; AWS)** **Hamack, Johnson**
Estates, trusts and bankruptcies. Prerequisite, 360.
- 490 C. P. A. Problems (3; AWS)** **Mackenzie**
Problems from the American Institute of Accountants and state C. P. A. examinations. Prerequisites, 320, 330, 480, 485, and 486.
- 499 Undergraduate Research (3, maximum 9; AWS)** **Staff**
Prerequisite, permission.

COURSES FOR GRADUATES ONLY

- 520, 521, 522 Seminar (3,3,3; A,W,S)** **Lorig**
Discussion and research in advanced and currently important topics in accounting theory. Prerequisite, permission.
- 591, 592 Seminar in Administrative Controls (3,3; AS,W)** **Hanson, Anton**
Accounting and statistical controls; budgets, standard costs, etc. Prerequisites, 330 for 591; 591 for 592.
- 604 Research (*, maximum 10; AWS)** **Staff**
Prerequisite, permission.
- Thesis (*; AWS)** **Staff**

BUSINESS COMMUNICATIONS

Executive Officer: HENRY A. BURD, 300C Commerce Hall

Assistant Professor: C. E. Peck.

Acting Assistant Professor: C. N. Henning.

Lecturer: H. A. Murphy.

The Department of Business Communications offers both required and supplementary courses for students majoring in other departments of the College. In this department students learn to compile research data and to write effective business letters and reports.

COURSES FOR UNDERGRADUATES

- 310 Business Correspondence (5; AWS)** **Peck, Murphy**
Analysis of principles, including psychological factors; actual business letters in terms of their fundamentals. Prerequisites, General Business 101 and English 103.
- 410 Business Reports (3; WS)** **Peck**
Analysis of assigned problems, cases, and topics, and the preparation of a series of written reports. Techniques of written presentation. Training in business analysis and research methodology. Prerequisite, 310.

COURSES FOR GRADUATES ONLY

- 571 Business Studies (4; WS)** **Henning**
Independent study in the field of business administration; critical evaluation of business analysis and research methods.

BUSINESS EDUCATION

Executive Officer: JOSEPH DEMMERY, 209 Commerce Hall

Associate Professor: M. F. Tidwell.

Instructor: J. E. Carter.

Acting Instructor: M. A. Alexander.

A major in business education prepares students for teaching positions in high schools and junior colleges. Students who choose this major are expected to complete the course requirements of the College of Business Administration (except Finance 301 and General Business 439) and the course requirements for the provisional general teaching certificate, which is issued by the College of Education (see page 204 for complete certification requirements).

Additional requirements for a major in business education are: Secretarial Training 10 (Typewriting), 111, 112 (Secretarial Training), 115 (Office Machines), 120-121 (Gregg Shorthand), and 122 (Advanced Gregg Shorthand); and 10 credits in approved electives in secretarial training, accounting, or marketing.

BUSINESS LAW

Executive Officer: JOSEPH DEMMERY, 209 Commerce Hall

Associate Professor: S. D. Brown.

Assistant Professor: L. D. Goldberg.

Lecturers: W. H. Botzer, M. E. Burrus, F. H. Hamack, J. S. Harlow, R. A. Purdue.

The Department of Business Law does not offer a major, but provides courses in the essentials of business law for business administration students and students in other colleges.

COURSES FOR UNDERGRADUATES

- 201 Business Law (5; AWS)** **Brown, Goldberg, Staff**
Introduction to law, its origin and development; formation and performance of contracts; fraud, mistake, duress and undue influence; rights of third parties and remedies available at law and in equity; the law of agency as affecting the rights and duties of the principal, the agent, and third parties. Prerequisite, English 103.
- 202 Business Law (5; AWS)** **Brown, Goldberg, Staff**
Real and personal property, security transactions, sales, and negotiable instruments. Prerequisite, 201.
- 307 Business Law (3; AWS)** **Botzer, Burrus**
For engineering students and others unable to take more than 3 credits in business law. May not be substituted for 201. Not open for credit to business administration students. Prerequisite, permission.
- 410 Labor Legislation (5; W)** **Goldberg**
Legislative and judicial actions bearing directly on labor problems and the labor movement in their relation to social, political, and economic theories. Prerequisites, junior standing and Economics 340 or permission.
- 420 Law in Accounting Practice (3; AWS)** **Brown, Goldberg, Hamack**
Advanced business law problems for C. P. A. candidates. Prerequisite, 202.

BUSINESS STATISTICS

Executive Officer: DONALD H. MACKENZIE, 203 Commerce Hall

Associate Professors: G. I. Butterbaugh, K. O. Hanson.

The Department of Business Statistics gives training in collecting, recording, analyzing, presenting, and interpreting the statistical data required for the management of business. The requirements for a major are: Business Statistics 340, 341, 342, and 443; Accounting 310 (Intermediate Accounting) and 341 (Systems for Mass Production); Mechanical Engineering 415 (Quality Control) and 417 (Methods Analysis); and Mathematics 105 (College Algebra).

COURSES FOR UNDERGRADUATES

- 201 Statistical Analysis (5; AWS)** **Butterbaugh, Hanson**
Basic statistical measures and methods in the solution of business problems. A nonmathematical course in the elements of descriptive statistics. Misuses of statistical measures; fallacies in methods of collecting and interpreting data. Prerequisite, General Business 101.
- 340 Advanced Statistical Analysis (5; W)** **Butterbaugh**
Application of statistical techniques to practical problems of business, with emphasis on the interpretation of final results; problems involving the construction of index numbers; simple correlation, and measurement of and adjustment for trend and seasonal variation. Prerequisite, 201.
- 341 Sampling (3; W)** **Butterbaugh**
Theory and practice of sampling as applied to business problems; effect of biases on accuracy of results; precision and its cost. Tests of reliability of measures and the significance of differences in results obtained in sampling. Introduction to use of control charts in office, sales, and production management; acceptance sampling. Prerequisite, 201.
- 342 Correlation (3; S)** **Butterbaugh**
Theory and practice of simple and multiple correlation techniques as applied to business problems. Validity tests of correlation results; short-cut technique; use of graphic multiple correlation in commercial outlook forecasting; application of correlation in managerial control. Prerequisite, 201. Recommended to follow 340.
- 443 Statistical Problems (3; S)** **Butterbaugh**
Application of various types of analyses to practical business administration problems. The use of the analysis of variance technique; contingency tables; various types of control charts; sequential sampling; analysis of variations in labor, materials, and sales revenue. Prerequisite, 341.

COURSES FOR GRADUATES ONLY

- 520 Seminar (5; offered when demand is sufficient)** **Butterbaugh**
Discussions and research in the application of statistical technique to the management function. Prerequisites, Mathematics 105 and 443.
- 604 Research (*, maximum 10; AWS)** **Butterbaugh**
Prerequisite, permission.
- Thesis (*; AWS)** **Butterbaugh**

FINANCE

Executive Officer: DONALD H. MACKENZIE, 203 Commerce Hall

Professor: H. H. Preston.

Acting Assistant Professors: C. N. Henning, H. I. Kester.

Instructors: H. Blythe, B. A. Kolb.

Students majoring in finance choose one of two options: banking and credit, which prepares students for careers in banks and related financial institutions and as credit managers; and corporation finance and investments, which prepares students for careers in investment banking, investment management, and financial administration in business enterprises.

BANKING OPTION. The requirements are: Finance 420, 425, 428, and 444; plus 13 credits elected from Finance 334, 367, 432, and 446; Insurance 301 (Principles); Accounting 310 (Intermediate Accounting); and Economics 350 (Public Finance and Taxation I).

INVESTMENTS OPTION. The requirements are: Finance 420 (or 425), 444, and 446; Accounting 310 (Intermediate Accounting); plus 13 credits from Finance 334, 367, 428, 432, and 450; Insurance 301 (Principles); and Economics 350 (Public Finance and Taxation I).

COURSES FOR UNDERGRADUATES

- 201 Banking and Business (5; AWS)** **Staff**
Functions of the important financial institutions, including commercial banks and the banking system of the United States; investment banking, security markets, savings institutions, consumer credit agencies, governmental credit agencies, and international financial relationships. The role each institution plays in meeting the short-, intermediate-, and long-term credit needs of business and individuals is emphasized. Prerequisites, Accounting 151 and Economics 200 and 201.
- 301 Corporation Finance (5; AWS)** **Staff**
Formation and financial organization of the business enterprise; corporate securities; promotion; long-term financing of various types of businesses; marketing of securities; working capital analysis; sources of short-term funds; income determination; reserve and dividend policies; financing expansion; failure and reorganization. Prerequisite, 201.

- 334 Credits and Collections (3; AS)** **Blythe**
Credit as a factor in the production and distribution of commodities; retail credit and mercantile credit; mercantile credit as a basis for bank credit; organization and functions of the credit department; sources of credit information; credit limits; collection systems and procedures; creditors' legal remedies. Prerequisite, 201.
- 367 Foreign Exchange (5; AS)** **Henning**
Principles of international exchange; financing imports and exports; foreign exchange markets; foreign banking by American institutions; current status of foreign exchange. Prerequisite, 201.
- 420 Advanced Money and Banking (5; W)** **Preston**
Development and interrelationship of the banking system with emphasis upon current problems of credit control and regulation; Federal Reserve policy making as it affects the individual commercial bank; banks and the money market. Prerequisite, 201.
- 425 Banking Policy and Administration (5; S)** **Preston**
Administration of the individual commercial bank; internal organization, personnel, bank expansion, dividend policy, and customer relations. Major emphasis is placed upon the bank's loan and investment policy. Prerequisite, 201.
- 428 Bank Credit Administration (3; W)** **Staff**
Selected cases of loans to Pacific Northwest industries and agriculture. Prerequisites, 301 and Accounting 250 or 255.
- 432 Agricultural Finance (3; W)** **Hanson**
Principles of agricultural credit; organization and operation of lending agencies, private and governmental; analysis of production and mortgage loans by commercial banks to farmers; evaluation of banking institutions serving agriculture. Prerequisites, 201 and Accounting 250 or 255.
- 444 Principles of Investment (5; AW)** **Kester**
Designed both for students who expect to enter financial work and for those who desire a knowledge of investment for personal use. Basic principles in the selection of investment media; determination of individual and institutional investment policies; fundamental analysis of industries and securities. Prerequisite, 301.
- 446 Investment Analysis (5; S)** **Kester**
An advanced course primarily for students who want preparation for investment banking or for professional investment work. Principles and techniques applicable to the analysis of securities, both corporate and governmental, and to workable criteria for the selection or rejection of issues are emphasized. Prerequisites, 444 and Accounting 310.
- 450 Problems in Corporation Finance (5; W)** **Kester, Kolb**
Case study of financial problems of private business corporations. Includes special problems in promotion; financing current operations, financing long-run needs, reserve and dividend policies, expansion, combination, and reorganization, as well as comprehensive financial problems, from the management point of view. Prerequisite, 301 or permission.
- 499 Undergraduate Research (3, maximum 6; AWS)** **Staff**
Current problems in credit, administration, international finance, banking, corporation finance, and investments. Prerequisite, 301 and permission.

COURSES FOR GRADUATES ONLY

- 520 Seminar in Banking Problems (3; A)** **Preston**
Selected problems of contemporary and permanent significance in domestic and international banking and finance. Prerequisite, permission.
- 521 Seminar in Money Markets (3; W)** **Henning**
Sources of supply and demand for funds in organized money markets, both short- and long-term; the influence of supply and demand factors on interest rates and terms of financing. Prerequisite, permission.
- 522 Seminar in Corporation Finance (3; S)** **Kester**
Current financing problems and trends. Prerequisite, permission.
- 604 Research (*, maximum 10; AWS)** **Staff**
Prerequisite, permission.
- Thesis (*, AWS)** **Staff**

FOREIGN TRADE

Executive Officer: HENRY A. BURD, 300C Commerce Hall

Acting Assistant Professor: L. P. Dowd.

The Department of Foreign Trade prepares students for careers in importing and exporting houses, import and export departments of manufacturing and mercantile establishments, and related foreign trade activities. The requirements for a major are: Foreign Trade 310 and 460; Finance 367 (Foreign Exchange); Marketing 371 (Wholesaling); a minimum of 5 credits from Foreign Trade 450, 495, and 496; and a minimum of 10 upper-division credits from geography, political science, and

far eastern courses, which must include at least two of these fields. Proficiency in a foreign language is recommended.

COURSES FOR UNDERGRADUATES

- 310 Foreign Trade Practices (5; AW)** **Dowd**
Foreign trade marketing; exporting and importing; importance of world trade, its business, political, and geographic aspects. Prerequisite, Marketing 301.
- 450 Far Eastern Foreign Trade Problems (5; S)** **Dowd**
Analysis of export and import problems and techniques; problems of investment in the Far East. Prerequisite, 310.
- 460 Problems in Foreign Trade (5; A)** **Dowd**
Foreign market analysis; techniques and instruments; problems of pricing, merchandising, and shipment. Prerequisite, 310.
- 495, 496 Research in Foreign Trade (3,3; W,S)** **Dowd**
Compiling, organizing, and interpreting data from library and original sources, including contact with business organizations; evaluating actual cases. Prerequisite, 460 and Finance 367 for 495; 495 for 496.

COURSES FOR GRADUATES ONLY

- 520, 521 Seminar (3,3; offered when demand is sufficient)** **Dowd**
Advanced problems in foreign trade. Prerequisite, permission.
- 604 Research (*, maximum 10; AWS)** **Dowd**
Prerequisite, permission.
- Thesis (*; AWS)** **Dowd**

GENERAL BUSINESS

Executive Officer: JOSEPH DEMMERY, 209 Commerce Hall

Professors: W. E. Cox, J. Demmery, N. H. Engle.

Associate Professors: D. E. Robinson, B. O. Wheeler.

Instructor: J. W. McGuire.

The Department of General Business is designed for students who want a balanced training in several fields of business administration or who have not decided upon a specialized field of study. The requirements for a major are: 30 credits in approved upper-division courses in business, of which no more than 10 may be in any one major field.

COURSES FOR UNDERGRADUATES

- 101 Introduction to Business (5; AWS)** **Cox, Wheeler**
The nature of business problems; various types of ownership; physical factors in location of business; personnel aspects; marketing problems, devices for long- and short-term financing; managerial controls, such as accounting, statistics, and budgets; and the relation of business to government.
- 439 Business Fluctuations (5; AWS)** **Robinson, Wheeler**
Analysis of the basic variations affecting general business conditions as a background for business and investment decisions; appraisal of proposals for controlling cycles and of forecasting techniques. Prerequisites, Finance 301, Marketing 301, Production 301, and Business Statistics 201. General Business 439 and Economics 422 are interchangeable and may be offered to meet business administration or economics requirements.
- 499 Undergraduate Research (3, maximum 9; AWS)** **Demmery, Wheeler**
Prerequisites, 439 and permission.

COURSES FOR GRADUATES ONLY

- 593 Seminar in Business Fluctuations (3; offered when demand is sufficient)** **Demmery, Wheeler**
Business problems arising from business fluctuations; analysis of business policies and methods contributing to instability; problems of measurement and adjustment to fluctuation; appraisal of corrective measures internal and external to business. Prerequisites, 439 and permission.
- 594 Seminar in Business Forecasting (3; offered when demand is sufficient)** **Demmery, Robinson**
Problems in business forecasting; appraisal of forecasting theory, techniques, and commercial forecasting services; preparation of forecasts. Prerequisites, 593 and permission.
- 595 Seminar in Business Research (5; offered when demand is sufficient)** **Engle**
Methodology and technique in business research. Prerequisite, permission.
- 598 Current Problems in Business (5; offered when demand is sufficient)** **Engle**
Current business developments and important problems. Prerequisite, permission.
- 600 Research (*, maximum 10; AWS)** **Staff**
Prerequisite, permission.
- Thesis (*; AWS)** **Staff**

HUMAN RELATIONS IN BUSINESS

Executive Officer: EDWARD G. BROWN, 300G Commerce Hall

Associate Professor: T. J. Barnowe.

Instructors: R. A. Dunnington, J. W. Hennessey, Jr., A. A. Zoll III.

The purpose of the Department of Human Relations in Business is to help each student develop an understanding of human relations that will make him a more responsible member of a business organization. Both courses offered by the Department are useful to students in other colleges of the University, and course 460 is required for all business administration students.

COURSES FOR UNDERGRADUATES

365 Industrial Relations for Engineers (3; AWS)

Staff

Actual cases are used to develop useful ways of dealing with human situations, making administrative decisions, supervising people, and building effective industrial and personnel relations. Not open to business administration students.

460 Human Relations in Business and Industry (5; AWS)

Staff

Actual cases are used to develop an understanding of human situations in business and industry. Useful methods and concepts are developed as aids in diagnosing and taking action. Prerequisite, junior standing.

INSURANCE

Executive Officer: JOSEPH DEMMERY, 209 Commerce Hall

Acting Assistant Professor: D. F. Hayne.

Instructor: H. Blythe.

The Department of Insurance has two primary aims: to give students information which will make them more intelligent purchasers of both personal and business insurance, and to train students who expect to enter some branch of the insurance business or the insurance department of a banking, commercial, or industrial organization. Students majoring in insurance may choose either a life insurance or a property-casualty insurance option.

LIFE INSURANCE OPTION. The requirements are: Insurance 301, 360, 460, and 480; plus 11 or more credits from the following: Insurance 359; Accounting 310 (Intermediate Accounting); Economics 345 (Social Security); Finance 444 (Principles of Investment); and Law 202 (Insurance A) and 430 (Taxation A).

PROPERTY-CASUALTY INSURANCE OPTION. The requirements are: Insurance 301, 370, 375, and 480; plus 11 or more credits from the following: Accounting 310 (Intermediate Accounting); Finance 334 (Credit and Collections); Law 202 (Insurance A); Real Estate 301 (Principles of Urban Real Estate); and Transportation 452 (Transportation Insurance).

COURSES FOR UNDERGRADUATES

301 Principles of Insurance (5; AWS)

Blythe

Nature of risk and uncertainty; methods of meeting risk; the insurance mechanism; legal problems of insurance; various types of contracts and carriers; purchase of insurance by the individual. Prerequisite, General Business 101.

359 Estate Planning for Insurance (3; S)

S. Brown

Wills, trusts, and estates in connection with life insurance. Prerequisites, 360 and Business Law 202

360 Life Insurance for the Individual (5; A)

Hayne

Recognizing individual needs for life insurance; policy provisions; settlement options; programming; rates and reserves; prospecting. The viewpoint is that of the insurance company. Prerequisite, 301.

370 Property Insurance (5; A)

Hayne

Contracts and benefits under fire insurance and its allied lines of coverage; inland marine insurance; ocean marine insurance. The viewpoint is that of the insurance company. Prerequisite, 301.

375 Casualty Insurance (5; W)

Hayne

Contracts, benefits, and premiums in the fields of automobile, liability, burglary, robbery, and theft insurance, and fidelity and surety bonding. The viewpoint is that of the insurance company. Prerequisite, 301.

- 460 Life Insurance for Business (5; W)** Hayne
Methods of meeting the life contingency risks of economic enterprises, including key-man and liquidation insurance, group insurance, and employee benefit plans which are susceptible to funding by insurance. The viewpoint is that of the insurance company. Prerequisite, 360.
- 480 Insurance Programming for Business Enterprise (5; S)** Hayne
The insurance industry from the viewpoint of the business buyer; kinds and amounts of insurance to carry; how to evaluate the program. A case-study approach. Prerequisites, 301 and permission.
- 499 Undergraduate Research (3, maximum 6; AWS)** Hayne
Open only to qualified insurance students. Prerequisite, permission.

COURSES FOR GRADUATES ONLY

- 520 Seminar (5; offered when demand is sufficient)** Hayne
Discussion and research in insurance; methods of dealing with the problem of risk. Prerequisite, permission.
- 604 Research (*, maximum 10; AWS)** Hayne
Prerequisite, permission.
- Thesis (*; AWS)** Hayne

LAW, PREPROFESSIONAL PROGRAM

Adviser: 121 Education Hall

Students at the University who plan to enter the University of Washington School of Law may qualify for entrance by obtaining a bachelor's degree before entrance; or by taking three years of undergraduate work (135 credits) with a 2.5 grade-point average; or by taking a special three-year course of prelegal training which leads to a bachelor's degree at the successful completion of the first year in the Law School.

Students who take the three-year course leading to a bachelor's degree after one year in the Law School have a choice of three curricula. The College of Arts and Sciences provides an arts-law and a science-law curriculum (see page 115) and the College of Business Administration provides a business-law curriculum. In all these curricula the three-year program must include 138 credits with a 2.5 grade-point average, and the required quarters in physical education activity and/or military training, if a degree is to be conferred by the college at the end of a year in the Law School.

These three-year curricula are open to students from other institutions who enter the University with advanced standing, provided that they earn at least 45 approved credits in the University before entering the Law School. This privilege is not extended to normal school graduates attempting to graduate in two years nor to transfer students who enter the University with the rank of senior.

BUSINESS-LAW CURRICULUM. The requirements are: English 101, 102, 103 (Composition); Physical Education 110 or 175; 6 quarters of physical education activity; 12 or 18 credits in R.O.T.C. courses (required for men); all lower-division requirements of the College of Business Administration; 10 credits in either mathematics (excluding Mathematics 113), laboratory science, or one foreign language; all upper-division requirements of the College of Business Administration; and 47 credits in electives, arranged to provide 28 credits in upper-division courses.

MARKETING

Executive Officer: HENRY A. BURD, 300C Commerce Hall

Professors: H. A. Burd, N. H. Engle, C. J. Miller.

Associate Professors: W. J. Stanton, L. C. Wagner.

Assistant Professor: C. E. Peck.

Acting Assistant Professors: T. W. Boyne, N. W. Comish.

Instructors: E. Kolde, R. R. Still, D. S. Tull.

Students who major in marketing study the principles and policies governing the distribution of goods from producers to consumers and the functions performed by the various types of distributive agencies. Because of the wide latitude of this field, the Department of Marketing offers four options: wholesaling (including sales manage-

ment as well as industrial marketing), retailing, advertising, and marketing research.

WHOLESALE OPTION. The requirements are: Marketing 371, 381, 391, 395, 401, 451, and one of the following: Marketing 495-496, Finance 334 (Credit and Collections), Production 355 (Industrial Procurement), or Transportation 435 (Industrial Transportation Problems).

RETAILING OPTION. The requirements are: Marketing 371, 381, 391, 395, 431, 461, and two courses from the following: Marketing 441, 481, 495-496; Finance 334 (Credit and Collections); and Home Economics 125 (Textiles).

ADVERTISING OPTION. The requirements are: Marketing 371, 381, 391, 395, 401, 471, and two courses from the following: Marketing 441, 495-496; and Journalism 303 (Public Relations), 340 (Advertising Campaigns and Media), 342 (Radio Advertising), and 370 (Display Advertising).

MARKETING RESEARCH OPTION. The requirements are: Marketing 371, 381, 391, 395, 451 or 471; Business Statistics 340 (Advanced Statistical Analysis); and one of the following: Marketing 401, 495-496, Business Statistics 341 (Sampling), 342 (Correlation), or Sociology 442 (Public Opinion).

COURSES FOR UNDERGRADUATES

- 301 Principles of Marketing (5; AWS)** **Staff**
Analytical survey of institutions, functions, problems, and policies in the distribution of goods from producer to consumer; pricing, marketing costs, and governmental regulations. Prerequisite, General Business 101.
- 351 Principles of Salesmanship (2; AWS)** **Burd, Boyne**
Psychological, economic, and marketing foundations of sales activities; use of effective sales techniques. Prerequisite, 301.
- 361 Cooperative Marketing (3; S)** **Burd**
History, organization, and methods of operation of both producer and consumer cooperatives. Prerequisite, 301.
- 371 Wholesaling (5; AWS)** **Boyne, Tull**
Principles and functions of wholesaling consumer, industrial, and agricultural goods. Practical aspects of internal management of wholesaling business, warehousing, cost studies, and trade associations are emphasized. Prerequisite, 301.
- 381 Retailing (5; AWS)** **Miller, Comish**
Store location, layout, organization, policies, and systems; principles of buying, stock control, pricing, inventory methods, personnel management, and profit planning and control; coordination of store activities. Prerequisite, 301.
- 391 Advertising (5; AWS)** **Wagner, Still**
Relation to demand, cost, price, consumer choice, marketing; who pays; research; organization; techniques; social controls. Prerequisite, 301.
- 395 Marketing Analysis (5; AWS)** **Wagner**
Uses, methods, and techniques of marketing analysis. A class research project provides practical application of methods studied. Prerequisites, 391 and Business Statistics 201.
- 401 Sales Management (5; AWS)** **Stanton**
Analysis of sales methods, policies, and costs from the point of view of management. Sales organization; management of the sales force (selection, training, compensation, and supervision); sales planning; sales and distribution policies. Sales problems of representative companies are analyzed. Prerequisite, 301 and senior standing.
- 431 Retail Merchandising Problems (3; A)** **Comish**
Technical operational problems: mark-up and mark-down; inventories; discounts and datings; purchase planning and open-to-buy; rate of stock turnover and stock-sales ratios; price lining and stock control; analysis of merchandising reports and statements. For business administration students. Prerequisite, 381.
- 441 Retail Sales Promotion (3; AS)** **Staff**
The advertising department of a retail store; effective use of newspapers, radio, television, and direct mail displays; sales promotion; advertising programs, budgets, and coordination of selling effort. Prerequisites, 381 and 391.
- 451 Wholesale and Industrial Marketing Problems (5; WS)** **Miller**
Analysis of wholesale and industrial marketing problems at the management level. For business administration students. Prerequisite, 371.
- 461 Retail Management Problems (5; WS)** **Miller**
Analysis of retail marketing problems from the point of view of management. Prerequisite, 431.
- 471 Advertising Problems (5; WS)** **Wagner**
Analysis of advertising problems from the point of view of management. Prerequisite, 391.
- 481 Retail Field Work (2, maximum 8; AWS)** **Miller, Comish**
Open to retail scholarship students only. Prerequisite, permission.
- 495-496 Research in Marketing (3-3; offered when demand is sufficient)** **Staff**
Individual and group study; compiling, organizing, and interpreting data from library and original sources, including contact with business organizations. Each student will specialize in one of the following fields: A. Wholesaling; B. Retailing; C. Advertising; D. Marketing research. The letter A, B, C, or D should be used in registration. Prerequisites, 395, marketing major, and permission.

COURSES FOR GRADUATES ONLY

- 520, 521, 522 Seminar (3,3,3; A,W,S)** **Burd**
Social, economic, and business implications of current problems in marketing. Prerequisites, one marketing course and permission.
- 604 Research (*, maximum 10; AWS)** **Staff**
Prerequisite, permission.
- Thesis (*; AWS)** **Staff**

OFFICE MANAGEMENT

Executive Officer: DONALD H. MACKENZIE, 203 Commerce Hall

Lecturer: F. H. Hamack.

Office management may be chosen as a major by students who want to arrange a program in office organization, supervision of office functions, office personnel problems, and the techniques and procedures involved in efficient office management. The requirements for a major are: Accounting 305 (Office Management), 310 (Intermediate Accounting), 341 (Systems for Mass Production), and 499 (Undergraduate Research); Business Communications 310 (Business Correspondence); Finance 334 (Credit and Collections); and Personnel 310 (Personnel Management).

PERSONNEL

Executive Officer: EDWARD G. BROWN, 300G Commerce Hall

Associate Professor: R. A. Sutermeister.

Instructor: A. A. Zoll III.

Lecturer: H. A. Bergren.

The Department of Personnel provides training in the policies and procedures used in developing and maintaining an efficient work force. The requirements for a major are: Personnel 310, 345, 346, and 450; Psychology 335 (Industrial); Sociology 466 (Industrial); Economics 340 (Labor in the Economy); and Mechanical Engineering 201 (Metal Castings), 202 (Welding), 203 (Metal Machining), and 417 (Methods Analysis). (In some cases, substitutes are accepted for Mechanical Engineering 201, 202, and 203.)

Students majoring in personnel should take Human Relations 460 (Human Relations in Industry and Business) not later than the second quarter of the junior year.

COURSES FOR UNDERGRADUATES

- 310 Personnel Management (5; AWS)** **Sutermeister**
Procedures in obtaining and maintaining an efficient work force, with emphasis on the methods of initiating and carrying out an effective personnel program.
- 345 Personnel Management Techniques (3; AW)** **Sutermeister**
Practice in using the tools of a personnel administrator: job analysis and description, job evaluation, application blanks, reference letters, employment interviews, employee handbooks, counseling and correction interviews.
- 346 Personnel Management Techniques (3; WS)** **Sutermeister**
Practice in using the tools of a personnel administrator: job instruction and job methods, efficiency ratings, safety, and suggestion systems. Prerequisite, 345.
- 450 Industrial Relations Administration (5; WS)** **Bergren**
Negotiation and day-to-day administration of a labor contract; analysis of typical clauses, including their interpretation and application. Prerequisite, 310.

COURSES FOR GRADUATES ONLY

- 520 Seminar in Personnel Management (3; offered when demand is sufficient)** **Sutermeister**
Analysis and research on policies and advanced problems in personnel administration. Case studies are used. Prerequisite, permission.
- 604 Research (*, maximum 10; AWS)** **Sutermeister**
Thesis (*; AWS) **Sutermeister**

POLICY AND ADMINISTRATION

Executive Officer: EDWARD G. BROWN, 300G Commerce Hall

Professor: E. G. Brown.

Associate Professors: T. J. Barnowe, A. N. Schrieber, R. A. Sutermeister.

Assistant Professor: L. D. Goldberg.

Instructor: J. W. Hennessey.

The Department of Policy and Administration provides courses that integrate and supplement the work in other departments of the College. Policy and administration courses approach this field from a top-management point of view, to encourage the habit of thinking about business problems in an over-all context.

COURSES FOR UNDERGRADUATES

- 463 Administrative Practices (3; AWS)** Barnowe
Administrative behavior and the administrative function in business and industry, studied through selected reading and the use of actual cases. Emphasis is on the development of skill in diagnosing concrete situations. Prerequisite, Human Relations 460.
- 470 Business Policy (5; AS)** Brown, Hennessey, Schrieber
Problems of policy formulation at upper levels of management, requiring the over-all integration of the various aspects of business. Prerequisites, Finance 301, Marketing 301, and Production 301.
- 471 Problems of the Independent Businessman (3; WS)** Staff
Case studies of problems faced by independent owner-managers of small business enterprises. Prerequisites, Finance 301, Marketing 301, and Production 301.

COURSES FOR GRADUATES ONLY

- 560, 561 Policy Determination and Administration (3,3; AS,W)** E. G. Brown
Case-study seminar. Determination of the over-all policies of a business enterprise; administration of the policies to achieve the objectives of the organization. Prerequisites, M.B.A. candidacy and permission for 560; 560 for 561.
- 562 Responsibilities of Business Leadership (5; S)** Goldberg
Problems of top business executives in their relationships with employees, stockholders, competitors, customers, government, and the public in matters of social responsibility. Prerequisite, 561 or permission.
- 590 Seminar in Administration (5; WS)** Barnowe
Administrative functions, with emphasis upon organization, leadership, and control within the business unit. Prerequisites, M.B.A. candidacy and permission.
- 596 Seminar in Administrative Organization (3; offered when demand is sufficient)** Staff
Organization theories, concepts, and principles, with typical problems in their application to business enterprise. Prerequisites, 590 and permission.
- Thesis (*; AWS)** Staff

PRODUCTION

Executive Officer: EDWARD G. BROWN, 300G Commerce Hall

Associate Professor: A. N. Schrieber.

Lecturer: M. F. Sessions.

Instructor: C. W. Hackett.

The Department of Production provides training in industrial organization and management, production planning and control, material procurement, and control and operation analysis. The requirements for a major are: Accounting 310 (Intermediate Accounting), and 330 (Cost Accounting); Personnel 310 (Personnel Management); Production 351, 355, and 460; Mechanical Engineering 201 (Metal Casting), 202 (Welding), 203 (Metal Machining), and 417 (Methods Analysis).

COURSES FOR UNDERGRADUATES

- 301 Principles of Production (5; AWS)** Staff
Principles and procedures of a manufacturing enterprise: organization; product development; plant and equipment; planning and control of materials, production, quality, wages, and personnel; methods of analysis and budgeting.

- 351 Production Planning and Control (5; AS)** **Schrieber**
Organization, procedures, and techniques for the production planning and control functions in continuous and intermittent types of production. Prerequisite, 301.
- 355 Industrial Procurement (5; AW)** **Sessions**
Principles involved in the purchasing function of a manufacturing business, including organization of the purchasing department and its relationship to other departments, and policies on quality, inventory control, negotiations with vendors, manufacturing versus buying, prices, and costs. Prerequisites, 301 and Marketing 301.
- 380 Field Work in Production (2, maximum 6; AWS)** **Schrieber**
Part-time employment with pre-planned work programs, reports, and evaluation of experience. Prerequisites, 301 and permission.
- 460 Manufacturing Administration (5; WS)** **Schrieber**
Operating problems of a manufacturing enterprise and the production decisions made at various levels of management. Prerequisite, 301.
- 470 Industrial Analysis of the Pacific Northwest (5; S)** **Schrieber**
Production methods and problem analysis for manufacturing operations of selected industries in the Pacific Northwest. Prerequisite, 301.
- 499 Undergraduate Research (3, maximum 9; AWS)** **Schrieber**
Individual study or special project in production field. Students compile, organize, and interpret data from original and reference sources. Open only to qualified students. Prerequisites, 301 and permission.

COURSES FOR GRADUATES ONLY

- 520, 521 Seminar (3,3; A,W)** **Schrieber**
Problems and policies in manufacturing management. The first seminar deals with operating decisions requiring frequent review and reevaluation; the second covers long-term decisions, such as plant location, buildings, etc. Prerequisite, permission.
- 604 Research (*, maximum 10; AWS)** **Schrieber**
Prerequisite, permission.
- Thesis (*; AWS)** **Schrieber**

REAL ESTATE

Executive Officer: JOSEPH DEMMERY, 209 Commerce Hall

Professor: J. Demmery.

Associate Professor: B. O. Wheeler.

The Department of Real Estate provides training that is useful in a general business career and also prepares students who plan to enter the field of real estate. The requirements for a major are: Real Estate 301, 410, 495, and 496; Insurance 301 (Principles of Insurance); Architecture 105 (The House); and 7 or more credits from Finance 444 (Principles of Investment), Marketing 351 (Principles of Salesmanship), and Architecture 100 and 101 (Architectural Appreciation).

COURSES FOR UNDERGRADUATES

- 301 Principles of Urban Real Estate (5; AWS)** **Demmery, Wheeler**
Economic principles underlying the utilization of land; determining factors in the location and development of residential, commercial, industrial, and financial districts; public control. Prerequisite, General Business 101.
- 410 Real Estate Appraisals, Brokerage, and Management (5; W)** **Demmery**
Types of real estate uses and their characteristics; appraisals of farm and urban land improvements; property rights, real estate finance; management of property; leases. Prerequisite, 301.
- 495, 496 Research in Real Estate (3,3; W,S)** **Demmery**
Open to qualified undergraduate and graduate students. Prerequisites, 301 and permission for 495; 495 for 496.

COURSES FOR GRADUATES ONLY

- 520 Seminar (3; offered when demand is sufficient)** **Demmery**
Current problems in real estate appraisals, administration, management, financing, and control. Prerequisites, 301 and permission.
- 604 Research (*, maximum 10; AWS)** **Demmery**
Prerequisite, permission.
- Thesis (*; AWS)** **Demmery**

SECRETARIAL TRAINING

Executive Officer: JOSEPH DEMMERY, 209 Commerce Hall

Associate Professor: F. M. Tidwell.

Lecturer: H. A. Murphy.

Instructor: J. E. Carter.

Acting Instructors: M. A. Alexander, M. M. Delaney, N. G. Scherrer.

The Department of Secretarial Training is designed to meet the needs of students who are preparing for positions as secretaries to the executives of business concerns and other institutions. The requirements for a major are: Secretarial Training 310, 311, and 320; Business Communications 310 (Business Correspondence); Accounting 305 (Office Management); and English 387 (English Grammar).

COURSES FOR UNDERGRADUATES

- 10 Typewriting (1; AWS)** **Alexander**
Introduction; letter writing, manuscript writing, tabulation, and composition at the machine. No credit toward graduation.
- 111, 112 Secretarial Training (2,2; AWS,WS)** **Carter**
Typewriting fundamentals, speed building, timed production of letters and tabulations, and the use of various business forms; high-speed drills, office production typewriting of legal forms, and stenographic short cuts; duplicating processes. Prerequisites, 10 or equivalent for 111; 111 for 112.
- 115 Office Machines (3; AWS)** **Carter**
Laboratory instruction and practice in the operation of selected office machines, exclusive of secretarial machines.
- 120-121 Gregg Shorthand (3-3; AWS-AWS)** **Shorrer**
Theory of Gregg shorthand. Students who present one or more units of shorthand as entrance credit may not receive credit for 120.
- 122 Advanced Gregg Shorthand (3; WS)** **Staff**
Speed building and introduction to transcription. Prerequisite, 121.
- 310, 311 Advanced Secretarial Training (5,5; A,W)** **Tidwell**
Advanced shorthand dictation and transcription; general office practice and procedures; introduction to court reporting. Prerequisites, 122 for 310; 310 for 311.
- 312 Court Reporting (5; S)** **Tidwell**
An advanced course in court reporting; study of courtroom procedures and legal terminology; laboratory practice in the practice court of the Law School. Prerequisite, shorthand speed of 120 words per minute.
- 320 Secretarial Practice (5; S)** **Alexander**
Application of skills acquired in shorthand, typewriting, office machines, business letter writing, etc., to an integrated model office. One hour of recitation and one hour of laboratory work daily. Prerequisite, 122.

TRANSPORTATION

Executive Officer: HENRY A. BURD, 300C Commerce Hall

Assistant Professor: S. H. Brewer.

Lecturer: G. Rowe.

Instructors: J. W. Davenport, H. F. Hunter.

The Department of Transportation provides training for students who are planning careers in the field of transportation and for other business administration students who need an understanding of the methods of transportation and of industrial traffic management. The requirements for a major are: Business Law 202 (Business Law); Transportation 301; and at least 25 credits from Transportation 311, 313, 315, 317, 440, 450, 452, 455, and 499.

COURSES FOR UNDERGRADUATES

- 301 Principles of Transportation (5; AWS)** **Brewer, Davenport, Hunter**
Rail, water, highway, pipe line, and air transportation; industrial traffic management; and communications. Prerequisite, General Business 101.

- 311 Railroad Transportation (5; WS)** **Brewer, Hunter**
Railway history, routes, rates, freight, passenger, and express operations; management, policies, and regulation. Prerequisite, 301.
- 313 Air Transportation (5; AW)** **Brewer**
Problems of commercial air lines: costs, operating methods, traffic promotion, regulation, and safety requirements. Prerequisite, 301.
- 315 Highway Transportation (5; AS)** **Brewer**
Business methods and practices in operation and management of common, contract, and private motor carriers in intra- and interstate transportation; state and federal regulation of these carriers; highway freight rates. Prerequisite, 301.
- 317 Water Transportation (5; AW)** **Rowe**
Problems of ocean and inland water carriage relating to routes, rates, services, traffic, operation, and regulation. Prerequisite, 301.
- 435 Industrial Transportation Problems (5; WS)** **Brewer**
Plant location with respect to transportation costs, relative time in transit, considerations in industry location; handling, warehousing, and distribution problems; transportation pricing and claim procedure; liability relationships between carriers. For nonmajors. Not open to students who have taken 301. Prerequisite, permission.
- 440 Industrial Traffic Management (5; AS)** **Brewer**
Transportation buying; problems in keeping tariff files, obtaining and quoting rates, routing, expediting, and tracing shipments, making claims, and auditing freight bills. Prerequisite, transportation major or permission.
- 450 Air Law and Regulation (3; S)** **Brewer**
National and international control of air transportation, with emphasis on sovereignty of the air, carrier liability, the International Civil Aviation Organization, and procedures and practices before the Civil Aeronautics Board. Prerequisite, 313.
- 452 Transportation Insurance (5; S)** **Staff**
Contracts of affreightment, marine insurance, general and particular average, salvage, limited liability, and marine collision law. Prerequisite, 317.
- 455 Airport Management (3; S)** **Staff**
Aspects of airport planning, financing, operation, and management.
- 499 Undergraduate Research (3, maximum 6; AWS)** **Staff**
Individual study and special projects in transportation fields. Open only to qualified students majoring in transportation. Prerequisite, permission.

COURSES FOR GRADUATES ONLY

- 520, 521 Seminar in Transportation (3,3; offered when demand is sufficient)** **Staff**
Research in and discussion of current transportation problems. Prerequisite, permission.
- 604 Research (*; maximum 10; AWS)** **Staff**
Prerequisite, permission.
- Thesis (*; AWS)** **Staff**

SCHOOL OF DENTISTRY

Dean: ERNEST M. JONES, C301 Health Sciences Building

THE School of Dentistry is a part of the Division of Health Sciences, which includes the Schools of Medicine and Nursing and the College of Pharmacy. There are twelve departments in the School of Dentistry, eleven of which offer the four-year program of courses required for the degree of Doctor of Dental Surgery; these departments give instruction in all phases of dentistry. The Department of Dentistry offers courses for graduate dentists only. The twelfth department, Dental Hygiene, has separate admission and graduation requirements and a separate degree, the Bachelor of Science in Dental Hygiene (see page 200).

The objective of the School of Dentistry is to prepare a selected group of dental students for the practice of dentistry through the use of the best educational techniques employed in the field. Actual admission to practice in any state is conditional upon the requirements of a state board of dental examiners.

The School of Dentistry is approved by the Council on Dental Education of the American Dental Association and by the American Association of Dental Schools.

ADMISSION

Applications and pertinent material should be sent to the School of Dentistry Committee on Admissions. Before April 1, each applicant must submit the following material: (1) formal application for admission on the form furnished by the School of Dentistry; (2) official transcript of previous college record (sent directly from the registrar of the institution where preprofessional training was taken to the Committee on Admissions); (3) two unmounted recent photographs, 2 by 3 inches; and (4) at least three letters of recommendation, one preferably from a science instructor and others from business or professional people.

The Committee on Admissions will consider as candidates for entrance to the School of Dentistry individuals who hold a Bachelor of Arts or a Bachelor of Science degree from a fully accredited college or university and whose scholastic average has been 2.0 or better; and those who have completed at least two years of predental training (90 academic quarter credits, together with the required quarters of physical education and/or military training) with a scholastic average of 2.0 or above. All applicants must have completed the following minimum predental course requirements: 9 quarter credits in English composition, 15 in inorganic chemistry, 10 in organic chemistry, 15 in physics, and 15 or 20 in zoology.

Prospective dental students should choose electives with the aim of learning more about human relationships and of broadening their general knowledge. Laboratory drawing, sculpture, survey of American literature, introduction to modern literature, music appreciation, essentials of speaking, anthropology, economics, philosophy, psychology, and sociology are suggested, but students should study the course offerings in their schools for other possible electives.

At the end of the first year's work in the School of Dentistry, the degree of Bachelor of Science in Basic Medical Science may be granted by the College of Arts and Sciences to applicants who completed three years of study in that college before entering dental school, and have maintained a 2.5 grade-point average during all four years of work (see page 59).

SCHOLARSHIP

Students must maintain a 2.0 grade-point average throughout their course.

DOCTOR OF DENTAL SURGERY

To receive the degree of Doctor of Dental Surgery, the candidate must be twenty-one years of age; give evidence of good moral character; spend the last four quarters of the dental course as a regularly matriculated student; satisfactorily complete the course, including a thesis; and fulfill all additional requirements of the University.

All undergraduate courses offered in the School of Dentistry, except those of the

Department of Dental Hygiene, are required, as well as a group of courses offered in the School of Medicine for dental students.

GRADUATE STUDY

Special short courses for graduate dentists are offered from time to time in each of the areas of dentistry. Plans are also under way to make available one-day-a-week and one-day-a-month courses, extending over a period of ten weeks and one year, respectively.

MASTER OF SCIENCE IN DENTISTRY. Students who intend to work toward this advanced degree must meet the requirements of the Graduate School (see page 261) and of the department in which they expect to major. Candidates for the Master of Science in Dentistry must be graduates of approved dental schools, and must meet entrance requirements of the School of Dentistry.

The candidate may choose a major in one of the following clinical fields: orthodontics, pedodontics, or restorative dentistry. For a major in orthodontics or pedodontics, five quarters of residence and the completion of 50 credits are required. Requirements for a major in restorative dentistry are three quarters of residence and the completion of 36 credits. No foreign language is required for this degree.

CERTIFICATE IN ORTHODONTICS, PEDODONTICS, OR RESTORATIVE DENTISTRY. Requirements for a certificate are the same as for the degree of Master of Science in Dentistry, except that students need not meet Graduate School requirements and need not write a graduate thesis.

RESEARCH

All students working toward the degree of Master of Science in Dentistry are required to complete an original piece of research; which forms the basis for their graduate thesis. Since the inception of the School nine different research projects have been completed, and reports of the results of the various departmental research programs have appeared in numerous scientific publications. The School of Dentistry has received several grants from private sources to further research programs now in progress.

DENTAL MATERIALS

Acting Executive Officer: Herbert L. Gaskill, B122 Health Sciences Building

Instructor: H. L. Gaskill.

Clinical Associates: H. I. Gilbert, R. E. Plummer.

The Department of Dental Materials offers instruction in the physical and chemical properties and manipulation of the materials used in dentistry.

COURSES

131, 132 Dental Materials (2,3; A,W)

Physical and chemical properties of dental materials.

Gaskill, Gilbert, Plummer

DENTAL SCIENCE AND LITERATURE

Executive Officer: BERTON E. ANDERSON, B324 Health Sciences Building

Professor: E. M. Jones.

Associate Professor: B. E. Anderson.

Lecturers: P. E. Mehus, G. E. Wilson.

The Department of Dental Science and Literature teaches the fundamentals of the dental profession, such as legal problems, ethics, office management, and scientific writing.

COURSES

- 100 Orientation (1; A)** Jones, Anderson
Dentistry as a health profession: its scope, responsibilities, and contacts with other vocations; qualities and traits which lead to high attainment and social usefulness in the profession; purposes, correlation, and development of the various phases of dental education, meaning and value of the scientific method and the critical point of view in the field.
- 200 Dental History (1; A)** Anderson, Mahus
Origin and progress in dentistry: beginnings of the scientific study of the teeth and related parts; integration of the developments of the profession in all its phases—professional, technical, and scientific.
- N300, N301 Dental Medicine (0,0; W,S)** Staff of the Schools of Dentistry and Medicine
Systematic conditions and diseases, with special reference to their oral manifestations or implications. Consideration of some aspects of dermatology and syphilology, diabetes, the blood dyscrasias, endocrine gland and nutritional disturbances, and other conditions.
- 302 Technical Composition (2, A)** Anderson
Technique of using the library, with discussions of availability and source of scientific literature. Procedure and technique of writing scientific papers and preparing them for publication in scientific journals. Techniques of public speaking.
- 400, 401, 402 Applied Dental Science (1,2,1; A,W,S)** Staff of the Schools of Dentistry and Medicine
Correlation of preclinical basic medical science and other preclinical study with clinical procedures and requirements. New findings and practices are submitted so that senior students may utilize such information.
- 403 Jurisprudence (1; S)** Wilson
Legal problems and obligations incident to the practice of dentistry: state dental laws, contracts, malpractice, and dentists as expert witnesses.
- 431, 432, 433 Dental Ethics and Office Management (2,1,1; A,W,S)** Anderson
Office location, arrangement, equipment, and personnel; records; patient-dentist business relationships; credit, collections, and fees; accounting, insurance, and investments; buying materials; Code of Ethics of the American Dental Association.

DENTISTRY

Executive Officer: ALTON W. MOORE, B337 Health Sciences Building

COURSES FOR GRADUATES ONLY

- 500 Advanced Oral Histology, Embryology, and Oral Pathology (4; W)** Thomas, Ogilvie
Lectures and seminar discussions on the details of development, histology, and pathology of cranial, facial, and oral structures, with emphasis on clinical application of basic knowledge. (Dept. of Periodontology)
- 510 Applied Osteology and Myology of the Head and Neck (2; A)** Riedel, Moore
Detail study as a background for the study of the growth and development of the head and for cephalometric roentgenogram interpretation. (Dept. of Orthodontics)
- 511 Roentgenographic Cephalometry (2; A)** Moore, Riedel, Takano
Basic principles, history, and techniques of roentgenographic cephalometry. (Dept. of Orthodontics)
- 512, 513 Growth and Development (2,2; S,Summer)** Moore
Review of the various methods of human growth, with special emphasis upon studies of the head; growth of the head and development of the dentition from birth through maturity; analysis of the factors that produce normal occlusion and malocclusion. Each course is a prerequisite to the following course. (Dept. of Orthodontia)
- 521 Applied Dental Nutrition (1; AWS)** Gallagher
Lectures and seminar discussions on pathogenesis, pathology, and clinical signs of nutritional deficiencies; functions of the essential nutrients; value of clinical laboratory tests. Practical qualitative and quantitative diet analysis is performed. (Dept. of Periodontology)
- 522 Dental Caries Control (2; S)** Law, Staff
Seminar on etiology and control of dental caries. Discussion based on assigned reading on physiology, composition of saliva, chemical composition of the teeth, oral microbiology, degradation of carbohydrates, systemic factors in the caries process, fluorides, enzyme inhibitors, and caries susceptibility tests. (Dept. of Pedodontics)
- 523 Public Health Dentistry (1; offered when demand is sufficient)** Hoffman
- 580 Gnathodynamics (2; S)** Moore, Young
A seminar devoted to a comprehensive review of the temporomandibular joint and its associated structures. Thorough review of the anatomy and growth processes of the head and oral mechanism, with special emphasis upon the functional aspect of the human denture. Study of the instruments designed to imitate jaw movement and their effectiveness, together with the pathologies of the temporomandibular joint. (Dept. of Pedodontics)

- 581 Restorative Treatment Planning (4; offered when demand is sufficient)** **Jacobson**
Coordinated application of knowledge gained from both graduate and undergraduate courses to the diagnosis and treatment of the more complicated cases. (Dept. of Oral Diagnosis and Treatment Planning)
- 582 Cast Metal Restorations (4; offered when demand is sufficient)** **Stibbs, Staff**
Metallography of cast metals; physical properties of waxes and investments. Control of shrinkage. Interrelationships of physical properties of metals and physiology of oral tissues; thermal conductivity and pulpal response; galvanism; tissue tolerance in respect to various metals. Direct and indirect technics. Principles of cavity preparation that apply specifically to cast restorations. (Dept. of Fixed Partial Dentures)
- 583 Reproduction of Oral Tissues (4; AWS)** **Young, Regli**
A seminar-laboratory-clinic in the various needs for reproduction of oral tissues in restorative dentistry. Physical requirements of various types of restoration; routines, materials, and equipment used; tissue responses to physical and functional stimuli. (Dept. of Prosthodontics)

FIXED PARTIAL DENTURES

Executive Officer: GERALD D. STIBBS, B406 Health Sciences Building

Professor: G. D. Stibbs.

Instructor: W. J. Sproule.

Clinical Associates: W. L. Beebe, W. M. German, W. R. Griswold, J. D. Guthrie, W. H. Hagen, A. G. Schultz, B. B. Smith.

Clinical Assistants: R. W. Gehring, W. J. Mackey, R. J. Zech.

In this department the student learns the construction of fixed partial dentures, gold crowns, and inlays and crowns of baked porcelain.

COURSES

- 231, 232, 233 Fixed Partial Denture Technic (4,4,4; A,W,S)** **Sproule, Staff**
Fixed partial denture fundamentals; construction of selected cases on technic models.
- 234, 235 Ceramic Technic (2,2; A,W)** **Hagen, Staff**
Introduction to dental ceramics; technic assignments in production of porcelain inlays and porcelain veneer crowns.
- 300, 301, 302 Fixed Partial Dentures (1,1,1; A,W,S)** **Guthrie**
Lectures on various phases of typical crown and fixed partial denture construction.
- 347 Clinical Crowns and Fixed Partial Dentures (4; AWS)** **Stibbs, Staff**
Construction of crowns, fixed partial dentures, ceramic restorations for clinical cases; instruction under close supervision, with cases assigned according to the student's knowledge and abilities.
- 400, 401 Advanced Fixed Partial Dentures (1,1; A,W)** **Schultz, Hagen**
Lectures on refinements in technical procedures. Relatively difficult, atypical clinical cases are discussed and analyzed, with emphasis on diagnosis and treatment planning and on the relationship of this field to other forms of treatment.
- 446 Advanced Clinical Crowns and Fixed Partial Dentures (6; AWS)** **Stibbs, Staff**
Continuation and advancement of clinical experience, including clinical ceramics, with treatment of more difficult clinical cases under close supervision.

COURSES FOR GRADUATES ONLY

- 561 Abutments and Distribution of Masticatory Stresses (4; offered when demand is sufficient)** **Stibbs, Staff**
Tissue responses of bone and periodontal membrane to increased masticatory loads; physical principles involved in replacements in different locations in the mouth; considerations involved in length of span; retention form and resistance form; study of broken-stress design and fixed removable attachments; esthetic considerations of abutment preparation.

OPERATIVE DENTISTRY

Executive Officer: GERALD D. STIBBS, B406 Health Sciences Building

Professors: E. M. Jones, G. D. Stibbs.

Associate Professor: F. H. Pratt.

Assistant Professor: A. I. Hamilton.

Instructors: G. Mjaatvedt, K. N. Morrison.

Clinical Associates: B. B. Smith, O. P. Strizek.

Clinical Assistants: R. J. Aylen, R. C. Canfield, N. K. Jensen, A. M. Nelson, H. A. Nordeng, L. E. Ostlund, H. E. Schnepfer, S. E. Sutcliffe.

Assistant: C. Schroeter.

Operative dentistry is the general practice of dentistry, including cavity preparation and the use of restorative materials.

COURSES

- 131 Elementary Operative Dentistry Technic (4; S)** **Morrison, Staff**
Fundamental principles of cavity preparation; training in digital skill.
- 132, 133, 134 Oral Anatomy (2,4,4; A,W,S)** **Pratt, Staff**
Detailed study of the human dentition from the standpoint of function, and of morphology of the component parts in detail, with attention to systematized nomenclature. Drawings and carvings of teeth are made and the relationship of their form to environment and functional association is studied.
- 231, 232, 233 Operative Dentistry Technic (4,4,5; A,W,S)** **Morrison, Staff**
Advanced application of the principles and requirements of operative procedures; exercises on manikins to further manual dexterity; consideration of instrumentation and of manipulation of restorative materials.
- 261 Clinical Orientation (2; S)** **Hamilton, Staff**
Transition of thought and attention from technic and theory to clinical application in preparation for treatment of patients.
- 300, 301, 302 Operative Dentistry (1,1,1; A,W,S)** **Hamilton**
Lectures on the clinical application of knowledge acquired in lower-division technic courses; introduction to professional conduct and clinical demeanor.
- 346 Clinical Operative Dentistry (6; AWS)** **Stibbs, Staff**
Clinical procedures in all phases of operative dentistry; varied clinical experience under close supervision.
- 400, 401, 402 Advanced Operative Dentistry (1,1,1; A,W,S)** **Jones, Stibbs**
Lectures on refinements in technical procedures, treatment of atypical cases, and problems in diagnosis and treatment planning.
- 446 Advanced Clinical Operative Dentistry (6; AWS)** **Stibbs, Staff**
Supervised opportunity to attain optimum experience and self-reliance so that each student may develop as an operator to the best of his ability.

COURSES FOR GRADUATES ONLY

- 561 Plastics As Restorative Materials (4; offered when demand is sufficient)** **Stibbs, Staff**
Metallography of silver-tin amalgams; physical properties of zinc oxyphosphate cements, siliceous cements, and acrylic resins. Post-operative history of teeth restored with plastic materials; relative service life of materials. Basic and variant designs of cavity preparation, considering morphology of tooth, masticatory stress, physical properties of material, and location and size of restoration. Variant techniques of manipulation of plastics; analysis of failures in plastics.
- 562 Gold Foil Restorations (4; offered when demand is sufficient)** **Stibbs, Staff**
Tissue reactions to operative procedures; response of dental pulp to thermal change; age changes in dentinal wall and histology of dental pulp. Indications and contraindications for gold foil in restorative procedures. Physical properties of dentin, cohesive and noncohesive pure gold foil, and platinum-centered foil. Rationale of manipulation of these materials. Modifications of basic cavity preparation for foil: Black, Ferrier, Woodbury, True, etc. Procedures for condensation and finishing.

ORAL DIAGNOSIS AND TREATMENT PLANNING

Executive Officer: FREDERIC L. JACOBSON, B309 Health Sciences Building

Associate Professor: F. L. Jacobson.

Instructor: C. I. Degering.

Senior Consultants: E. A. Bourassa, L. W. Zech.

Clinical Associates: C. H. Feasel, E. C. Hewitt.

In this department the student learns to use diagnostic techniques, such as examination and X-ray, to interpret his findings, and to plan a course of treatment on the basis of his diagnosis.

COURSES

- 216, 217 Oral Roentgenology (1,1; W,S)** **Jacobson**
Physical, clinical, and interpretative aspects of dental X-ray procedures, with practical application in the completion of two acceptable full mouth surveys.
- 300, 301 Oral Diagnosis and Treatment Planning (1,1; A,W)** **Jacobson**
Fundamental procedures in oral diagnosis; preparation for advanced instruction.
- 346 Clinical Oral Diagnosis and Treatment Planning (3; AWS)** **Staff**
Opportunity for examining patients and observing diagnostic procedures; rendering emergency treatment to patients.
- 400, 401, 402 Advanced Oral Diagnosis and Treatment Planning (1,1,1; A,W,S)** **Jacobson**
Treatment planning of cases and familiarization with the clinical detection of oral pathological conditions.
- 446 Advanced Clinical Oral Diagnosis and Treatment Planning (3; AWS)** **Staff**
Advanced instruction in diagnosis and in the handling of patients. Typical cases of the various conditions in the oral cavity are presented.

ORAL SURGERY

Executive Officer: ROBERT E. JOHNSON, B348 Health Sciences Building

Associate Professor: R. E. Johnson.

Assistant Professor: D. Cooley.

Lecturer: J. J. Mattes.

Clinical Professor: F. H. Wanamaker.

Clinical Associates: G. D. Dore, F. H. Francis.

Clinical Assistants: G. E. Jones, D. T. Zack.

Senior Consultant: F. F. Molt.

The Department of Oral Surgery provides training and clinical experience in the procedures used for all types of operations in the oral cavity.

COURSES

- 200 Local Anesthesia (1; S)** **Cooley**
Introduction to methods of local anesthesia for dental and oral surgery. Review of the anatomy of the head and neck in relation to local anesthesia; review of the physical, chemical, and biological effects of local anesthesia; armamentarium; indications and contra-indications for local anesthesia; injection technique; and the handling of postanesthetic complications. Lectures and clinical demonstrations on oral surgery patients.
- 300, 301, 302 Exodontia (1,1,1; A,W,S)** **Johnson, Cooley**
General principles of oral surgery practice; history taking and the performance of oral examination; principles of asepsis and operative technique; armamentarium for surgical treatment; fundamental principles of surgical techniques in the extraction of teeth; pre- and post-operative care of the patient; types, prevention, and control of hemorrhage; diagnosis and treatment of complicated extractions and pathological conditions.
- 303 General Anesthesia (1; S)** **Mattes**
Introduction to the use of general anesthesia for oral surgery: agents employed and the physiological action, including the stages of anesthesia; methods of administration; premedication of the patient; armamentarium; complications and accidents; agents designed primarily for administration to children. Lectures and clinical demonstrations.
- 346 Clinical Exodontia (3; AWS)** **Johnson, Staff**
Dental extractions and minor oral surgery under local anesthesia. The student is responsible for the history, oral examination, X-ray diagnosis, clinical diagnosis, treatment planning, treatment, and postoperative treatment, under supervision of the staff. He assists a senior student on the more difficult cases and manages the simpler cases under the close supervision of the oral surgery staff. Opportunity is given for practical application of the principles of sterilization of supplies and instruments as well as the administration of local anesthetics and antibiotic, sedative, and analgesic drugs.
- 400, 401, 402 Oral Surgery (1,1,1; A,W,S)** **Johnson, Cooley, Wanamaker**
Major types of oral surgery, including the diagnosis and treatment of fractures of the jaws; disturbances of the temporomandibular articulation; developmental deformities of the maxilla and mandible; congenital cleft lip and palate; fundamentals of prevention and treatment of shock; fundamentals of maxillo-facial surgery.
- 446 Clinical Oral Surgery (3; AWS)** **Johnson, Staff**
Advanced application of the principles of exodontia and minor oral surgery. Directly supervised treatment of multiple extractions and preparation of the mouth for dentures; removal of unerupted or impacted teeth; removal of benign cysts and tumors of the maxilla and mandible; biopsies; management of oral infections.

ORTHODONTICS

Executive Officer: ALTON W. MOORE, B337 Health Sciences Building

Professor: A. W. Moore.

Assistant Professor: R. A. Riedel.

Instructors: W. S. Takano.

Clinical Associates: E. A. Bishop, E. J. Fraser, P. D. Lewis, W. P. McGovern.

Clinical Assistants: C. Craig, D. Empenger, K. S. Kahn.

Orthodontics is the branch of dentistry whose objective is the prevention and correction of malocclusion of the teeth.

In addition to the courses for dental students, the Department of Orthodontics offers a graduate program for students working toward the Master of Science in Dentistry with a major in orthodontics.

COURSES

- 300 Orthodontics (1; S)** **Moore**
Discussions and illustrations of the periodontal membrane, bone, and adjacent tissues as related to the forces of occlusion, of a balanced occlusion, and of the growth and development of the individual, with special emphasis on the head. Review of the major growth studies in the literature and their applications to dentistry and to orthodontics.
- 316 Orthodontic Technic (2; A)** **Riedel, Staff**
Technics of filing as well as soldering orthodontic wires and bands; adaptation of orthodontic bands to teeth; construction of simple appliances used as space maintainers and other preventive orthodontic mechanisms.
- 400, 401 Advanced Orthodontics (1,1; A,W)** **Moore, Riedel**
Brief historical review of the etiology of malocclusion; classification and analysis of cases; growth anomalies as well as deformities and their evaluation; the temporomandibular joint; the mandibular position as related to orthodontic case analysis; treatment planning; types of appliances and their uses; retention; the ultimate outcome of orthodontic treatment. Prerequisites, 300 and 316.

COURSES FOR GRADUATES ONLY

- 500, 501, 502, 503, 504 Orthodontics Seminar (2,4,4,2,2; A,W,S,Summer,A)** **Staff**
Methods of diagnosis, analysis, and treatment planning of malocclusion; analysis of methods and theoretical principles used in the treatment of malocclusion. The student presents a detailed case analysis and plan of treatment for each clinical patient he is supervising. Each course is a prerequisite to the following course.
- 546, 547, 548, 549, 550, 551 Clinical Orthodontics (4,5,5,5,5,6; A,W,S,Summer,A,W)** **Staff**
Technics of construction and manipulation of the edgewise arch mechanism; application of the technics in the treatment of malocclusion. Treatment of patients begins in the second quarter. Each course is a prerequisite to the following course.
- 600 Research (*; AWS and Summer)** **Staff**
Prerequisite, permission.
- Thesis (*; AWS and Summer)** **Staff**
An investigative program carried out under the direction of a member of the Department staff by the candidate for the degree of Master of Science in Dentistry. The problem may be in one of the basic sciences or may have a clinical application.

PEDODONTICS

Executive Officer: DAVID B. LAW, B343 Health Sciences Building

Associate Professor: D. B. Law.

Assistant Professor: W. G. Seims.

Lecturer: O. E. Hoffman.

Clinical Assistants: F. T. Bowler, C. I. Coleman, H. W. Fleege, G. M. Jinks, W. H. Smith, J. R. Rogers.

The Department of Pedodontics provides training in children's dentistry, public health dentistry, and the maintenance of dental health.

In addition to the courses for dental students, the Department of Pedodontics offers a graduate program for students working toward the Master of Science in Dentistry with a major in pedodontics.

COURSES

- 100 Public Health Dentistry (1; S)** **Hoffman**
Introduction to the field.
- 200, 201, 202 Preventive Dentistry (1,1,1; A,W,S)** **Law, Moore**
Etiology and control of dental caries. Physiology and composition of saliva, ecology of the mouth, chemical composition of teeth, degradation of carbohydrate, systemic factors in the caries process, enzyme inhibitors, fluorides, and caries susceptibility tests. Study of the growth and development of the oral mechanism and of the human head is begun in the second quarter; the forces of occlusion are analyzed and a comparison made between the various animal dentitions. The Broadbent-Bolton cephalometer is discussed, with particular emphasis on its research implications.
- 300, 301 Pedodontics (1,1; A,W)** **Law**
Emotional development of the child and its implications in pedodontic procedures. Space maintenance, the interception of incipient malocclusion, and clinical management of oral habits.
- 316 Pedodontics (2; W)** **Staff**
Operative techniques applicable to primary and mixed dentitions: cavity preparations in primary teeth, construction of a functional space maintainer, and restoration of a fractured incisor.
- 347 Clinical Pedodontics (2; WS)** **Staff**
Diagnosis and examination of the child patient. Restorative procedures in primary and mixed dentitions, with special emphasis on application of the rubber dam.
- 400 Pedodontics and Public Health Dentistry (1; S)** **Hoffman**
The child in the dental health program. Organization of dental health programs on local, state, and national levels. The role of the dentist in community public health planning. Public health legislation and its implications to the dental profession.
- 446 Advanced Clinical Pedodontics (3; AWS)** **Staff**
Diagnosis and treatment planning, with emphasis upon preventive dentistry. Complete operative procedures, including vital pulp therapy, construction of space maintainers, bite planes, and restoration of fractured anterior teeth.

COURSES FOR GRADUATES ONLY

- 500, 501, 502, 503, 504 Pedodontics Seminar (2,2,2,2; A,W,S,Summer,A)** **Law**
Seminar on problems of tooth formation, development, calcification, and eruption in the child. Management of clinical problems of tooth development; operative procedures, pulp therapy, treatment planning, and the consideration of emotional factors in pedodontic practice.
- 546, 547, 548, 549, 550 Clinical Pedodontics (* * * * *; A,W,S,Summer,A)** **Staff**
Advanced clinical practice. Assignment of selected cases, with student responsibility for complete examination, diagnosis, and treatment planning including completion of the case. The use of appliances to effect limited tooth movement in cases of space closure and the application of the Broadbent-Bolton cephalometer in diagnosis and treatment.
- 600 Research (*; AWS)** **Staff**
Prerequisite, permission.
- Thesis (*; AWS)** **Staff**
An investigative program carried out under the direction of a member of the Department staff by the candidate for the degree of Master of Science in Dentistry. The problem may be in one of the basic sciences or may have a clinical application.

PERIODONTOLOGY

Executive Officer: B. O. A. THOMAS, B410 Health Sciences Building

Professor: B. O. A. Thomas.

Associate Professor: J. I. Ingle.

Assistant Professors: J. W. Gallagher, A. L. Ogilvie.

Instructor: E. A. Cornish.

Clinical Associate: M. V. Starks.

Clinical Assistants: J. H. Losh, R. G. McLaughlin, J. F. Vaughn.

In this department students are taught the basic knowledge and techniques necessary in diagnosing and treating diseases of the mouth.

COURSES

- 100 Comparative Dental Anatomy (1; W)** **Thomas**
Evolution, form, and function of the human dentition; temporomandibular articulation and associated parts of the skull.
- 131 Oral Histology and Embryology (4; S)** **Thomas, Ogilvie, Gallagher**
Development of the facial region, with emphasis on nasal, pharyngeal and oral structures. Histology of enamel, dentin, dental pulp, cementum, periodontal membrane, alveolar bone, oral mucous membrane, maxillary sinus, and temporomandibular articulation.
- 200 Introduction to Periodontology (1; W)** **Staff**
Illustrated lectures on elementary material necessary for clinical work.

- 231 **Endodontia Technic (2; S)** Ingle, Starks, Vaughn
Root canal treatment in terms of present-day concepts, with emphasis on a definite, simplified technic. Treatment of extracted teeth as practice for clinical cases.
- 261 **Periodontology Orientation (1; S)** Staff
Instruction in oral examination, diagnosis, and the technic of oral prophylaxis.
- 300, 301 **Periodontology (1,1; A,W)** Staff
Illustrated lectures and discussions on fundamentals of periodontal disease and clinical problems in its treatment. Objectives of periodontal therapy; classification; diagnosis, prognosis, and treatment planning; treatment methods; interrelationships of periodontology and other phases of clinical dentistry.
- 302 **Advanced Periodontology (1; S)** Staff
- 304 **Endodontia (1; A)** Ingle
The differential diagnosis of facial pain; problems in pulp anesthesia; periapical surgery (root resection and periapical curettage); and systemic antibiotic therapy.
- 331 **Oral Pathology (4; A)** Thomas, Ogilvie, Gallagher
Clinical pathological problems, including dental caries, pulp reaction to filling materials, pulp and periapical pathology, histopathology of periodontal disease, unerupted teeth, tooth resorption, soft tissue lesions, cysts, and benign and malignant oral tumors.
- 346 **Clinical Periodontology (3; AWS)** Staff
Treatment of routine cases of periodontal disease; oral prophylaxis.
- 349 **Clinical Endodontia (1½; AWS)** Staff
Root canal therapy.
- 400 **Advanced Periodontology (1; A)** Staff
Systemic factors in periodontal disease, clinical laboratory tests, nutritional deficiencies, occlusal dysfunction, preventive periodontics, and recent advances in periodontology.
- 446 **Advanced Clinical Periodontology (3; AWS)** Staff
Advanced and unusual cases of periodontal disease, including nutritional deficiencies, occlusal equilibration, and periodontal surgery.
- 449 **Advanced Clinical Endodontia (1½; AWS)** Staff
In addition to filling several root canals, the student performs periapical surgery and at least three minor operations (pulp capping, pulpotomy, or bleaching).

PROSTHODONTICS

Executive Officer: HARRY A. YOUNG, C404 Health Sciences Building

Professor: H. A. Young.

Associate Professor: C. Regli.

Lecturers: C. S. Ballard, B. Jankelson, W. A. Sykes, R. F. West.

Senior Consultant: C. J. Stansbery.

Clinical Associates: C. O. Anderson, T. J. Riley, Jr., F. P. Barnhart.

Clinical Assistants: W. L. Kydd, C. H. Smith, H. E. Burgess, G. Conley, R. F. Hoar, N. K. Jensen, P. McClain, G. S. Patterson, L. W. Reed.

Prosthodontics is the construction and fitting of artificial dentures.

COURSES

- 131 **Complete Denture Technic (8; S)** Regli, Staff
Theories, principles, and technics of constructing complete dentures.
- 231, 232 **Removable Partial Denture Technic (4,4; A,W)** Regli, Staff
Theories, principles, and technics of constructing removable partial dentures.
- 300, 301, 302 **Complete Denture Prosthodontics (1,1,1; A,W,S)** Young
Evolution of concepts and operative procedures employed in clinical complete denture treatments.
- 303, 304 **Removable Partial Denture Prosthodontics (1,1; W,S)** Regli
Evolution of clinical procedures and concepts; discussion of operative procedures employed in clinical removable partial denture treatments.
- 346 **Junior Clinical Prosthodontics (8; AWS)** Staff
Clinical treatment of edentulous and partial edentulous patients.
- 400, 401 **Advanced Complete Denture Prosthodontics (1,1; A,S)** Young, Special Lectures
Evolution, development, and requirements of dental articulators; theories and concepts of mandibular movements and denture occlusions; maxillofacial prosthesis and special appliances; variations in concepts and office practice procedures.
- 402 **Advanced Removable Partial Denture Prosthodontics (1; W)** Regli
Concepts related to stress control, methods of construction, and materials used. Biological and physical considerations in designing. Indications and uses of specialized appliances.
- 446 **Senior Clinical Prosthodontics (5; AWS)** Staff
Clinical treatment of edentulous and partial edentulous patients. Construction of complete dentures and removable partial dentures; repairs of both types of dentures.

COURSES FOR GRADUATES ONLY**561 Immediate Dentures (4; AWS)****Young-Regli**

A seminar-clinic in removable partial denture treatments. Discussions of diagnosis and treatment planning; variations in basic denture procedures; the surgical operations of preparing the ridges for dentures; tissue reaction and wound healing; postoperative care; patient information. Clinical operations using procedures and equipment for denture construction.

562 Removable Partial Dentures (4; AWS)**Young-Regli**

A seminar-clinic in removable partial denture treatments. Discussions of diagnosis and treatment planning, stressing mucosa, bone, and abutment teeth, and the influence of natural and modified tooth crown on abutment values. Clinical operations using procedures and equipment for removable partial denture construction.

DENTAL HYGIENE**Director: Esther M. Wilkins, B324 Health Sciences Building**

Assistant Professor: E. M. Wilkins.

Instructors: A. M. Beat, H. M. Newell, M. A. Weidinger.

The Department of Dental Hygiene has been organized and developed to meet the standards of the Council on Dental Education of the American Dental Association.

Two curricula are offered. The two-year basic curriculum, for undergraduate students, provides preparation for the professional practice of dental hygiene. It includes adequate clinical experience and theoretical study to enable its graduates to meet the requirements of a state board of dental examiners for licensure as registered dental hygienists. The other curriculum, for graduate dental hygienists, provides background and training for administrative work with specialization directed toward the field of practice selected by the student. Both curricula lead to the Bachelor of Science degree.

ADMISSION

Applications and all credentials should be sent to the Committee on Admissions of the School of Dentistry. On or before March 1, each applicant must submit the following: (1) formal application for admission on the form furnished by the School of Dentistry; (2) official transcript of previous academic record (sent directly to the Committee on Admissions from the registrar of the institution where study was completed) showing the complete record with grades and credit hours, subjects the applicant is taking or will take to complete her preprofessional training prior to registration in the Department of Dental Hygiene, and credit granted for high school study; (3) two unmounted recent photographs (2 by 3 inches); and (4) at least two letters of recommendation, one from a previous science instructor and one from a business or professional person.

The Committee on Admissions will consider as candidates for entrance to the basic curriculum of the Department of Dental Hygiene individuals who meet the entrance requirements of the University of Washington and the College of Arts and Sciences in the University, and have completed 90 academic quarter credits, together with the required quarters of physical education activity, in an accredited university or college. Minimum course requirements for entrance are: 9 quarter credits in English composition, 10 in biology, 10 in inorganic chemistry, 5 in physics, 5 in psychology, 5 in public speaking, and 5 in sociology. Of the remaining 44 credits, 10 must be in the humanities and 20 in the social sciences. The basic curriculum is open only to women between the ages of eighteen and thirty-five. Before admission is granted, an interview is required. One class of twenty-five dental hygiene students is admitted each spring.

Students who are taking their preprofessional training at the University follow the two-year pre-dental hygiene program offered in the College of Arts and Sciences.

Candidates for admission to the graduate hygienist curriculum must be graduates of an approved school of dental hygiene.

BACHELOR OF SCIENCE

BASIC CURRICULUM. This program includes specific courses in the Schools of Dentistry and Medicine and the Colleges of Pharmacy and Arts and Sciences. The student takes in sequence all the courses offered for undergraduates in the Department of Dental Hygiene and the following additional courses: Chemistry 230 (Organic); Conjoint 317-318 (Elementary Anatomy and Physiology); Home Economics 300

(Nutrition); Microbiology 301 (General Bacteriology); Nursery School 305 (Personality Growth of the Preschool Child); Pathology 302 (General); Physical Education 292 (First Aid and Safety); Pedodontics 200 (Preventive Dentistry); Pharmacy 352 (Pharmacy and Therapeutics); and Public Health 402 (Communicable Disease Control), 412 (Organizations and Services), 461 (School and Community Health Programs), and 464 (Community Health Education Techniques).

A total of 180 academic credits is required for graduation.

CURRICULUM FOR GRADUATE DENTAL HYGIENISTS. This program provides dental hygienists with the opportunity to supplement their previous education with the background necessary for positions in administration, teaching, and public health. Students choose a major in either dental hygiene or public health dental hygiene. The requirement for graduation in this curriculum is a total of 180 academic credits, which must include pre-dental hygiene requirements, courses listed for the basic curriculum, and the course requirements for one of the majors. Credit toward graduation is granted for academic and professional courses previously taken at an approved college or school of dental hygiene.

MAJOR IN DENTAL HYGIENE. Students must fulfill the requirements of the pre-professional program and the basic curriculum. They must have a total of 36 to 46 credits in dental hygiene, including a minimum of 10 taken in this department. Courses 491, 492, and 493 are required.

MAJOR IN PUBLIC HEALTH DENTAL HYGIENE. A program is being formulated for this major. The standards for proficiency in public health education, as established in the Department of Public Health and Preventive Medicine within the School of Medicine, will be maintained in the requirements.

COURSES FOR UNDERGRADUATES

- | | |
|---|----------------------------------|
| 300 Dental Procedures (3; A) | School of Dentistry Staff |
| Lectures in dental procedures, with emphasis on the application of dental assisting. | |
| 331 Dental Anatomy (4; A) | Pratt |
| Morphology of permanent and deciduous teeth; sketching and carving of essential units. | |
| 332 Dental Materials (2; W) | Gaskill |
| Survey of the physical and chemical properties of dental materials, with laboratory experience in their manipulation. | |
| 333 Oral Radiographic Technique (2; A) | Wilkins |
| Principles and procedures in radiographic technique. | |
| 334 Oral Histology (3; W) | Ogilvie |
| Development and microscopic anatomy of structures of the oral cavity. | |
| 335 Oral Prophylaxis (2; W) | Wilkins, Beat, Newell |
| Objectives and principles of oral hygiene; instrumentation and procedure of the oral prophylaxis; training in digital skill. | |
| 346 Clinical Dental Procedures (1; W) | School of Dentistry Staff |
| Clinical experience in dental assisting. | |
| 347 Clinical Oral Prophylaxis (1; S) | Wilkins, Beat, Newell |
| Clinical experience in the performance of the oral prophylaxis, topical application of sodium fluoride, and home care instruction for patients. | |
| 400 Oral Pathology and Periodontology (3; A) | Thomas, Cornish |
| Study of pathological disorders of the oral structures. Principles of periodontia. | |
| 401 Office Procedures and Ethics (2; S) | Anderson, Wilkins |
| Dental office and clinic procedure; dental and dental hygiene ethics. | |
| 446 Dental Clinic Practice (2; WS) | Wilkins, Weidinger |
| Advanced clinical practice, including work in the Child Health Center and in public health and School of Dentistry clinics. | |
| 447, 448, 449 Dental Hygiene Practice (2,2,2; A,W,S) | Wilkins, Beat, Newell |
| Advanced application of the principles of clinical dental hygiene. | |

COURSES FOR GRADUATE DENTAL HYGIENISTS

- | | |
|---|----------------|
| 491 Seminar in Dental Hygiene (2; A) | Wilkins |
| Study of professional education, accreditation, legislation, organization, and literature. Responsibilities of the dental hygienist to the community. | |
| 492 Readings in Current Literature in Dental Hygiene and Preventive Dentistry (2; A) | Wilkins |
| Discussion of reported readings and survey of background material, with emphasis on dental research and its application to dental health education. | |
| 493 Problems in Dental Hygiene (2-4; A) | Wilkins |
| Problems for study directed to increase understanding in the selected field of practice. Presentation of background, causes, program, and evaluation. | |

402-403 Princ. Dental Hygiene Practice (1)
 405-406 Oral Pathology (1)
 407-408 Princ. Periodontology (1)

COLLEGE OF EDUCATION

Dean: FRANCIS F. POWERS, 230 Education Hall

Professors: J. E. Corbally, E. M. Draper, A. Dvorak, W. J. Osburn, G. D. Strayer, Jr., C. T. Williams.

Professors Emeriti: F. E. Bolton, T. R. Cole, E. B. Stevens.

Associate Professors: A. H. Hayden, J. H. Jessup.

Assistant Professors: A. R. Baily, J. A. Barr, H. Boroughs, Jr., C. MacDonald.

Instructor: H. V. Batie.

Co-operating Faculty: Deans A. Grimshaw, L. S. Woodburne; Directors G. Boughton (acting), S. Chapple, H. P. Everest, G. Hughes, W. F. Isaacs, G. E. Taylor; Executive Officers C. B. Allendoerfer, K. C. Cole (acting), P. C. Cross, R. K. Cutler, G. E. Goodspeed, R. B. Heilman, C. L. Hitchcock, W. S. Holt, G. D. Hudson, J. R. Huber, R. B. Loucks, G. A. Lundberg, J. H. Manley, A. W. Martin, J. B. McDiarmid, H. L. Nostrand, L. E. Powers, H. G. Rahskopf, J. I. Rowntree, C. C. D. Vail, R. M. Wilson; Professors H. A. Bone, G. H. Cady, J. A. Conway, C. M. Gates, M. H. Hatch, W. M. Read, C. R. Strother, C. L. Utterback, F. G. Williston, W. E. Wilson; Associate Professors S. W. Bijou, H. W. Blaser, M. A. de Vries, H. Hall, D. F. Harrington, D. G. Hitchner, A. R. Jerbert, P. Johnson, R. W. Kenworthy, L. E. McAdams, H. McLellan, H. C. Meyer, T. F. Normann, G. S. Reeves, L. H. Rulifson, L. V. Simpson, M. F. Tidwell, A. Vargas-Baron; Assistant Professors A. A. Auernheimer, C. E. Bowerman, W. Brazeau, H. M. Brier, M. R. Broer, D. W. Emery, K. Fox, E. A. Groves, W. C. Grummel, D. Home, D. G. MacLean, O. W. Nelson, C. L. Peek, R. L. Politzer, C. A. Root, A. Sorenson, M. A. Turner, C. E. Vavra, E. H. Waters; Lecturers H. A. Murphy, E. A. Rankin; Instructors J. E. Carter, S. Fuller, P. E. Hager, E. M. Jenks; Acting Instructor M. A. Alexander.

THE College of Education is a professional college for teachers. It offers curricula leading to public school certification on the elementary and secondary levels, and to the degrees of Bachelor of Arts, Bachelor of Science, and Bachelor of Arts in Elementary Education. Courses leading to the degrees of Master of Education, Master of Arts, Doctor of Education, and Doctor of Philosophy are offered through the Department of Education, which also administers the College's professional education courses. Graduate and undergraduate students in the College take both professional education courses and courses in specialized subjects given in other schools and colleges of the University.

The College of Education maintains a Bureau of Teacher Service and Placement to help qualified students and graduates find positions. Students who wish to use this service should register with the Bureau, 113 Education Hall, during their senior year, and should obtain recommendations before leaving the University, while their work and personal qualities are clear in the minds of their instructors. These records are kept in the Bureau's files for use when needed.

ADMISSION

The University requirement for entrance is 16 high school units (see page 15 for other admission regulations). The College of Education requires a 2.2 grade-point average in high school studies, and also requires that the 16 units include 2 units of one foreign language, 1 unit of laboratory science, 1 unit of elementary algebra, 1 unit of plane geometry or second-year algebra, and 1 unit of social science. Students with deficiencies may enter the College of Education by means of special petition. The requirement of 2 units of foreign language may be met with 15 credits in a foreign language and/or in English composition or literature, exclusive of English 101, 102, and 103.

Students may enter the pre-education program of the College of Arts and Sciences (see page 79) if they have not decided which education curriculum to enter or if their high school grade-point average is lower than that required for admission to the College of Education.

SCHOLARSHIP

The College of Education requires that all students maintain a cumulative 2.2 grade-point average.

GRADUATION

The graduation requirements of the University are 180 academic credits, including Physical Education 110 or 175 (Health Education); the required quarters of physical education activity and/or military training; the senior year spent in residence; and 60 upper-division credits (see page 28 for more detailed information about these requirements).

Additional graduation requirements of the College of Education are:

1. The maintenance of a 2.2 cumulative grade-point average.
2. Completion of English 101, 102, 103 (Composition) or the equivalent.
3. Fulfillment of group requirements. Courses taken by education students are in three main groups: humanities, social sciences, and sciences. Each student must complete 30 credits in one group, 20 credits in another, and 10 credits in the remaining group (see page 45 for a list of subjects by groups). Physical Education 110 or 175 (Health Education) and English 101, 102, 103 (Composition) may not be used to fulfill group requirements.
4. Completion of at least 9 credits in education courses.
5. Completion of the major requirements for one of the degrees offered by the College of Education.

BACHELOR OF ARTS

To obtain the Bachelor of Arts degree, education students may major in art, business education, chemistry, civics, drama, economics, English, French, geography, German, history, industrial education, journalism, Latin, mathematics, music, physical education, political science, sociology, Spanish, or speech. The requirements for each major are included in the first area of concentration in that subject (see pages 205 to 212).

BACHELOR OF SCIENCE

To obtain the Bachelor of Science degree, students may major in biology, chemistry, geology, health education, home economics, mathematics, physics, or psychology. The requirements for each major are included in the first area of concentration in that subject (see pages 205 to 212).

BACHELOR OF ARTS IN ELEMENTARY EDUCATION

Students who wish to emphasize elementary school teaching may choose a major in elementary education. The requirements for this major include 38 credits in education. Courses must include Education 209, 370E, 371K or E, 374, 376, 377X-Y-Z, and 378C-D, or approved substitutes.

TEACHER CERTIFICATION

The State Board of Education, charged by law with the responsibility of establishing the types and kinds of teaching certificates in the state of Washington, has by official action instituted a general certificate in this state. It is no longer possible for a student to start work toward an elementary or secondary certificate as such, since these were abolished as original certificates on September 1, 1951, at which time the provisional general certificate replaced them.

Transfer students who have been graduated from an approved four-year teacher-training institution are accepted on a graduate basis, but they must meet all the professional undergraduate requirements before a teaching certificate is issued. Claims for exemption from specific requirements are passed upon by the Registrar and by the Dean of the College of Education. Transfer students must present a grade-point average of 2.2 for admittance to education courses leading to certification. When they have spent three quarters at the University of Washington, their grade point is based on grades received at this institution and must meet the 2.2 requirement if they are to qualify for the teaching certificate.

Transfer students working toward the provisional general certificate must earn 9 credits in education courses, 10 credits in the first broad area of concentration or basic academic field, and 5 credits in the second broad area of concentration at this University.

PROVISIONAL GENERAL CERTIFICATE

The provisional general certificate is valid for one calendar year from date of issue and must be registered annually up to a maximum of four years. During this time, the teacher should meet the requirements for a standard general certificate.

Requirements for the provisional general certificate are:

1. A Bachelor of Arts, a Bachelor of Science, or a Bachelor of Arts in Elementary Education degree.
2. Evidence of such general scholarship and personal and moral qualities as give promise of success.
3. United States citizenship.
4. The following general courses: English 101, 102, and 103 (Composition); 6 quarters of physical education activity; Physical Education 110 or 175 (Health); Speech 100 (Introduction); Psychology 100 (General); Psychology 306 (The Child) or equivalent; History 464 (State of Washington); Music 107 (Survey) or Education 377 (Music for Elementary Teachers) or approved substitute; Art 100 (Introduction) or Education 376 (Art in the Elementary School) or approved substitute; Public Health 461 (School and Community Health Programs); and electives to satisfy College of Education group requirements.
5. Education courses in this sequence: Education 230; 209 and 370 concurrently; 370E; one special methods course; 374; 390; 371K, E, X, or S; 372E, X, or S; and 360.
6. A cumulative grade-point average of 2.2 or above; an average of C or above in all education courses, with a C or above in Education 371E, X, or S; and an average of C or above in each area of concentration or basic academic field.
7. A signed oath of allegiance as a citizen of the United States.
8. A health examination within six months before the certificate is granted.
9. Either a first and second broad area of concentration, or a basic academic field and a second broad area of concentration.

For purposes of teacher certification, fields of study are divided into five general areas: fine and applied arts; health, including physical education; language arts; science and mathematics; and social studies.

The first broad area of concentration is a group of courses in one academic subject, plus related courses in the same area. It includes degree requirements and is required of students who wish to emphasize secondary school teaching.

The second broad area of concentration is a group of courses (15 to 25 credits) which may be chosen from one of the five general areas. This group should not be in the same general area as the first area of concentration or the basic academic field. It is required of all students who wish to certify.

The basic academic field is a group of courses in one academic subject, plus related courses in the same area. It is required of students who wish to emphasize preparation for elementary teaching.

Candidates for the provisional general certificate may emphasize training for teaching in either elementary or secondary schools.

Elementary Emphasis includes (in addition to the professional and general requirements listed in paragraphs 1 through 9 above):

1. A basic academic field in one of the areas listed below.
2. A second area of concentration in one of the areas listed below.
3. 20 credits chosen from the following: Drama 437; Education 389; Geography 100; History 241; Home Economics 300; Home Economics 356 or Sociology 352; Librarianship 451 or 452; and Sociology 100.

Secondary Emphasis includes (in addition to the professional and general requirements listed in paragraphs 1 through 9 above):

1. A first area of concentration in one of the subjects listed below.
2. A second area of concentration in one of the subjects listed below.

The various areas as established by the State Board of Education are given below, along with the specific requirements for each area as defined by the College of Education.

AREA I, FINE AND APPLIED ARTS

Art

FIRST AREA OF CONCENTRATION. The requirements are: Art 105, 106, 107, 109, 110, 111, 112, 253, 254, 255, 256, 258, 272, 300, 301, 302, 303, 304, 305, 362, 463, 466, 495, 496, and 497; Architecture 100 and 101; Philosophy 445 or Liberal Arts 111; plus recommended courses to complete the area. (The following courses are suggested for the thirteenth quarter; they may be taken either before or after teaching experience: 320, 326, 369, 450 or 451, and 464.)

BASIC ACADEMIC FIELD. The requirements are: 45 to 48 credits, including Art 105, 106, 107, 109, 111, 112, and 151; 6 credits from Art 253 (or 254 or 255), 256, 258, 272, 300, 302, 303, 305, and 326 (or 329); plus recommended courses to complete the field.

SECOND AREA OF CONCENTRATION. This program should be planned in consultation with an adviser.

Business Education

FIRST AREA OF CONCENTRATION. The requirements are: Accounting 150, 151, and 255; Business Communications 310; Business Law 201; Business Statistics 201; Finance 201; General Business 101; Human Relations 460; Marketing 301; Production 301; Secretarial Training 10, 111, 112, 115, 120-121, and 122; 10 credits selected from secretarial training, accounting, or marketing courses; plus recommended courses to complete the area.

BASIC ACADEMIC FIELD. The requirements are: Accounting 150, 151, and 255; Business Communications 310; General Business 101; Business Law 201; Marketing 301; Secretarial Training 111, 112, 115, and 120-121; Education 324 and 325; plus recommended courses to complete the field.

SECOND AREA OF CONCENTRATION. The requirements are: Accounting 150 and 151; Secretarial Training 112, 115, 120-121, and 122; Education 324 and 325; plus recommended courses to complete the area.

Home Economics

FIRST AREA OF CONCENTRATION. The requirements are: Home Economics 101, 115, 125, 134, 215, 234, 248, 307, 315, 338, 347, 348, 354, 356, and 457; 3 credits from Home Economics 407, 434, 447, or 495; Art 109; Chemistry 101-102; Economics 200; Nursery School 305; Nursing 100; Sociology 110; Zoology 208; Microbiology 301; plus recommended courses to complete the area.

BASIC ACADEMIC FIELD. The requirements are: 45 credits, including Home Economics 101, 115, 125, 134, 215, 234, 248, 307, 347, 348, 354, 356, and 457; plus recommended courses to complete the field.

SECOND AREA OF CONCENTRATION. The requirements for specialization in textiles, clothing, and art are: Home Economics 125, 134, 234, and 347; and electives selected from 321, 322, 329, 334, 338, 426, and 434. The requirements for specialization in food, nutrition, and health are: Home Economics 115, 215, 300, 350, and 457; and Nursing 100. The requirements for specialization in family relationships and child welfare are: Home Economics 110, 350, 356, and 457; Nursery School 305. In each specialization, recommended courses may be added to complete the areas.

Industrial Education

FIRST AREA OF CONCENTRATION. The requirements are: 36 credits, including Education 180, 181, 280, 281, 380, 383, 384, 386, and 388; Mechanical Engineering 201, 202, 203, and 305; Architecture 105; plus recommended courses to complete the area.

BASIC ACADEMIC FIELD. The requirements are the same as those for the first area of concentration.

SECOND AREA OF CONCENTRATION. The requirements are: Education 180, 181, 280, 281, and 388; Mechanical Engineering 201, 202, and 203; plus recommended courses to complete the area.

Music

Preparatory to entrance to the professional teacher-training courses, an examination will be given in piano, voice, and syllable reading at the end of the sophomore year. Students who offer piano for instrumental entrance requirements shall complete 12 credits in Music 130A before graduation. Students who have substituted corresponding proficiency on another instrument shall remove entrance requirements by the end of the freshman year.

One year of study, or the ability to demonstrate attainment equal to Music 110C and 120C, is required.

All students majoring in music education will be required to meet the following performance standards before being approved for directed teaching: (1) play ten traditional community songs from memory; (2) improvise a suitable accompaniment to a melody in any given key; (3) play singly or in combination parts of a choral or instrumental composition suitable for use in the public schools; (4) transpose simple melodies; and (5) perform in a musical manner a group of short compositions suitable for use in the elementary-grade music program.

FIRST AREA OF CONCENTRATION. The requirements are: Music 101, 102, 103, 110C, 120C, 124, 125, 126, 201, 202, 203, 207, 208, 209, 224, 225, 226, 244, 304, 344, 345, 346J, 384, 385, and 386; 9-18 credits in vocal or instrumental instruction; 6 credits in music ensemble; plus recommended courses to complete the area.

BASIC ACADEMIC FIELD. The requirements are: Music 101, 102, 103, 110A, 110C; 111 or 112, 120A, and 120C; 4 credits from 124, 125, 126, 224, 225, and 226; 244, 304, and 385; one year of music ensemble; Education 377X-Y-Z; plus recommended courses to complete the field.

SECOND AREA OF CONCENTRATION. The requirements for a vocal area are: Music 101, 102, 103, 130C, 304, 346J, 384, 385, 386; 3 credits in upper-division choral ensemble; plus recommended courses to complete the area. The requirements for an instrumental area are: Music 101, 102, 103, 124, 125, and 126; 130B, 130F, or 130G; 224, 225, 226, 244, 304, 346J, 384, 385, and 386; plus recommended courses to complete the area.

AREA II, HEALTH (INCLUDING PHYSICAL EDUCATION)

Health Education (Public Health Emphasis)

FIRST AREA OF CONCENTRATION. The requirements are: 45 credits, including Public Health 301 or 402, 412, 464, and 485; Conjoint 496 or Education 402; Physical Education 291, 292, 345, and 453; Sociology 353 or Home Economics 356; Psychiatry 467 or Education 408; Home Economics 300; Microbiology 301; plus recommended courses to complete the area.

BASIC ACADEMIC FIELD. The requirements are: 40 credits, including Public Health 301 or 402, 412, 464, and 485; Public Health 496 or Education 402; Physical Education 291, 292, 345, and 453; Psychiatry 467 or Education 408; Home Economics 300; Sociology 353 or Home Economics 356; Microbiology 301 or equivalent; plus recommended courses to complete the field.

SECOND AREA OF CONCENTRATION. The requirements are: Physical Education 291, 292, and 453; Public Health 301 and 412; plus recommended courses to complete the area.

Physical Education for Men

FIRST AREA OF CONCENTRATION IN PHYSICAL EDUCATION. The requirements are: Physical Education 161, 162, 163, 264, 265, 266, 181, 182, 183, 284, 285, 286, 190, 291, 292, 293, 294, 309, 322, 324, 340, 345, 358, 361, 364, 363, 447, 450, 465, and 493; 6 credits from 370, 371, 372, and 373; Anatomy 301; Chemistry 101-102; Sociology 110; Zoology 111 and 112, or Biology 101J-102J; Zoology 114 and 208; plus recommended courses to complete the area.

FIRST AREA OF CONCENTRATION IN HEALTH EDUCATION. The requirements are: Physical Education 291, 292, 345, and 453; either Anatomy 301 and Zoology 208 or 358, or Conjoint 317-318; either Biology 101J-102J or Zoology 111 and 112; Chemistry 101 and 102; Sociology 110; Conjoint 496 or Education 402; Home Economics 300;

microbiology or an approved substitute; Psychiatry 467 or Education 408; Public Health 402 or 301; Public Health 412 and 464; Sociology 353 or Home Economics 356; plus recommended courses to complete the area.

BASIC ACADEMIC FIELD. Students who plan to complete a basic academic field in physical education should consult advisers in the College of Education and the School of Physical Education.

SECOND AREA OF CONCENTRATION IN PHYSICAL EDUCATION. The requirements are: Physical Education 161, 162, 163, 264, 265, 266, 181, 182, 183, 184, 185, 186, 345, 358, 361, 363, 364, and 450; 370, 371, 372, or 373; Zoology 118, 208, or 358; plus recommended courses to complete the area.

SECOND AREA OF CONCENTRATION IN HEALTH EDUCATION. The requirements are: Physical Education 291, 292, and 453; Public Health 301 and 412; plus recommended courses to complete the area.

Physical Education for Women

FIRST AREA OF CONCENTRATION IN PHYSICAL EDUCATION. The requirements are: Physical Education 115, 121, 157, 176, 177, 178, 281, 282, 283, 284, 190, 292, 293, 301, 311, 312, 318, 322, 328, 345, 356, 362, 363, 364, 450, 466, and 480; Anatomy 301; Biology 101J-102J, Zoology 111 and 112, or Chemistry 101 and 102; Sociology 110; Zoology 208 or 358; 5 credits in physics or an approved elective; plus recommended courses to complete the area. If this area is not accompanied by a second area in health education, Physical Education 453 and 465 and Home Economics 300 are also required.

FIRST AREA OF CONCENTRATION IN HEALTH EDUCATION. The requirements are: Physical Education 291, 292, 345, and 453; either Anatomy 301 and Zoology 208 or 358, or Conjoint 317-318; either Biology 101J-102J or Zoology 111 and 112; Chemistry 101 and 102; Sociology 110; Conjoint 496 or Education 402; Home Economics 300; Microbiology 301 or approved substitute; Psychiatry 467 or Education 408; Public Health 301 or 402, 412, and 464; Sociology 353 or Home Economics 356; plus recommended courses to complete the area (chosen in consultation with an adviser).

BASIC ACADEMIC FIELD. Students who plan to complete a basic academic field in physical education should consult advisers in the College of Education and the School of Physical Education.

SECOND AREA OF CONCENTRATION IN PHYSICAL EDUCATION. The requirements are: Physical Education 176, 177, 178, 292, 309, 312, 345, and 363; Zoology 118, 208, or 358; plus recommended courses to complete the area (chosen in consultation with an adviser).

SECOND AREA OF CONCENTRATION IN HEALTH EDUCATION. The requirements are: Physical Education 291, 292, and 453; Public Health 301 and 412; plus recommended courses to complete the area.

AREA III, LANGUAGE ARTS

Drama

FIRST AREA OF CONCENTRATION. The requirements are: Drama 101, 102, 146, 147, 148, 251, 252, 253, 403, 404, 405, 406, 414, 421 or 423, 422, 427, 428, 429, 451, 452, 453, 481 or 482 or 483, and 497; 25 credits in literature, including English 264, 265, 370, and 371 or 372; plus recommended courses to complete the area. A senior comprehensive examination is also required.

BASIC ACADEMIC FIELD. The requirements are: 45 credits, including Drama 101, 102, 146, 147; 6 credits from 251, 252, and 253; 307, 308, or 309; 434, 435, or 436; 6 credits from 403, 404, 405, 406, and 414; 6 credits from 427, 428, 429 or 451, 452, and 453; 497; 10 credits in drama electives; plus recommended courses to complete the field.

SECOND AREA OF CONCENTRATION. The requirements are: 33 credits, including Drama 101, 102, 146, 147, 148, 251, and 252; 6 credits from 403, 404, 405, 406, and 414; 6 credits from 427, 428, 429, 451, 452, and 453; 497; plus recommended courses to complete the area.

English

FIRST AREAS OF CONCENTRATION. The requirements for specialization in advanced writing are: 50 credits, including English 258, 264 or 370, 377 or 374, 387 or 417; 448 or 449; 404, 406, or 466; 6 credits from 251, 252, and 253; 6 credits from 261, 262, and 263; 6 credits from 328, 329, and 330; 6 credits from 277, 278, and 279; 15 credits

in upper-division writing courses, 10 of these in consecutive courses; Education 326; Speech 240; plus recommended courses to complete the area. The remaining credits may be obtained in courses in advanced writing, literature, and related fields.

The requirements for specialization in literature are: 50 credits, including English 257 or 258, 351, and 370; 344, 345, 367, 368, or 369; 374, 375, 377, 378, or 379; 361, 362, or 363; 387 or 417; 10 credits in courses which continue or are closely related in period or subject matter to two of those already chosen; Education 326; Speech 240; 3 credits in advanced writing; plus recommended courses to complete the area. The remaining credits may be obtained in upper-division courses in literature and advanced writing, and in courses in foreign literature in translation offered by foreign language departments.

BASIC ACADEMIC FIELD. The requirements are: 45 credits, including English 257 or 258, 351, and 370; 344, 345, 367, 368, or 369; 374, 375, 377, 378, or 379; 361, 362, or 363; 15 credits in English electives, 10 of which continue or are closely related to two of the upper-division courses already chosen; plus recommended courses to complete the field.

SECOND AREAS OF CONCENTRATION. One area requires 36 credits, including Speech 240; English 387 or 417; at least 3 credits in advanced writing; and electives in literature (including Shakespeare and nineteenth-century English and American literature) to complete the required credits. The other area requires 24 credits, including Speech 240; one course each in advanced writing and literature; and electives to complete the requirement, preferably including either 264, 265, and 266, or 257, 258, and 387 (or 417). The requirements in each case include recommended courses to complete the area.

French

FIRST AREA OF CONCENTRATION. The requirements are: 45 credits, including French 201, 202, 203, 301, 302, 303, 304, 305, 306; 327, 328, 329 or 330; 341, 358, and 359; 12 credits in electives and some directed reading; plus recommended courses to complete the area.

BASIC ACADEMIC FIELD. The requirements are the same as those for the first area of concentration.

SECOND AREA OF CONCENTRATION. The requirements are: a minimum of 24 credits in French courses numbered above 203; plus recommended courses to complete the area.

Germanic Languages and Literature

Scientific German, courses in English translation, and first-year German are not counted toward the major or toward teaching areas.

FIRST AREA OF CONCENTRATION. The requirements are: 29 credits, including German 207, 230, 300, 301, 302, 303, 401, 402, and 403; Education 330; plus recommended courses to complete the area.

BASIC ACADEMIC FIELD. The requirements are the same as those for the first area of concentration.

SECOND AREA OF CONCENTRATION. The requirements are: 20 credits, including German 207, 300, 301, 302, 303, 401, 402, 403, and 3 credits in electives; Education 330; plus recommended courses to complete the area.

Journalism

FIRST AREA OF CONCENTRATION. The requirements are: Journalism 100, 200, 201, 220, 300, 303, 306, 311, 328, 329, 333, 334 and 375J; plus recommended courses to complete the area. All journalism courses must be scheduled by arrangement with the Director of the Division of Journalism. A 3.0 minimum grade-point average must be maintained in all journalism courses, otherwise credits may be applied only toward a second area of concentration.

BASIC ACADEMIC FIELD. The requirements are the same as those for the first area of concentration.

SECOND AREA OF CONCENTRATION. The requirements are: Journalism 200, 201, 220, 300, 306, and 375J; plus recommended courses to complete the area. All journalism courses must be scheduled by arrangement with the Director of the Division of Journalism.

Latin

FIRST AREA OF CONCENTRATION. The requirements are: 27 credits in upper-division Latin courses; 9 credits chosen with the consent of the Department from upper-division Latin and Greek courses, Classics 330, History 201-202, 403, and 404, and Philosophy 320; plus recommended courses to complete the area.

BASIC ACADEMIC FIELD. The requirements are the same as those for the first area of concentration.

SECOND AREA OF CONCENTRATION. The requirements are: 20 credits in courses numbered above 300, including Latin 309; plus recommended courses to complete the area.

Librarianship

A high school librarian's certificate is required of all librarians in accredited high schools. Applicants must hold a teaching certificate. Course requirements are as follows:

1. For librarianship in schools with enrollment of 100 or less: a minimum of $7\frac{1}{2}$ quarter credits in approved courses in library science.
2. For librarianship in schools with enrollment of 100 to 200: a minimum of 15 quarter credits in approved courses in library science.
3. For librarianship in schools with enrollment of 200 to 500: one year of training in an approved library school recommended. The minimum requirement for schools in this group is the same as that in paragraph 2 above.
4. For librarianship in schools with enrollment of 500 or more: one year of training in an approved library school.

SECOND AREA OF CONCENTRATION. The requirements are: 18 credits, including Librarianship 451, 460, 461, 462, 463, and 464; plus recommended courses to complete the area.

Spanish

FIRST AREA OF CONCENTRATION. The requirements are: 45 credits, including Spanish 201, 202, 203, 301, 302, 303, 304, 305, 306, 358, and 359; 14 credits in electives and some directed reading; 6 credits from 327, 328, 329 and 330; plus recommended courses to complete the area.

BASIC ACADEMIC FIELD. The requirements are the same as those for the first area of concentration.

SECOND AREA OF CONCENTRATION. The requirements are: 24 credits, including Spanish 210, 211, and 212; plus recommended courses to complete the area. Only courses numbered above 203 are counted toward the total requirements.

Speech

FIRST AREA OF CONCENTRATION IN GENERAL SPEECH. The requirements are: 49 credits, including Speech 100, 110, 120, 230, 232, 240, 260, 352, 470, and 498; one approved workshop course (339, 349, or 369); one approved 5-credit upper-division elective; Education 342; plus recommended courses to complete the area. (In the fifth year, students must elect an additional 15 credits of speech courses approved by the Department of Speech, including Speech 400 unless it has already been completed.)

FIRST AREA OF CONCENTRATION IN SPEECH CORRECTION. The requirements are: 51 credits, including Speech 100, 110, 120, 352, 470, 471, and 473; 8 credits in clinical practice (474 and/or 484); 480, 481, 489, and 498; plus recommended courses to complete the area. (In the fifth year, students must elect an additional 14 credits in speech courses approved by the Department of Speech, including Speech 400 unless it has already been completed. It is expected that students who emphasize speech correction and hearing will also elect additional approved courses in psychology during the fifth year.)

BASIC ACADEMIC FIELD. The requirements are the same as those for the first area of concentration.

SECOND AREA OF CONCENTRATION IN GENERAL SPEECH. The requirements are: 30 credits, including Speech 100, 110, 120, 230 or 240, 352, 470; at least 2 credits in an approved speech elective; Education 342; plus recommended courses to complete the area. (In the fifth year, students must elect an additional 5 credits approved by the Department of Speech.)

AREA IV, SCIENCES AND MATHEMATICS**Biology**

FIRST AREA OF CONCENTRATION. The requirements are: 60 credits, including either Biology 101J-102J, Botany 111, or Zoology 111; Biology 451; Botany 112, 113, and 371 or 472; Zoology 112, and 358 or 400; Zoology 433, 434, or 444, or Biology 473; Zoology 463, 464, or 465; Microbiology 301; 10 credits in approved electives, usually from Botany 201, and 202 or 331, Zoology 433, 434, and 456; and Biology 401 and 473; plus recommended courses to complete the area.

BASIC ACADEMIC FIELD. The requirements are the same as those for the first area of concentration.

SECOND AREA OF CONCENTRATION. The requirements are: 30 credits, including either (1) Botany 111 and 10 credits selected from Botany 112, and 113 or 371, or (2) Biology 101J and 102J, Botany 112 or 113, and 371; either (1) Zoology 111 and 112 and any 5-credit upper-division laboratory course in zoology, or (2) Biology 101J-102J with a grade of A or B and 10 credits in any upper-division laboratory courses in zoology (if the grade in Biology 101J-102J is C, Zoology 112 must precede the laboratory courses in zoology); plus recommended courses to complete the area.

Chemistry

Grades of C or above must be obtained in all chemistry courses counted to meet the minimum requirements for a first or second area or a basic academic field.

FIRST AREA OF CONCENTRATION. The requirements are: 36 credits, including Chemistry 115, 116 (or 111, 112, 113), 221, 231, 232, 241, 242, 351, 352, and 354; one year of college physics; plus recommended courses to complete the area. The election of enough college mathematics to include some calculus is recommended.

BASIC ACADEMIC FIELD. The requirements are the same as those for the first area of concentration.

SECOND AREA OF CONCENTRATION. The requirements are: 25 credits, including Chemistry 115, 116 (or 111, 112, 113), 221, and 230; one year of high school or college physics; plus recommended courses to complete the area.

Geology

FIRST AREA OF CONCENTRATION. The requirements are: 36 credits, including Geology 205, 206, 207, and 412; plus recommended courses to complete the area.

BASIC ACADEMIC FIELD. The requirements are the same as those for the first area of concentration.

SECOND AREA OF CONCENTRATION. The requirements are: 20 credits, including Geology 101, 205, 206, and approved electives; plus recommended courses to complete the area.

Mathematics

FIRST AREA OF CONCENTRATION. The requirements are: 48 credits, including Mathematics 104, 105, 106, 307, 308, 309; 20 credits in approved electives, including 6 credits in algebra and 6 in geometry; plus recommended courses to complete the area. The only approved lower-division electives are 100 and 281.

BASIC ACADEMIC FIELD. The requirements are the same as those for the first area of concentration.

SECOND AREA OF CONCENTRATION. The requirements are: 25 credits, including Mathematics 104, 105, 106; 12 credits in approved electives; plus recommended courses to complete the area. The only approved lower-division electives are 100 and 281.

Physics

FIRST AREA OF CONCENTRATION. The requirements are: 42 credits, including Physics 121, 122, 123 (or 101, 102, 103), 321, 322, 323, 325, 326, 360, and 361; plus recommended courses to complete the area.

BASIC ACADEMIC FIELD. The requirements are the same as those for the first area of concentration.

AREA V, SOCIAL STUDIES**Civics**

FIRST AREA OF CONCENTRATION. The requirements are: 40 credits, including Political Science 100, 360, and 376; Economics 160; Sociology 110; 13 elective credits in political science; 5 credits in economics or sociology; plus recommended courses to complete the area.

BASIC ACADEMIC FIELD. The requirements are the same as those for the first area of concentration.

SECOND AREA OF CONCENTRATION. The requirements are: 25 credits, including Political Science 100 and 360; Economics 160 or Sociology 110; 13 elective credits in political science; plus recommended courses to complete the area.

Economics

FIRST AREA OF CONCENTRATION. The requirements are: Economics 200, 201, 301, and 302; plus 25 additional credits to be selected from four fields of economics other than the field of economic theory. Ten of the 25 credits must be taken in one of the four fields and 5 credits in each of the other three fields. Additional requirements are: Accounting 150, 255; either Business Statistics 201, Mathematics 281, Psychology 301, or Sociology 223; plus related courses to complete the area.

BASIC ACADEMIC FIELD. The requirements are the same as those for the first area of concentration.

SECOND AREA OF CONCENTRATION. The requirements are: 25 credits, including Economics 200, 201; three upper-division courses from three different fields of specialization; plus recommended courses to complete the area.

Far Eastern

SECOND AREA OF CONCENTRATION. The requirements are: 18 credits, including Far Eastern 110 or 310; Far Eastern 423J, or 447, or Chinese 457; Far Eastern 240, 241, 242, 243, 443, or 478; 3 or 5 credits in approved electives; plus recommended courses to complete the area. A 2.2 grade-point average is required in Far Eastern courses.

Geography

FIRST AREA OF CONCENTRATION. The requirements are: 50 credits, including Geography 100, 102, 202, 207, 210, 325, and 358; 23 credits in additional upper-division courses; plus recommended courses to complete the area.

BASIC ACADEMIC FIELD. The requirements are: 45 credits, including Geography 100, 102, 202, 207, 210, 325, and 358; 18 credits in additional upper-division courses; plus recommended courses to complete the field.

SECOND AREA OF CONCENTRATION. The requirements are: 26 credits, including Geography 100, 102, 202, 210, 325, and 370; one course numbered above 400; plus recommended courses to complete the area.

History

FIRST AREA OF CONCENTRATION. The requirements are: 50 credits, including History 101 and 102 or Social Science 101, 102, 103; History 201-202, 241, and 464; plus recommended upper-division courses to complete the area. A 2.5 grade-point average is required in history courses.

BASIC ACADEMIC FIELD. The requirements are the same as those for the first area of concentration.

SECOND AREA OF CONCENTRATION. The requirements are: 30 credits, including History 101 and 102 or Social Science 101, 102, and 103; History 241 and 464; plus recommended upper-division courses to complete the area. A 2.5 grade-point average is required in history courses.

Political Science

FIRST AREA OF CONCENTRATION. The requirements are: 40 credits, including Political Science 100, 210, 321, 351, 360, and 376; plus recommended courses to complete the area.

BASIC ACADEMIC FIELD. The requirements are the same as those for the first area of concentration.

SECOND AREA OF CONCENTRATION. The requirements are: 20 credits, including Political Science 100, 360, and 376; plus recommended courses to complete the area.

Psychology

FIRST AREA OF CONCENTRATION. The requirements are: 36 credits, including Psychology 100, 101, 200, 301, 400 or 427; plus recommended courses to complete the area.

BASIC ACADEMIC FIELD. The requirements are the same as those for the first area of concentration.

SECOND AREA OF CONCENTRATION. The requirements are: 18 credits, including Psychology 100 and 101; plus recommended courses to complete the area.

Sociology

FIRST AREA OF CONCENTRATION. The requirements are: 36 credits, including Sociology 110 or 310, 223, 230 or 430, 240, and 352 or 450; plus recommended courses to complete the area.

BASIC ACADEMIC FIELD. The requirements are the same as those for the first area of concentration.

SECOND AREA OF CONCENTRATION. The requirements are: 27 credits, including Sociology 110 or 310, and 352 or 430; plus recommended courses to complete the area.

STANDARD GENERAL CERTIFICATE

The standard general certificate has been issued since August 1951. This is a continuing certificate; it is valid as long as the holder teaches and five years thereafter.

Graduates of approved institutions who have a provisional general certificate may obtain a standard general certificate after a minimum of one year's teaching experience and the completion of additional course work. At least 45 credits above the requirements for the bachelor's degree are necessary for the standard general certificate.

Candidates for the standard general certificate must plan their entire 45-credit program (the "fifth year") in advance under the supervision of advisers in the College of Education.

CERTIFICATE CONVERSION PROGRAM

The following general eligibility requirements for teachers who hold elementary and secondary certificates were approved by the State Board of Education on June 13, 1950.

1. Persons who hold a three-year or a six-year elementary and a three-year or a six-year secondary certificate, or their equivalents, will be eligible for a standard general certificate on or after July 1, 1951, provided that they have had at least one year of teaching experience.
2. Persons who hold a three-year or a six-year elementary certificate, or the equivalent, will be eligible for the standard general certificate on or after July 1, 1951, provided that they have had at least one year of teaching experience and have completed 45 quarter credits of study beyond elementary certificate requirements, including subject matter and professional education studies as recommended in the program pattern for the general certificate. These should include laboratory experiences at the secondary level. Standards approved for supervision of the fifth college year in the program for the general certificate will apply to this study.
3. Persons who hold a three-year or a six-year secondary certificate, or the equivalent, will be eligible for the standard general certificate on or after July 1, 1951, provided that they have had at least one year of teaching experience and have completed a minimum of 24 quarter credits of professionalized subject matter, such as reading, art, music, health, physical education, and fundamental concepts of science and number, in addition to child development, elementary curriculum and procedures, and laboratory experiences on the elementary level. Standards approved for supervision of the fifth college year in the program for the general certificate will apply to this study.

CONTINUING VALIDITY OF CERTIFICATES

The following regulations on certificates now in force were also approved by the State Board on June 13, 1950.

1. Effective July 1, 1951, the standard general certificate shall be valid as long as the holder remains in teaching service and for a period of five years thereafter.

2. Effective July 1, 1951, the six-year secondary certificate shall be valid as long as the holder remains in teaching service and for a period of five years thereafter.
3. Effective July 1, 1951, the six-year elementary certificate shall be valid as long as the holder remains in teaching service and for a period of five years thereafter, provided that he has completed 45 quarter credits beyond the requirements of the certificate. Standards approved for supervision of the fifth college year in the program for the general certificate will apply to this study. *Holders of this certificate may, however, continue it in force, as at present, by earning 9 quarter credits every six years.*

RENEWAL OF CERTIFICATES

Renewal of all teaching certificates must be made through the State Office of Public Instruction, in Olympia, Washington, some time before the expiration date of the original certificate, since *a lapsed certificate may be reinstated only upon completion of additional course work.*

SPECIAL CERTIFICATES AND CREDENTIALS

Information about special types of certificates and credentials is contained in the state bulletin, *Certification of Teachers and Administrators*, which may be obtained from the State Office of Public Instruction in Olympia, Washington.

ADMINISTRATORS' CREDENTIALS

Detailed information about requirements for administrators' credentials may be obtained from the State Office of Public Instruction in Olympia, Washington. The basic requirements for administrators' credentials in accredited districts of the state are listed here.

Principals of elementary schools with six or more teachers must qualify for elementary principals' credentials; junior high school principals must qualify for junior high school principals' credentials; and high school principals devoting at least two hours per day to intraschedule administrative duties must qualify for high school principals' credentials.

Principals of union high schools and superintendents of districts with one or more elementary schools and an accredited high school must qualify for superintendents' credentials.

A teaching certificate on the proper level is a prerequisite for an administrator's credential. This certificate must be kept in force to keep the credential valid. An elementary certificate is a prerequisite for an elementary principal's credential; an elementary or secondary certificate for a junior high school principal's credential; a secondary certificate for a high school principal's credential; and a secondary certificate for a superintendent's credential. The secondary certificate must be kept in force during the time the superintendent's credential is being used.

ELEMENTARY PRINCIPAL'S CREDENTIAL

One of the two following qualifications is necessary.

1. Two or more years of successful experience as principal of an elementary school of six or more teachers prior to September 1, 1936.
2. At least two years of successful teaching experience in the elementary school or the junior high school, plus 12 quarter credits of professional courses relating to elementary administration and supervision taken subsequent to at least one year of teaching experience. Not less than 6 of the required credits must be from List A, below, and must cover at least two of the enumerated fields. The remaining credits may be from either list. Other courses within the field of elementary education may also be offered, subject to evaluation. All courses presented to satisfy the requirements for an elementary principal's credential must have been completed within ten years prior to date of application.

LIST A. Elementary curriculum; elementary administration and supervision; elementary school methods; and guidance.

LIST B. Tests and measurements; kindergarten; health and physical education; and remedial education.

JUNIOR HIGH SCHOOL PRINCIPAL'S CREDENTIAL

One of the two following qualifications is necessary.

1. Two or more years of successful experience as principal of a junior high school prior to September 1, 1936.
2. Completion of not less than four years of professional preparation and at least two years of successful teaching experience in the common schools, plus 12 quarter credits of professional courses relating to junior high school administration and supervision taken subsequent to at least one year of teaching experience. Not less than 6 of the required number of quarter credits must be from List A, below, and must cover at least two of the enumerated fields. The remaining courses may be from either list. Other courses within the field of junior high school education may also be offered, subject to evaluation. All courses presented to satisfy the requirements for a junior high school principal's credential must have been completed within ten years prior to date of application.

LIST A. Junior high school administration and supervision or high school administration and supervision; junior high school curriculum; junior high school methods; and guidance.

LIST B. Adolescence; extracurricular activities; tests and measurements; and health and physical education.

SENIOR HIGH SCHOOL PRINCIPAL'S CREDENTIAL

One of the two following qualifications is necessary.

1. Two or more years of successful experience as a high school principal prior to September 1, 1934.
2. At least two years of successful teaching experience on the secondary level, plus 12 quarter credits of professional courses relating to secondary organization, supervision, and administration taken subsequent to at least one year of teaching experience. Not less than 6 of the required number of quarter credits must be from List A, below, and must cover at least two of the enumerated fields. The remaining credits may be from either list. Other courses within the field of secondary education may be offered subject to evaluation. All courses presented to satisfy the requirements for the high school principal's credential must have been completed within ten years prior to date of application.

LIST A. High school administration and supervision; high school curriculum; guidance; and school finance.

LIST B. Educational research; extracurricular activities; health and physical education; and tests and measurements.

SUPERINTENDENT'S CREDENTIAL

One of the five following qualifications is necessary.

1. At least two years of successful experience as a superintendent prior to September 1, 1934.
2. At least four years of successful administrative experience, including two years as principal of an elementary school of six or more teachers, and two years as principal of a high school, head of a high school department with six or more teachers, or supervisor. While serving as high school principal, department head, or supervisor, at least two hours per day must have been devoted to administrative duties. (In order to qualify for a superintendent's credential on the basis of the above requirements, it is necessary to be in possession of both elementary and high school principals' credentials. It is also necessary to submit proof of having served in an elementary school of six or more teachers and, in the case of the high school experience, proof of having devoted at least two hours per day to administrative duties. Only a candidate who gained his experience prior to September 1, 1934, may qualify under this paragraph and not be in possession of both elementary and senior high school principals' credentials.)
3. At least two years of successful experience as principal of an elementary school of six or more teachers, plus 12 quarter credits of professional courses relating to organization, administration, and supervision in secondary schools taken subsequent to at least one year of teaching experience. These educational requirements are in addition to the minimum required for initial certification on the secondary level.

4. A junior high school principal whose training has been on the secondary level may apply for a superintendent's credential on the basis of two years of successful experience as principal of a regularly organized junior high school, plus 24 quarter credits of professional courses relating to organization, administration, and supervision of elementary education taken subsequent to one year of teaching experience; a junior high school principal whose training has been on the elementary level may apply for a superintendent's credential on the basis of two years of successful experience as principal of a regularly organized junior high school, plus 12 quarter credits relating to organization, administration, and supervision in secondary schools taken subsequent to one year of teaching experience; this provision does not rescind any regulations or requirements already in effect.
5. At least two years of successful experience as a high school principal, head of a high school department, or supervisor, plus 24 quarter credits of professional courses relating to organization, administration, and supervision of elementary education taken subsequent to at least one year of teaching experience. While serving as a high school administrator, at least two hours per day must have been devoted to administrative duties. These educational requirements are in addition to the minimum required for certification on the secondary level. Not less than 6 of the required number of quarter credits must be from List A, below, and must cover at least three of the enumerated fields, one of which must be school finance. The remaining credits may be from either list. Other courses within the prescribed field may also be offered, subject to evaluation.

In lieu of experience on the elementary level, courses in the following fields are accepted.

LIST A. Elementary curriculum; elementary school administration and supervision; elementary school methods; school finance; and guidance.

LIST B. Tests and measurements; kindergarten; health and physical education; and remedial education.

In lieu of experience on the secondary level, courses in the following fields are accepted.

LIST A. High school administration and supervision; high school curriculum; guidance; and school finance.

LIST B. Educational research; extracurricular activities; health and physical education; and tests and measurements.

It should be carefully noted that training may be substituted in lieu of administrative experience on one level or the other, but not on both. In other words, a candidate for a superintendent's credential must have had at least two years of successful experience as a teacher, plus two years of successful experience as an elementary, junior, or senior high school principal, or as a supervisor or head of a department in a senior high school, and as such have devoted at least two hours per day to administrative duties.

Courses that are not acceptable as graduate credit for advanced degrees at the University of Washington or the State College of Washington, or at other institutions authorized to grant such degrees and accredited by the State Board of Education, are not accepted for a superintendent's credential, except that when the teaching certificate has been earned in a secondary teacher-training institution, one-half of the 24 academic credits in elementary education in lieu of elementary administrative experience required for the superintendent's credential may be obtained on the undergraduate level at an elementary-teacher-training institution maintaining a laboratory school. Courses completed more than ten years prior to application are not acceptable. A course in school finance is required for a superintendent's credential.

The superintendent's credential is valid for a principalship in any field of service for which the holder of the credential is properly qualified with a teacher's certificate.

ADVANCED DEGREES

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School (see page 261) as well as the general departmental requirements listed below. The Department of Education requires that candidates for advanced degrees have at least 20 credits in background courses in education. One year of successful teaching or administrative experience is required for admission to candidacy for master's degrees; two years of successful teaching or administrative experience are required for admission to doctoral candidacy.

The fields in education from which students may choose courses leading to advanced degrees in education are: educational psychology; educational sociology; educational administration and supervision; elementary education; secondary education; classroom techniques; history and philosophy of education and comparative education; college problems; curriculum; guidance and extracurricular activities; and remedial and special education.

MASTER OF ARTS. The requirements are: 24 credits in education, including Education 591 and 10 credits in each of two fields of education; and 12 credits in a department other than education.

MASTER OF EDUCATION. The requirements are: 27 credits in education, including Education 591 and 4 to 7 credits in each of four fields of education; and 15 credits in two departments other than education, including 5 credits in courses numbered above 500. In addition to the fields listed above, candidates for the Master of Education degree may elect work in the fields of tests and measurements and business education. (If business education is one of the two noneducation subjects, a maximum of 10 credits in it may be offered, the 10 credits to be in business education, materials, and distributive education.) Students must take a written final examination over the selected four fields of education.

DOCTOR OF EDUCATION. The requirements are: 60 credits in education, including Education 491 or 490, 591, and 587 or 588 or 589, 12 to 15 credits in one field of education, 6 to 9 credits in each of three other fields of education, and electives to make up the total; and 45 credits in departments other than education, including 9 to 15 credits each in arts and letters, science and mathematics, foreign language, and social sciences.

In addition to the fields listed above, candidates for the Doctor of Education degree may elect a field in tests and measurements.

DOCTOR OF PHILOSOPHY. The requirements are: 70 credits in education, including Education 490, 591, a minimum of 5 credits in 587, 588, and 589, and approximately 15 credits in each of three fields of education; and either 35 credits in one department other than education, or 20 credits in each of two departments other than education.

Candidates for the doctorate who are taking a minor in education must present a minimum of 35 approved credits in education courses.

COURSES FOR UNDERGRADUATES

Courses 320 to 346J and course 375J are special methods courses in secondary subjects.

- N74 Improvement of Reading and Study Habits (0; AWS)** **Osburn**
This course is designed to increase rate and comprehension in reading and to improve study habits, so that students may achieve better grades through greater learning efficiency.
- 180, 181 Mechanical Drawing for Industrial Education Teachers (3,3; A,W)** **Baily**
Freehand sketching; orthographic projection; pictorial representation; dimensioning; lettering; developments; working drawing and blueprint reading. Prerequisite for 181, 180 or General Engineering 101.
- 182 General Shop for Industrial Education Teachers (5; W)** **Baily**
Introduction to industrial education: the common tools, materials, processes, and products of industry.
- 209 Educational Psychology (3; AWS)** **Batio, Powers**
The psychological basis of education. Recent experimentation. Prerequisites, Psychology 100 and a course in child development.
- 230 Washington State Manual (2; AWS)** **Corbally**
State Constitution and excerpts from school code. Required by law of all applicants for Washington State teaching certificates.
- 280 Fundamentals of Woodwork for Industrial Education Teachers (3; A)** **Baily**
Hand tool processes; elementary machine operations; methods of assembling and fastening; simple wood finishing. Prerequisites, 180 and 181 or equivalent.
- 281 General Metalwork for Industrial Education Teachers (5; not offered 1952-53)**
- 320 Art (2; A)** **Johnson**
Prerequisites, 370, senior standing, and permission.
- 321 Botany (2; S)** **Blaser**
Prerequisites, 370 and 25 credits in botany.
- 322 Chemistry (2; AWS)** **Cady**
Prerequisites, 370 and at least 20 credits in college chemistry with a grade-point average of 3.0.
- 323 Civics (2; S)** **Hitchner**
Prerequisite, 370.
- 324 Business Education: Bookkeeping and General Business (2; A)** **Carter**
Prerequisites, 370 and 30 credits toward a major in business education, including 10 credits in accounting.

- 325 Business Education: Typewriting, Shorthand, Transcription, and Business Communications (2; A)** **Tidwell**
Prerequisites, 370, Secretarial Training 120-121, 122, and permission.
- 326 English (5; AW)** **Emery**
Two credits count as education and 3 as English. Prerequisite, 370.
- 327 Trade and Industrial Education (3; W)** **Baily**
Prerequisite, 370.
- 329 French (2; S)** **Simpson**
Prerequisites, 370, French 303 and 358, and permission. 303 and 358 may be taken concurrently with 329.
- 330 German (2; A)** **Staff**
Prerequisites, 370, German 303 or permission.
- 331 History (2; W)** **Boroughs**
Prerequisite, 370.
- 332 Home Economics (3; W)** **McAdams**
Two credits count as education and 1 as home economics. Prerequisites, 370 and 25 credits in home economics.
- 333 Methods of Teaching for Institution Administration Students (5; W)** **McAdams**
Prerequisites, junior standing and 25 credits in home economics.
- 334 Geography (2; W)** **Staff**
Prerequisites, 370 and permission.
- 335 Latin (2; S)** **Grummel**
Prerequisites, 370 and 20 credits in upper-division Latin courses.
- 336 Mathematics (3; S)** **Jerbert**
Two credits count as education and 1 as mathematics. Prerequisites, 370 and Mathematics 309 or equivalent.
- 338 Far East (2; not offered 1952-53)**
- 339 Physical Education for Men (2; S)** **Peek**
Prerequisites, 370 and Physical Education 358, 361, and 363.
- 340 Health and Physical Education for Women (2; W)** **Fox**
Prerequisites, 370 and Physical Education 453, 356, 362, 363, 364, and Education 371E, X, or S concurrently.
- 341 Scandinavian (2; A)** **Arestad, Johnson**
Prerequisites, 370 and permission.
- 342 Speech (3; A)** **Nelson**
Two credits count as education and 1 as speech. Prerequisites, 370 and at least 20 credits in speech, including Speech 352 or equivalent.
- 343 Spanish (2; S)** **Simpson**
Prerequisites, 370, Spanish 303 and 358, and permission. 303 and 358 may be taken concurrently with 343.
- 344 Zoology (2; W)** **Hatch**
Prerequisites, 370 and 20 credits in zoology.
- 346J Senior High School Music (3; S)** **Normann**
Prerequisites, 370 and junior standing. Two credits count as education and 1 as music.
- 360 Principles of Education (3; AWS)** **Draper**
Individually and in groups, students study and analyze problems in the areas of professionalization of teachers, foreign education programs, guidance and counseling, vocational education, extracurricular activities, and curriculum improvement. Prerequisite, 371E, X, or S.
- 370 Introduction to Teaching Procedures (5; AWS)** **Boroughs**
Fundamental techniques and methods of teaching, with emphasis on practical considerations. Classroom teaching situations are observed on the elementary and junior and senior high school levels.
- 370E Elementary School Methods (5; AWS)** **MacDonald**
Basic principles, techniques, and methods of teaching in the elementary school, from the kindergarten through the intermediate grades. Classroom observations are scheduled in the city schools. Prerequisite, 370.
- 371K Directed Teaching, Kindergarten (3-8; AWS)** **Corbally, MacDonald, Powers**
All directed teaching is done in the public schools, and all morning must be left free for an assignment. Assignments are made by the Director of Cadet Teaching the first day of each quarter. Prerequisites, 209, 230, 370E, 374, 376, 377X-Y, 378C-D, 390, or approved equivalents. Fee, \$1 per credit.
- 371E Directed Teaching, Elementary (Grades One Through Six) (3-8; AWS)** **Corbally, MacDonald, Powers**
All directed teaching is done in the public schools, and all morning must be left free for an assignment. Assignments are made by the Director of Cadet Teaching the first day of each quarter. Prerequisites, 209, 230, 370E, 374, 376, 377X-Y, 378C-D, 390, or approved equivalents. Fee, \$1 per credit.
- 371X Directed Teaching, Junior High (3-8; AWS)** **Corbally, Boroughs, Powers**
All directed teaching is done in the public schools from 8:30 a.m. to 12:30 p.m. daily. Assignments are made by the Director of Cadet Teaching the first day of each quarter. Prerequisites,

209, 230, 370, 370E, secondary subject matter methods, 390, or approved equivalents. Fee, \$1 per credit.

- 371S **Directed Teaching, Senior High (3-8; AWS)** **Corbally, Boroughs, Powers**
All directed teaching is done in the public schools from 8:30 a.m. to 12:30 p.m. daily.
Vocational home economics cadets must take Home Economics 348 and 395 with 371S to make a total of 15 credits for the quarter.
Women's physical education cadets do directed teaching in Winter Quarter only.
Assignments are made by the Director of Cadet Teaching the first day of each quarter.
Prerequisites, 209, 230, 370, 370E, secondary subject matter methods, 390, or approved equivalents. Fee, \$1 per credit.
- 372E, 372X, 372S **Professional Laboratory Experiences (3,3,3; AWS,AWS,AWS)** **Williams**
Professional experiences arranged on opposite level from directed teaching: participation in and acquaintance with pupil and community activities. Prerequisite, 371E, X, or S.
- 374 **Fundamentals of Reading Instruction (5; AWS)** **MacDonald**
The teaching of reading in the elementary school from the readiness program in the kindergarten-primary area through the intermediate grades. Prerequisite, 370E.
- 375J **Journalism (3; S)** **Brier**
Prerequisites, 370 and Journalism 200 and 201.
- 376 **Art in the Elementary School (5; AWS)** **Johnson**
The place of creative art in the school curriculum. Emphasis is on content, methods of presentation, and evaluation; areas include drawing, painting, design, and crafts. Laboratory experience, with some lectures, discussion, and reading. Prerequisite, 370E.
- 377X-377Y-377Z **Music for Elementary Teachers (2-2-2; AW-WS-AS)** **Root**
377X: techniques, problems, and materials of music teaching for the classroom teacher from kindergarten through grade three, including basic music knowledge, singing, creative, keyboard, and rhythmic activities. Prerequisites, 370E, Music 110Y, and 110Z, or equivalent as determined by examination. 377Y: study and practice of music activities, with emphasis on conducting, music reading, two- and three-part singing, instruments of the orchestra, and folk music. Prerequisite, 377X or equivalent. 377Z: practice in presentation and evaluation of music material for classroom use, with emphasis on elementary school choirs, assembly singing, directed listening, and audio-visual aids. Prerequisite, 377Y or equivalent.
- 378C, 378D **Physical Education for the Elementary School (3,3; AW,WS)** **Horne, Auerheimer**
Special methods for teaching the activities included in the physical education program of elementary schools: program planning and related problems; analysis and practice of rhythmic activities, games, sports, story plays, mimetics, apparatus, stunts and tumbling, and special events. Prerequisite, 370E.
- 380 **Tools and Materials for Industrial Education Teachers (2; not offered 1952-53)**
- 383-384 **Advanced Woodwork for Industrial Education Teachers (2-2; W-S)** **Baily**
Design, construction, and finishing of projects in wood, involving machine operations, air-brush finishing, and upholstering. Prerequisite, 280 for 383.
- 386 **Home Planning for Industrial Education (4; S)** **Baily**
Consumer knowledge and information in the problems involved in purchasing, planning, financing, and building a home are emphasized. Students draw, blueprint, and write specifications for a complete set of house plans. Prerequisite, 180.
- 387 **Special Problems in Industrial Education (1-5; AWS)** **Baily**
The student works on an individual basis, conferring with the staff as needs arise on one or more problems in industrial education that are of special interest to him. An outline and an organized plan of procedure are to be presented to the adviser. Prerequisite, permission.
- 388 **Selection and Organization of Industrial Education Subject Matter (3; A)** **Baily**
Problems, techniques, and procedures in the selection and organization of teaching content for industrial education; preparation of job and informational assignments and testing devices for shop teachers.
- 389 **Industrial Education for Elementary Teachers (5; AWS)** **Baily**
Planning and preparing a representative unit in some area of the elementary school program, with emphasis upon constructional activity; development of basic skills in the use of common hand tools; study of materials used in elementary handwork.
- 390 **Evaluation in Education (3; AWS)** **Dvorak**
Measurement in today's schools; construction of achievement tests; principles and applications of tests and standardized tests and scales in classroom management, educational diagnosis, and remedial education. Prerequisite, 370.
- 401 **Advanced Educational Psychology (3; A)** **Barr**
Theoretical principles and experimental backgrounds. Prerequisite, permission.
- 402 **Child Study and Development (2½; Summer)** **Staff**
Stages of child development; child welfare agencies; theories of some of the great leaders in child study; interplay between forces in the growing organism and the impact of various aspects of development upon each other; the influence of the cultural environment and the attitudes of others on a child's behavior and adjustment. Prerequisite, permission.
- 403 **Psychology of Elementary School Subjects (5; offered alternate years, not offered 1952-53)**
- 404 **Education of Exceptional Children (5; S)** **Hayden**
Atypical children studied from the point of view of the classroom teacher. Prerequisite, permission.

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- 406 Character Education (3; W)** **Barr**
Experimental background of the modern effort toward character development. Prerequisite, permission.
- 408 Mental Hygiene for Teachers and Administrators (3; W)** **Barr**
Mental hygiene of school children, teachers, and administrators, including genetic factors and the influence of various school situations upon the formation of adjustment patterns. Special problems of teachers and administrators are emphasized. Some background in educational psychology is recommended, but is not a prerequisite.
- 410 Educational Sociology (3; AWS)** **Jessup**
A systematic view of the larger social factors and relationships underlying the school as an institution. Pivotal topics are: individual-group interaction; agencies of person-group interaction; and outcomes of individual-group interaction. The relationship of the school to the community. Prerequisite, permission.
- 415 Principles of Safety Education (2½, Summer)** **Corbally**
Development and principles of school safety education; practical methods of implementing a school program. Prerequisite, permission.
- 417 Adult Education (3; A)** **Jessup**
Principles and methods of directing the continued educational growth of adults. Prerequisite, permission.
- 421 Remedial Teaching (5; offered alternate years, not offered 1952-53)**
- 422 Diagnosis in Education (5; W)** **Osburn**
Materials and devices for locating pupil difficulties, with special reference to scholastic progress in the language arts and mathematics; techniques and diagnosis as applied to emotional blockages and defects. For administrators and elementary and secondary teachers.
- 423 Learning Processes of Handicapped Children (5; A)** **Osburn**
Special problems presented by children who are exceptional because of physiological, psychological, and emotional handicaps. Case studies relating to delinquent and maladjusted children from the standpoint of both diagnosis and treatment. For supervisors, administrators, and teachers.
- 425 Teaching Reading and Remedial Reading (5; S)** **Osburn**
Experimental evidence of and practical classroom experience with the problems encountered in the teaching of reading and the correction of reading difficulties.
- 430 Public School Administration (3; AS)** **Strayer**
Selection, organization, function, and duties of school boards; relation of the superintendent of schools to the board, principals, supervisors, teachers, and pupils; selection and assignment of personnel; interpretation of the school program to the public; formation of policies; administration of the instructional program; finance and business management; appraisal of the school system; leadership in democratizing school administration and in community life. For superintendents, principals, supervisors, and those who wish to qualify for these positions. Prerequisite, permission.
- 431 School Finance (3; W)** **Strayer**
Basic principles of public finance; development of school support; principles of school finance; school accounting forms and procedures; administration of the annual budget; interpretation of finance facts to the public; desirable improvements in school finance practices. Prerequisite, 430 or permission.
- 433 Elementary School Organization and Administration (3; S)** **Jessup**
The work of the elementary school principal: plans of organization, promotion schemes, supervisory duties, teacher welfare, student organizations, and public relations.
- 434 High School Organization and Administration (3; A)** **Strayer**
General plans for secondary school organization and administration; types of junior and senior high schools; advantages and disadvantages of 8-4, 6-3-3, 6-6, 6-4-4, and 7-5 plans; program making; pupil adjustment; principal and department heads; extension of the programs to include the thirteenth and fourteenth years. Prerequisite, permission.
- 437 School Supervision (5; offered alternate years, not offered 1952-53)**
- 445V Principles and Objectives of Vocational Education (3; S)** **Bailey**
Aims and objectives of vocational education; materials of instruction; standards of work; judging measurement of work. Prerequisite, permission.
- 447 Principles of Guidance (3; AW)** **Barr**
The role of guidance in present-day education; tools and techniques; organization and evaluation. For teachers and administrators. A background in educational psychology and tests and measurements is recommended, but is not a prerequisite.
- 448 Improvement of Guidance Techniques (3; S)** **Barr**
The improvement of existing methods and techniques, including anecdotal records, case studies, sociometric studies in the classroom, home visits, pupil questionnaires, and individual and group counseling. For teachers, administrators, and counselors who do not plan to take 541, 542, 543. A background in educational psychology and tests and measurements is recommended, but is not a prerequisite.
- 455 Auditory and Visual Aids in Teaching (3; W)** **Hayden**
The utilization of audio-visual equipment and materials to improve instruction. Prerequisite, permission.

- 461 Elementary School Curriculum (5; W)** **Jessup**
The child as a growing organism developing personality and as a learner. The curriculum as the guiding life of the school: the development of units, utilization of materials of instruction, social experiences, creative experiences, and evaluation of curriculum material. Prerequisite, permission.
- 464 Principles of Curriculum Improvement (3; A)** **Draper**
Intensive study of the basic principles and procedures utilized in the development of curriculum materials. Current practices in the development of objectives and learning experiences in the public schools are studied and evaluated and individual projects are carried out. Prerequisite, permission.
- 467 Techniques of Curriculum Improvement (3; S)** **Draper**
Intensive study of the basic techniques used in the development of courses of study and units of work. Emphasis is on the major unit of work and the common learning units of work. Individual projects are carried out. Prerequisite, permission.
- 468 Extracurricular Activities (3; W)** **Draper**
Student projects on individual problems in the area of extracurricular activities. The problem of evaluating pupil growth through participation in the extracurricular activities is emphasized. Prerequisite, permission.
- 470 Historical Backgrounds of Educational Methods (3; A)** **Williams**
Readings in the educational classics from the Greeks to the present, to trace their influence upon the development of educational theory and practice. Principal sources are Plato, Aristotle, Quintilian, Plutarch, Comenius, Vives, Montaigne, Locke, Milton, Rousseau, Pestalozzi, Herbart, Froebel, and Spencer. Prerequisite, permission.
- 476C Field Work in Business Education (4; Summer)** **Staff**
Internship in business and industry: work experience, job analysis, and research combined with specific curriculum-building programs. For experienced business education teachers. Limited enrollment. Prerequisite, permission of instructor.
- 476D Materials and Methods of Teaching Typewriting (2½; Summer)** **Tidwell**
Psychological and physiological factors in the methodology of typewriting; objectives and evaluation; procedures for developing advanced and applied skills.
- 476E Materials and Methods of Teaching Office and Clerical Practice (2½; Summer)** **Staff**
Objectives and content of office practice and general clerical practice courses; plans for organizing classes and methods of teaching specific machines and subject matter; laboratory study of new inventions in office machines.
- 476F Materials and Methods of Teaching Thomas Shorthand (2½; Summer)** **Staff**
Complete theory of Thomas shorthand; teaching objectives, materials, standards, and methods; the psychology of skill learning. An accelerated course for experienced teachers.
- 476H Workshop in Current Distributive Education (2½-5; Summer)** **Staff**
Immediate problems in the field of distributive education; student employment; local, state, and national retailers' clubs; trends in adult training; special problems of the new coordinator. For present and prospective coordinators.
- 476I Problems of Distributive Education (2½; Summer)** **Staff**
For distributive education supervisors and teachers.
- 476K Coordination of Distributive Education and Diversified Occupational Programs (2½; Summer)** **Staff**
For distributive education supervisors and teachers.
- 476L Materials and Methods of Teaching Gregg Shorthand and Transcription (2½; Summer)** **Staff**
Recent research and experimentation in teaching shorthand and transcription are emphasized. Psychology of skill development; comparison of the various methods of teaching shorthand; evaluation of teaching materials; consideration of standards, objectives, and teaching techniques. An advanced course for experienced teachers.
- 476M Principles and Problems of Business Education (2½; Summer)** **Tidwell**
Objectives, history, trends, and issues of business education; federal participation in vocational education; economic, occupational, and population trends and their implications in business education; leaders in business education; research and problems.
- 476N Materials and Methods of Teaching Bookkeeping and General Business Subjects (2½; Summer)** **Staff**
Techniques of teaching bookkeeping and general business subjects; relationship to the curriculum; standards to be achieved; content and organization of the subject matter; tests and teaching materials; new trends in the field; motivational devices; visual aids.
- 477 The Teaching of Reading (5; offered alternate years, not offered 1952-53)**
- 480 History of Education (5; A)** **Jessup**
A social interpretation of preliterate education; beginnings in the Orient, Greece, Rome, the Medieval period, the Renaissance, and modern times. The relationship of education to democracy, fascism, communism, and newer concepts involving the world-wide spread of democracy and education. Prerequisite, permission.
- 484 Comparative Education (5; W)** **Jessup**
The school systems of England, Germany, France, Italy, and the Soviet Union; an interpretation in terms of the political philosophy of each country. World trends in education. Prerequisite, permission.
- 485 Advanced General Shop for Industrial Education Teachers (3; not offered 1952-53)**

- 490 Educational Statistics (5; A)** **Dvorak**
Statistical methods applicable in educational administration and research: central tendency; variability; probability; sampling and reliability; experimental hypotheses; linear, curvilinear, bi-serial, partial, and multiple correlation; regression; reliability; application of various statistical procedures to specific problems. Prerequisite, 390.
- 491 Advanced Educational Measurement (3; W)** **Dvorak**
Construction, scaling, evaluation, and limitations of educational tests and scales; application of test and scale results in educational diagnosis, guidance, and administration. Prerequisites, 390 and 490, or Psychology 301, or equivalent.
- 499 Undergraduate Research (2-5; AWS)** **Staff**
Instructor and field must be designated in registration. (See 600 for list of fields.) Prerequisite, permission of instructor and director of educational research.

COURSES FOR GRADUATES ONLY

- 501 Seminar in Educational Psychology (3; S)** **Barr**
Psychological principles of education; summary of research results in application to school problems. Prerequisite, a background in general and educational psychology.
- 510 Seminar in Educational Sociology (3; S)** **Jessup**
Application of sociological principles to school problems; individual problems and investigations. For teachers, administrators, and those using educational sociology as a field for advanced degrees.
- 525 Seminar in Elementary Education (3; S)** **Boroughs**
A critical examination of the elementary school, with special emphasis on curriculum and method.
- 531 Seminar in Administration: Finance (5; S)** **Strayer**
Current problems in school finance, including costs, ability to support schools, and financial implications of educational principles. The relation of costs to efficiency; preparation of the budget, salary schedules, sources of school revenue, problems of state and local school support, and state and local control of school funds; financing capital outlay, research, and public relations. Prerequisites, 430 and 431, or permission.
- 533 Seminar in Administration: School Buildings (3; W)** **Strayer**
School building surveys; sharing responsibility for the educational plant; types of school buildings and building materials; appraisal of existing school plants; heating and ventilating; acoustics; special areas; audio-visual illumination and color; preparation of floor plans on the basis of educational plans; building maintenance and school insurance; modernizing existing buildings; financing the school plant program. Prerequisite, 430 or permission.
- 535 Public Relations for Public Schools (5; S)** **Strayer**
Relationship between the public schools and the public, with emphasis on the two-way flow of ideas between school and community; the school board, administrators, advisory groups, and the public relations program; school personnel and the public; pupils, parents, and community attitudes; proven techniques and media; special versus continuous public relations programs; special problems such as school finance, school extracurricular activities, and building programs. Prerequisite, 430 or permission.
- 541, 542, 543 Guidance and Counseling (3,3,3; A,W,S)** **Barr**
Techniques and materials used in school guidance; organization and administration of the guidance program. Primarily for people who plan to become counselors or guidance workers in educational institutions. Prerequisite, permission.
- 547 Seminar in Guidance (5; Summer)** **Corbally**
Individual problems in the areas of organization, supervision, and administration of guidance in the elementary and secondary schools. Required of most graduate students using guidance as a field for advanced degrees.
- 550 Development and Organization of Higher Education (3; A)** **Williams**
Higher education from the standpoint of the new instructor; history of administrative organization.
- 551 College Problems (3; W)** **Williams**
A consideration of the pertinent problems of the college teacher and his tasks.
- 552 Improvement of College Teaching (3; S)** **Williams**
An analysis of types of teaching applicable to the college level, with special reference to lectures, assignments, use of textbooks, student reports, quiz techniques, panel discussions, the use of visual aids, syllabi, and bibliographies.
- 560, 561 Seminar in Curriculum (3,3; W,S)** **Drapor**
Research in guidance, extracurricular activities, and curriculum. The core curriculum and general education are emphasized.
- 570, 571 Problems in Modern Methods (3,3; W,S)** **Williams**
The nature of teaching and the problems involved in the underlying principles and practices of types of modern methodology, with special reference to experimental studies in the project, the unit, socialized recitation, audio-visual aids, supervised study, lesson plans, lectures, assignments, and the activity movement.
- 587, 588, 589 Seminar in Philosophy of Education (3,3,3; A,W,S)** **Williams**
The nature and meaning of philosophy as it relates to educational objectives, methodology, curriculum, and administration, from the points of view represented in idealism, realism, naturalism, and pragmatism.

591 Methods of Educational Research (3, AWS)**Hayden**

A study of devices and methods used in conducting research. Designed to assist students in planning, organizing, and writing theses. Required of candidates for advanced degrees.

600 Research (*; AWS)**Staff**

Prerequisites, 591 and permission of instructor and director of educational research. Instructor and field must be designated in registration. When registration is for "thesis and/or research only," an incidental fee of \$21.50 is charged and the work may be done *in absentia*.

- A. Educational Psychology
- B. Educational Sociology
- C. Educational Administration and Supervision
- D. Elementary Education
- E. Secondary Education
- F. Classroom Techniques

- G. History and Philosophy of Education and Comparative Education
- H. Higher Education
- I. Curriculum
- J. Guidance and Extracurricular Activities
- K. Remedial and Special Education
- L. Measurements

Thesis (*; AWS)**Staff**

Advanced degree candidates in education must register for "thesis." When registration is for "thesis and/or research only," an incidental fee of \$21.50 is charged and the work may be done *in absentia*.

COLLEGE OF ENGINEERING

Dean: HAROLD E. WESSMAN, 206 Guggenheim Hall

THE College of Engineering offers curricula in aeronautical, ceramic, chemical, civil, electrical, mechanical, metallurgical, and mining engineering. These curricula are accredited by the Engineers' Council for Professional Development, the principal accrediting agency of the engineering profession in the United States. All courses of study in the College of Engineering are designed to provide an understanding of the physical sciences; a fundamental background for the conception, design, construction, operation, and improvement of structures and machines, of processes and projects; and an educational foundation in the humanities and the social sciences.

Four-year curricula leading to bachelor's degrees are offered in the Departments of Aeronautical, Chemical, Civil, Electrical, and Mechanical Engineering, and in the School of Mineral Engineering through the Divisions of Ceramic, Metallurgical, and Mining Engineering.

In addition to the four-year curricula, the College offers a course of study in industrial engineering for which a second bachelor's degree is awarded at the end of five years, the first four of which comprise the standard four-year curriculum of any branch of engineering in which the College grants a bachelor's degree, while the fifth is made up of courses in industrial management and related subjects.

The Department of General Engineering administers the first-year curriculum for the other departments in the College. It provides courses in basic engineering subjects, orientation courses, and advisory services to help freshmen prepare for entrance to their major departments, but does not offer a full curriculum leading to a degree.

The Department of Humanistic-Social Studies offers an integrated sequence of courses in the humanities and the social sciences. These courses are included in all engineering programs of study and do not constitute a separate curriculum.

ADMISSION

The University requirement for entrance is 16 high school units with a 2.0 grade-point average (see page 15 for other admission regulations). The College of Engineering requires that the 16 units include 1 unit each of elementary algebra, plane geometry, physics, and chemistry; and $\frac{1}{2}$ unit each of advanced algebra and solid geometry. Although trigonometry is not required, it is strongly recommended as a high school elective. Students should make every possible effort to complete these required subjects before entering the College. Under certain circumstances, however, and with the approval of the Dean of the College, deficiencies in admission requirements may be removed after entrance.

It is essential that students possess a good working knowledge of algebra at the beginning of the College course. A test in high school algebra by class work and by examination is given shortly after the beginning of the first quarter, and students who fail in the test are not permitted to continue with freshman engineering mathematics but are required to take a review of preparatory algebra (Mathematics A, for which students register in the Department of Extension Classes or Correspondence Study) during the first quarter. Although no foreign language is required for admission to the College, students who take a foreign language in high school will find German or French the most useful in an engineering career.

Admission to the College of Engineering is on a selective basis. Each applicant is considered on the strength of his previous record, with special attention to proficiency in English, mathematics, chemistry, and physics.

SCHOLARSHIP

The University scholarship rules require that all freshman students in their first three quarters, and all transfer students in their first quarter, maintain a grade-point average of 1.8 or above. All other students must maintain a 2.0 or above. The rules of the College of Engineering provide that, as a prerequisite to registration for re-

quired junior and senior courses, students must earn a grade-point average of at least 2.2 in the required courses for the first two years.

GRADUATION

The graduation requirements of the University are 180 academic credits (including Physical Education 110 or 175); the required quarters of physical education and/or military training; the senior year spent in residence; 60 upper-division credits; and a cumulative grade-point average of 2.0 (see page 28 for more detailed information about these requirements).

In the College of Engineering, one of the prescribed curricula must be completed and the student must earn a grade-point average of at least 2.2 in the upper-division subjects in his major department. The College of Engineering allows no more than 9 quarter credits in upper-division military subjects to be counted in the required upper-division credits.

ADVANCED DEGREES

Students who intend to work toward advanced degrees must fulfill the requirements of the Graduate School (see page 261) and of the department in which they expect to major.

Graduate study leading to a Master of Science degree with departmental designation is available in the Departments of Aeronautical, Chemical, Civil, Electrical, and Mechanical Engineering, and in the School of Mineral Engineering through the Divisions of Ceramic, Metallurgical, and Mining Engineering.

The degree of Master of Science in Engineering (without departmental designation) is offered to qualified advanced students whose undergraduate majors have been in departments different from those in which they have worked toward master's degrees, and to students who are doing graduate work in several engineering departments with the approval of advisers in their major departments. This degree may be of particular interest to those students who are planning a program of graduate studies that will prepare them for the field of nuclear engineering. Elective courses in nuclear physics may be incorporated in the study program for such students.

The degrees of Master of Aeronautical Engineering and Master of Electrical Engineering are offered to students who satisfactorily complete an approved two-year program of graduate work in aeronautical or electrical engineering.

Graduate study leading to the Doctor of Philosophy degree is available in the field of chemistry and chemical engineering.

PROFESSIONAL DEGREES

Professional degrees in engineering will be discontinued during the year 1952-53. No applications for these degrees will be accepted after October 1, 1952. Until that date applications will be accepted for the professional degrees of Aeronautical Engineer, Chemical Engineer, Civil Engineer, Electrical Engineer, and Mechanical Engineer from graduates of this college who give evidence of having been engaged continuously in responsible engineering work for not less than four years, of which three have been in the supervision of engineering projects; who are at least thirty years of age; and who present satisfactory theses.

The College also offers, through the School of Mineral Engineering, the professional degrees of Engineer of Mines, Metallurgical Engineer, and Ceramic Engineer to graduates of this college who present evidence of five years of professional experience in the proper field, of which four have been spent in a directive or supervisory capacity, and who present satisfactory theses.

For these professional degrees, responsible engineering work is interpreted to mean work equivalent to that required for membership in the National Founder Engineering Societies. Teaching experience counts in lieu of professional experience in the same ratio as now recognized by the professional societies, provided that a minimum of two years of acceptable engineering work other than teaching is included.

Application for a professional degree must be accompanied by an exact statement of the applicant's record since graduation. The department concerned judges the application and selects the thesis committee. If the applicant has rendered special service to his profession with accomplishments of undisputed merit, the thesis may be waived upon presentation of articles describing such work in publications of

recognized standing. The candidate must submit two copies of his thesis in final form at least one month before the date on which theses for advanced degrees are deposited in the library. Action will be taken by the faculty of the College upon recommendation of the proper department.

ENGINEERING EXPERIMENT STATION

Most engineering research is carried on under the direction of the departments in cooperation with the Engineering Experiment Station, which administers a budget for research and the publication of significant results. More than forty research projects are currently in progress, the majority of them financed by the University through the departments or the Experiment Station and the others done under contract for outside sponsors. Investigations are carried on by graduate research fellows under the supervision of the teaching faculty. Research fellows devote one-half time to assigned projects in their major fields and may use their investigations as subject matter for graduate theses. Under this plan a generous number of grants are available, and a qualified graduate student who receives one of these fellowships may obtain a master's degree in five quarters.

Requests for further information should be sent to Professor F. B. Farquharson, Director, Engineering Experiment Station, University of Washington, Seattle 5, Washington.

BUILDINGS AND FACILITIES

The departments of the College of Engineering occupy six major campus buildings: More Hall (Civil), Hydraulics Laboratory (Civil), Electrical Engineering Building, Roberts Hall (School of Mineral Engineering), Guggenheim Hall (Aeronautical and Mechanical Engineering), and Engineering Hall (Mechanical Engineering and Humanistic-Social Studies). In addition to numerous smaller isolated laboratories, substantial portions of the following buildings are also used: Bagley Hall (Chemical Engineering), Education Hall (General Engineering), and Engineering Shops (Mechanical Engineering). Brief descriptions of the departmental laboratory facilities are given in the following paragraphs.

AERONAUTICAL ENGINEERING. Five different wind tunnels and a small supersonic laboratory are available for class instruction and research in the field of aerodynamics. The F. K. Kirsten Aeronautical Laboratory, largest of the wind tunnels, has been used for aerodynamic research and industrial testing since it was completed in 1937. It has a test section measuring 8 by 12 feet, and a maximum air speed of 250 mph. Special laboratory equipment is available for studying the behavior of typical aircraft structures under load. Universal testing machines ranging in load capacity from 60,000 to 2,400,000 pounds are available in the Civil Engineering Structural Research Laboratory.

The Department maintains a well-equipped and well-staffed machine and model shop which assists students constructing equipment for research or special projects.

CHEMICAL ENGINEERING. The Department of Chemical Engineering is in Daniel Bagley Hall, where, in addition to well-equipped laboratories for instruction in chemistry, a number of laboratories with extensive special equipment are provided for students in chemical engineering courses. The two-story chemical engineering unit operations laboratory contains equipment for study of fluid flow, heat transfer, evaporation, absorption, distillation, centrifuging, drying, filtration, and crystallization. In a separate room is grinding and sieving equipment. An industrial chemistry laboratory has pilot-plant-size equipment for study of chemical processing. Complete equipment is available for study of paper pulping processes on a pilot-plant basis, and for laboratory investigations of electrochemistry. Machine, instrument, and glass-blowing shops staffed by full-time employees are maintained. A wide variety of special equipment for research is used by seniors and graduate students for thesis investigations, and a branch library in Bagley Hall houses a special collection of reference books and periodicals in chemistry and chemical engineering.

CIVIL ENGINEERING. More Hall, the Civil Engineering Building, has modern structural, concrete, mineral aggregates, soil mechanics, bituminous, and sanitary engineering laboratories. The structural laboratory contains a 2,400,000-pound testing machine with 120 inches between screws, a number of smaller machines ranging in capacity from 60,000 to 300,000 pounds, and complete electronic apparatus for stress

and strain measurements. The concrete laboratory has facilities for making, curing, and testing concrete specimens. The aggregates laboratory houses apparatus for testing the hardness, soundness, and wearing qualities of rock, and for control of grading. The soil mechanics laboratory is of top rank in this field, and is equipped for all generally recognized tests encountered in foundation and earthwork engineering. The bituminous laboratory contains apparatus for the usual tests required of asphaltic road building materials, and is exceptionally well equipped for research in the design of stable bituminous surfacings. A complete sanitary engineering laboratory for the chemical, bacteriological, and microscopic analysis of water, sewage, and industrial wastes is available for study and professional research. The Charles W. Harris Hydraulics Laboratory, on the shore of Lake Union, is equipped with the latest facilities for investigations and laboratory studies of many problems in experimental hydraulics and water power. It is supplemented by a half-acre outdoor laboratory for construction and study of models of river channels.

ELECTRICAL ENGINEERING. The Department of Electrical Engineering is in Electrical Engineering Hall, a new three-story building of very modern design. The main laboratories are classified as follows: electrical machinery, communications, transients, impulse generator (high-voltage), power transmission line, illumination, industrial control, and electrical measurement. In addition, a number of smaller laboratories are available for research and special uses.

The large machinery laboratory is exceptionally well equipped for the study and testing of direct- and alternating-current motors and generators, transformers, induction regulators, and other auxiliary equipment. Experiments involving the operation of electrical machines are also run in the adjacent industrial controls laboratory, where power rectifiers, electronic apparatus, relays, and other necessary devices are available. The communications laboratory has the latest facilities for the study of vacuum tube circuits and equipment; wire transmission, including line characteristics, filters, and other terminal apparatus; and ultra-high-frequency theory and practice. The electrical measurements laboratory is equipped for measuring a wide variety of electrical and magnetic quantities in addition to the basic measurement of voltage, current, and power.

The other laboratories are used in senior elective courses and graduate instruction. Included among the special laboratories are ten rooms which accommodate from two to six students each and are used for work on special problems and for graduate research. One of these laboratories, which is in a penthouse on the roof, is especially designed to house radio transmitting equipment; antenna towers are on the roof nearby. Other laboratories contain servomechanism and acoustics equipment, and one room is assigned to the Department's amateur radio club.

GENERAL ENGINEERING. The Department of General Engineering is on the third and fourth floors of Education Hall. In addition to ten well-equipped and well-lighted classrooms for drafting and computation courses, there are a sound projection room seating 125, a library and study room, a lounge room for the student General Engineering Club, and a blueprinting room with a high-speed printing and developing machine.

HUMANISTIC-SOCIAL STUDIES. The Department of Humanistic-Social Studies is unusually well provided with modern equipment to supplement conventional teaching methods. Foremost among its facilities is a library of its own stocked with books in a wide variety of nontechnical fields. These volumes are on open shelves, readily accessible to students who wish to browse. In 1951 the Department set up in that library a collection of records for circulation within the Engineering College. The Department also has a projection room and a music room of its own. Both have the equipment for most of the audio-visual activities now common in teaching, including the recording and playing back of students' talks. All of these facilities are steadily being expanded and improved.

MECHANICAL ENGINEERING. Mechanical engineering laboratory facilities are in three main groups. One group serves the courses in production methods and includes the conventional equipment of a foundry, forge and weld shop, and machine shop, together with numerous special machines. Appropriate testing and gauging apparatus is also available; it includes physical testing equipment for foundry and core sands, an electronic interferometer, and air precision gauging devices.

A second laboratory is equipped to simplify practices and to provide for research projects in the heat-power field. It contains all of the common types of heat-power

and refrigeration machines, steam engines and turbines, gas, gasoline, and diesel engines, with the necessary auxiliary equipment, such as dynamometers, condensers, and heat exchangers, for the study of heat balances. A gas turbine unit is arranged with complete instrumentation for a wide range of tests, with provision for alternate combustion chambers and for water injection. A nonoperating turbo-jet unit is available for study. Auxiliary equipment for flame propagation investigations in jet combustion chambers is available, and equipment for standard tests on centrifugal fans is also part of this laboratory. An adjunct laboratory is equipped for the testing of lubrication oils and fuels.

A third laboratory provides facilities for the study of engineering materials. It has three universal testing machines, an impact machine, a fatigue machine, plastic molding equipment, complete hardness testing equipment, a metaloscope for metallographic investigations, apparatus for strength determination by photoelastic and electronic strain gauge methods, and industrial X-ray and Zyglo inspection equipment. Apparatus for the study of vibrations, including a torsionograph, is a part of this laboratory, as are devices for the study of engineering materials at high and low temperatures.

CERAMIC ENGINEERING. The laboratories of the Division of Ceramic Engineering may be classified into five groups, the first of which is the laboratory for grinding and classifying raw materials, mixing and tempering them, and forming them into shapes. The second group, in the Kiln Building, contains twelve kilns for firing and testing ware. A rotary kiln of sufficient size for batch testing or pilot-plant experiments has recently been completed. The physical testing laboratory makes up the third unit. In the fourth group are the pottery and glaze laboratories which have facilities for casting and hand or wheel forming, and for glaze preparation, spraying, drying, and firing. The fifth group consists of the new research laboratory with much special equipment, including a long-arm centrifuge and a super centrifuge for sub-sieve particle size determination, a thermal expansion furnace, a diffraction X-ray unit, and differential thermal analysis equipment for mineral identification and analysis. The Division also operates ceramic craft shops in which students are trained in hand production methods.

METALLURGICAL ENGINEERING. The Division of Metallurgical Engineering maintains a laboratory with facilities for process and physical metallurgical investigations. The process laboratories are equipped for studies in smelting, roasting, leaching, and electro-recovery of metals. Fire assay and wet assay laboratories are adjuncts for process control. A fuels analytical laboratory is available for studies of fuel characteristics and values.

The physical metallurgy laboratories include a preparation laboratory for cutting and coarse grinding of specimens; a polishing and physical testing laboratory; and a metallographic laboratory with several dark rooms. A nondestructive inspection laboratory provides training facilities in examination of manufactured articles by X-ray and other special techniques. The advanced physical metallurgy laboratories feature a diffraction X-ray unit with recording goniometer, micro-hardness testing, and controlled atmosphere heat treating furnaces. A well-equipped foundry with a cupola and electric melting furnaces is available in conjunction with a complete series of courses in foundry metallurgy. Frequent field trips are made to plants of the diverse metal industry of western Washington.

MINING ENGINEERING. Laboratories of the Division of Mining Engineering include full-scale commercial equipment supplemented by laboratory testing machines of the latest design. Mining practices are studied with the aid of models, maps, and frequent field trips. A full equipment catalogue file enables the student to relate class problems to field practice. The important coal fields of western Washington, the mining districts of the Cascade Mountains, and the large quarry industry of Puget Sound afford opportunity for study of all phases of mining. Annual excursions to more distant mining districts supplement the local studies. The facilities of the Department of Geology are also used by the mining students.

The ore dressing and mineral preparation laboratories are equipped to serve every milling problem. A microscopy and fine-sizing laboratory is a feature of the basic approach to concentration and grinding problems. A large well-equipped flotation and magnetic separation laboratory is maintained. A complete pilot plant treating 50 pounds of feed per hour, with equipment units movable so that any suitable flow through the plant can be arranged, is used in studying advanced milling problems.

Commercial-size machines are used for large batch testing. A crushing and screening laboratory and a sampling room complete the special laboratory facilities. A wide variety of ores are in storage and available for experimental testing.

Students selecting the geological option have at their disposal the complete laboratories of the Department of Geology. The origin of mineral deposits and their characteristics are studied with the aid of maps, structural sections, and suites of typical specimens with polished and thin sections for microscope examination. The large collection of ores at the School of Mineral Engineering is also available. Stratigraphic and paleontological laboratories are supplemented by field study in the Eocene area around Puget Sound and farther afield in summer courses.

AERONAUTICAL ENGINEERING

Executive Officer: F. S. EASTMAN, 207 Guggenheim Hall

Professors: F. S. Eastman, H. C. Martin.

Associate Professors: V. M. Ganzer, R. E. Street.

Assistant Professor: R. C. Weikel.

The Department of Aeronautical Engineering offers courses leading to the degrees of Bachelor of Science in Aeronautical Engineering, Master of Science in Aeronautical Engineering, Master of Science in Engineering (see page 224), and Master of Aeronautical Engineering.

BACHELOR OF SCIENCE IN AERONAUTICAL ENGINEERING

The curriculum for the first year is administered by the Department of General Engineering (see page 241).

Students who are planning to do graduate work must elect Mathematics 421 (Ordinary and Partial Differential Equations) during their senior year.

SECOND YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
H.-S.S. 261 Tech. of Comm.	1	Aero. Engr. 200	2	Civil Engr. 292 Mechanics. 3	
Math. 251 Analytic Geom. & Calc.	5	Civil Engr. 291 Mechanics. 3		Elect. Engr. 300 Direct	
Mech. Engr. 201 Metal Castings	1	Econ. 211 General	3	Currents	5
Mech. Engr. 220 Heat Engines	3	H.-S.S. 262 Tech. of Comm.	1	Math. 253 Analytic Geom. & Calc.	3
Mech. Engr. 260 Mechanism	3	Math. 252 Analytic Geom. & Calc.	3	Mech. Engr. 203 Metal Machining	1
Physics 217 Engr. Physics. 4		Physics 218 Engr. Physics. 4		Physics 219 Engr. Physics. 4	
P.E. Activity	1	P.E. Activity	2 or 3	P.E. Activity	2 or 3
R.O.T.C.	2 or 3	R.O.T.C.	17-20	R.O.T.C.	18-21
	18-21				

THIRD YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Civil Engr. 293 Mechanics. 3		Aero. Engr. 300	3	Aero. Engr. 301	3
Civil Engr. 342 Hydraulics	5	H.-S.S. 332 Humanities. 3		Aero. Engr. 302	3
Elect. Engr. 301 Alt. Currents	5	Mech. Engr. 320 Thermodynamics	5	Aero. Engr. 360	3
H.-S.S. 331 Humanities. 3		Mech. Engr. 340 Engr. Mater.	3	H.-S.S. 491 Nontech. Reading	1
	16	Mech. Engr. 361 Machine Design	3	Mech. Engr. 341 Aircraft Mater.	2
			17	Mech. Engr. 362 Machine Design	3
					15

FOURTH YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Aero. Engr. 303	3	Aero. Engr. 321	1	Aero. Engr. 311	2
Aero. Engr. 320	1	Aero. Engr. 331	4	Aero. Engr. 340	4
Aero. Engr. 330	4	Aero. Engr. 391	0	Aero. Engr. 350	1
Aero. Engr. 390	0	Aero. Engr. 410	4	Aero. Engr. 392	1
Psychol. 336 Indust.	3	Hum. Rel. 365 Indust. Rel.	3	Bus. Law 307 Bus. Law.	3
Electives	4	Electives	3	Electives	4
	15		15		15

ADVANCED DEGREES

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School (see page 261).

MASTER OF SCIENCE IN AERONAUTICAL ENGINEERING. Candidates for this degree must have the Bachelor of Science degree in Aeronautical Engineering or its equivalent. A total of 36 hours of course work and a thesis are required. Courses 505, 508, 516, 522, 530, 533, 553, 556, 571, 572, and 573 are usually required. No foreign language is required.

MASTER OF AERONAUTICAL ENGINEERING. This is a more advanced degree than that of Master of Science in Aeronautical Engineering. A total of 72 hours of course work and a more extensive thesis are required. Other requirements are similar to those for the Master of Science degree.

COURSES FOR UNDERGRADUATES

- 200 Introduction to Aeronautics (2; A)** Eastman
History, sources of information, nomenclature, and a summary of the field of aeronautical engineering showing the important differences between it and other engineering fields.
- 300, 301, Aerodynamics (3,3; W,S)** Ganzer
300: air properties and their variations with altitude; the continuity and Bernoulli equations; jets and body pressure distribution; dimensional analysis and dynamic similarity; aeronautical nomenclature; the stream function applied to simple problems; aerodynamic characteristics of airfoils in a perfect and real fluid. Prerequisites, Civil Engineering 342, Physics 217, 218, and 219, and Mathematics 251. 301: momentum and circulation theory of lift; induced effects; airplane efficiency factor; spanwise lift distribution; auxiliary lift devices. Prerequisite, 300.
- 302, 303 Aerodynamics (3,3; S,A)** Ganzer
302: aerothermodynamic relations; viscosity and compressibility effects on bodies and in pipes; laboratory facilities; wind tunnel wall corrections; parasite drag and power required by an airplane. Prerequisites, 301 (which may be taken concurrently) and Mechanical Engineering 320. 303: performance of propeller and jet-driven airplanes as affected by power plants and airplane configuration; stability and control. Prerequisite, 302.
- 311 The Plane Design Loads (2; S)** Weikel
The V-g diagram; air load and dead weight shear, moment, and torsion; C.A.A. requirements. Prerequisite, 303.
- 320, 321 Aerodynamics Laboratory (1,1; AW,WS)** Staff
320: tests of subsonic and supersonic operating characteristics of wind tunnels and ducts. Prerequisite, 302. 321: pressure distribution, wake, and boundary layer tests of two-dimensional airfoils; three-dimensional tests involving complete model build-up. Prerequisites, 303 and 320.
- 330, 331 Aircraft Structural Analysis (4,4; A,W)** Weikel
330: analysis of statically determinate plane and space trusses; stresses and deflections of the general beam; introduction to simple monocoque and stressed-skin structures. Prerequisites, Mechanical Engineering 340 and 361. 331: analysis of statically indeterminate plane and space trusses; continuous beams, frames, and rings; complex monocoque and stressed-skin structures; introduction to buckling and instability problems. Prerequisite, 330.
- 340 Aircraft Structural Design (4; S)** Weikel
Basic structural design criteria for aircraft; materials and allowable stresses; fundamentals of design of basic components of an airplane. Prerequisite, 331.
- 350 Aircraft Structural Testing (1; AWS)** Weikel
Methods and techniques of aircraft structural testing; laboratory test of typical structural components of an airplane. Prerequisite, 330.
- 360 Aircraft Engines (3; WS)** Eastman
Factors influencing performance and operating characteristics of various types of reciprocating engines, including jet engines, at altitude; cooling. Prerequisite, Mechanical Engineering 320.
- 380 Aeronautical Engineering Measurements (2; W)** Staff
Problems of instrumentation in the aeronautical laboratory and in flight; analysis, calibration problems, and use of standard and special aeronautical measuring equipment; wind-tunnel balance systems, strain gauges, hot-wire anemometer, flexure pivots, flight instruments, and cathode-ray oscillograph. Prerequisite, senior standing.
- 385 Selected Subjects in Aeronautical Design (2; W)** Staff
Lectures and typical problems presented by men with aeronautical engineering experience. Prerequisite, permission.
- 390-391-392 Seminar (0-0-1; A-W-S)** Eastman, Staff
Prerequisite, senior standing.
- 395 Special Projects (2-5; AWS)** Staff
Prerequisite, senior standing.
- 404 Introduction to Theoretical Aerodynamics (3; AS)** Street, Ganzer
Euler's equations of motion; use of potential and stream functions; sources, sinks, and vortices; three-dimensional flow; two-dimensional flow; theory of airfoils and wings. Prerequisite, Mathematics 253.

- 410 Aerodynamic Design (4; W)** **Ganzer**
Preliminary design of a modern airplane to satisfy given requirements of performance, stability, and control. Prerequisite, 303.
- 422 Aerodynamics Laboratory (3; S)** **Staff**
Tests in the 12-foot wind tunnel for determining performance, stability, and control characteristics of a typical two-engined airplane. Prerequisite, 321.
- 441 Advanced Structural Design (3; offered when demand is sufficient)** **Weikel**
Factors influencing structural design; structural design problems; basic design of major structural components of an airplane. Prerequisite, 340.
- 461 Propulsion Components (3; A)** **Staff**
Theoretical and practical aspects of propellers, compressors, and turbines. Prerequisite, 301.
- 462 Propulsion (3; offered when demand is sufficient)** **Staff**
Theory of operation and practical aspects of ram jets, pulse jets, turbo jets, and rockets. Prerequisite, 302.
- 470 Analytical Problems in Aeronautics (3; S)** **Staff**
Ordinary differential equations applied to problems of aerodynamics, structures, and dynamics. Prerequisite, Mathematics 414 or permission.

COURSES FOR GRADUATES ONLY

- 505, 506 Aerodynamics of Incompressible Fluids (3,3; A,W)** **Street**
Theory of perfect incompressible fluids. Euler's equations of motion; circulation and vorticity, potential flow, conformal transformations, and theory of the two-dimensional airfoil; lifting line theory of the finite wing. Theory of viscous incompressible fluids. The Navier-Stokes equations, dimensional analysis, and exact solutions. Prandtl's boundary layer theory, Kármán's integral theorem, and laminar and turbulent boundary layer over airfoils and bodies of revolution. Prerequisite, 505 for 506.
- 508, 509 Aerodynamics of Compressible Fluids (3,3; W,S)** **Street**
Basic thermodynamics, equations of motion of a nonviscous compressible fluid, flows in one dimension, shock waves, and subsonic compressible flows; the theory of characteristics and supersonic flows; exact solutions, linearized flows over flat plates and delta wings, swept-back wings, and bodies of revolution. Prerequisite, 508 for 509.
- 513 Heat Transfer in Aeronautics (3; offered when demand is sufficient)** **Street**
The fundamental laws of heat transfer; the temperature boundary layer and effects of high speed upon skin temperatures; applications to rocket flight at high altitudes, heat exchangers in aircraft, and de-icing of airplane wings. Prerequisites, 506 and Physics 250, or equivalent.
- 516 Stability and Control (3; S).** **Ganzer**
Aerodynamics of control; the general problem of dynamic stability; the influence of aerodynamic parameters on flying characteristics.
- 518 Rotary Wing Aircraft (3; W)** **Eastman**
The aerodynamics and dynamics of rotary wing aircraft.
- 520-521-522 Seminar (0-0-1; A-W-S)** **Staff**
- 530 Theory of Elastic Structures (3; A)** **Martin, Weikel**
Stresses, strains, displacements, and the basic equations of elasticity. Integration of equations for certain special cases. Principle of virtual work and the energy theorems; approximate solutions. Application of basic theory to particular cases of elastic structures.
- 533 Theory of Plasticity (3; S)** **Martin**
Behavior of inelastic structures. Significance of test methods and results; stress-strain relations; conditions for yielding. Plastic bending, torsion, buckling, and creep. Prerequisite, 530 or Civil Engineering 572.
- 540 Aircraft Structural Problems (3; W)** **Martin**
Application of the methods of elasticity to aircraft structural problems. Original papers and reports are used as source material; unsolved problems of current interest are considered and their difficulties discussed. Prerequisite, 530 or Civil Engineering 572.
- 545 Experimental Stress Analysis (3; A)** **Martin, Weikel**
A survey of the experimental methods commonly used in investigating and testing aircraft structures. Lectures supplemented by study of current experimental research projects and facilities. Prerequisite, 530 or Civil Engineering 572.
- 550 Dynamics of the Airplane (3; offered when demand is sufficient)** **Martin, Street**
The dynamics of the rigid airplane: general theory of particle motion in space, and the application to problems of airplane flight paths and airplane stability. The dynamics of the elastic airplane: general theory of systems of elastically connected particles, and the application to the dynamics of airplane components; dynamic loads on airplane structural components; gyroscopic propeller vibrations; special problems.
- 553 Aircraft Vibrations (3; A)** **Martin**
Short survey of elementary vibration theory; the vibrations of systems with many degrees of freedom, and of elastic bodies with special application to the airplane.
- 556 Aero-Elasticity (3; W)** **Martin**
The aerodynamics of the elastic airplane: theory of flutter and divergence phenomena; the influence of elasticity on airplane performance.
- 557 Nonlinear Problems in Airplane Dynamics (3; offered when demand is sufficient)** **Martin, Street**
The application to aeronautics of nonlinear ordinary differential equations of motion, and

the topology of their integral curves in the phase plane. Dynamical interpretation of singular points; existence of periodic solutions; questions of stability. Nonlinear resonance, frequency demultiplication; relaxation oscillations.

571, 572, 573 Analysis in Aeronautics (3,3,3; A,W,S)

Martin, Street

Analytical processes for solving problems in the various fields of aeronautical engineering.

599 Special Projects (2-5, maximum 15; AWS)

Staff

600 Research (2-5; AWS)

Staff

Thesis (*; AWS)

Staff

CHEMICAL ENGINEERING

Executive Officer: PAUL C. CROSS, 103 Bagley Hall

Adviser: RALPH W. MOULTON, 37 Bagley Hall

Professor: R. W. Moulton.

Associate Professor: J. L. McCarthy.

Assistant Professor: L. N. Johanson.

Instructor: J. A. Buckham.

The Department of Chemical Engineering offers courses leading to the degrees of Bachelor of Science in Chemical Engineering, Master of Science in Chemical Engineering, Master of Science in Engineering (see page 224), and Doctor of Philosophy.

BACHELOR OF SCIENCE IN CHEMICAL ENGINEERING

The curriculum for the first year is administered by the Department of General Engineering (see page 241).

SECOND YEAR

FIRST QUARTER	CREDITS
Chem. Engr. 271.....	3
Chem. 355 Physical.....	3
H.-S.S. 261 Tech. of Comm.	1
Math. 251 Analytic Geom. & Calc.	5
Physics 217 Engr. Physics. 4	
P.E. Activity	1
R.O.T.C.	2 or 3
	<hr/> 17-20

SECOND QUARTER	CREDITS
Chem. Engr. 272.....	3
Chem. 356 Physical.....	4
H.-S.S. 262 Tech. of Comm.	1
Math. 252 Analytic Geom. & Calc.	3
Mech. Engr. 202 Welding. 1	
Physics 218 Engr. Physics. 4	
P.E. Activity	1
R.O.T.C.	2 or 3
	<hr/> 17-20

THIRD QUARTER	CREDITS
Chem. Engr. 273.....	3
Chem. 357 Physical.....	3
Civil Engr. 292 Mechanics. 3	
H.-S.S. 263 Tech. of Comm.	1
Mech. Engr. 220 Heat Engines	3
Physics 219 Engr. Physics. 4	
P.E. Activity	1
R.O.T.C.	2 or 3
	<hr/> 18-21

THIRD YEAR

FIRST QUARTER	CREDITS
Chem. 335 Organic Chem.. 3	
Chem. 345 Organic Chem. Lab.	2
Chem. 358 Physical.....	3
Chem. Lab.	
Elect. Engr. 300 Direct Currents	5
H.-S.S. 331 Humanities.....	3
	<hr/> 16

SECOND QUARTER	CREDITS
Chem. Engr. 375.....	3
Chem. 336 Organic Chem.. 3	
Chem. 346 Organic Chem. Lab.	2
Chem. 359 Physical.....	3
Chem. Lab.	
Elect. Engr. 301 Alt. Currents	5
	<hr/> 16

THIRD QUARTER	CREDITS
Chem. Engr. 470.....	3
Chem. 337 Organic Chem.. 3	
Econ. 211 General.....	3
H.-S.S. 332 Humanities.....	3
Mech. Engr. 203 Metal Mach.	1
Mech. Engr. 361 Machine Design	3
	<hr/> 16

FOURTH YEAR

FIRST QUARTER	CREDITS
Chem. Engr. 471.....	4
Chem. Engr. 481.....	5
Chem. Engr. 498.....	1
H.-S.S. 491 Nontech. Reading	1
Psychol. 336 Industrial. 3	
Electives	2
	<hr/> 16

SECOND QUARTER	CREDITS
Chem. Engr. 472.....	4
Chem. Engr. 482.....	5
Chem. Engr. 498.....	2
Hum. Rel. 365 Indust. Rel.	3
H.-S.S. 492 Nontech. Reading	1
	<hr/> 15

THIRD QUARTER	CREDITS
Chem. Engr. 473.....	4
Chem. Engr. 483.....	5
Chem. Engr. 498.....	2
Bus. Law 307 Bus. Law... 3	
H.-S.S. 493 Nontech. Reading	1
	<hr/> 15

ADVANCED DEGREES

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School (see page 261). Entrance, or qualifying, examinations are required of prospective candidates for both degrees. These examinations are designed to assess the student's knowledge and understanding of the material normally contained in an undergraduate program with a major in chemical engineering. They are usually given on the Friday and Saturday preceding the opening of Autumn Quarter; during the first week of Winter Quarter, and toward the end of Spring Quarter.

MASTER OF SCIENCE IN CHEMICAL ENGINEERING. The requirements for this degree are 36 credits of course work and a thesis. The course work is usually divided in the ratio of about two to one between the major department and other departments. No foreign language is required.

DOCTOR OF PHILOSOPHY. Students who have completed at least one year of satisfactory graduate study and are acceptable for work leading to the Doctor of Philosophy degree in chemistry and chemical engineering are required to take "cumulative" examinations regularly, twice each quarter. They are not then required to take formal examinations in courses offered by the Department, except as may be specified by their research professors or advisory committees. The cumulatives are general examinations in the field of chemical engineering and are designed to stimulate independent study and thought. They attempt to evaluate the breadth of knowledge gained from courses, seminars, and literature, and the student's ability to apply this knowledge to problems of a diverse nature. The cumulative requirement is satisfied when six examinations are passed, usually out of the first twelve taken.

COURSES FOR UNDERGRADUATES

- 271, 272, 273 Introduction to Chemical Engineering (2-3,2-3,2-3; A,W,S)** **Buckham**
271: application of scientific laws to engineering problems dealing with gases and gas-vapor mixtures, from the standpoint of the chemical engineer, emphasizing the use of the material balance as a general tool. Prerequisites, Chemistry 107 or 116, and Mathematics 153, or equivalents. 272: material and energy balances of combustion processes and an introduction to thermodynamics. Prerequisite, 271. 273: combination of material and energy balances with equilibrium and rates of physical and chemical reactions. Elementary economic balance in chemical engineering operations. Prerequisite, 272.
- 371, 372 Survey of Chemical Engineering (2,2; W,S)** **Buckham**
Problems, methods, and objectives of the chemical engineer, illustrated by the study of typical unit operations and cases of scaling up of laboratory research to commercial production. For nonmajors only. Prerequisite, senior standing in chemistry or permission.
- 375 Chemical Engineering Thermodynamics (3; W)** **Staff**
Pressure-volume-temperature relationships, equations of state, and thermodynamic laws and properties, in terms of unit operations. Prerequisites, Chemistry 355 and 356 or equivalents.
- N381 Field Trip (0; Spring Vacation)** **Staff**
A four-day field trip in which various chemical industries in the Pacific Northwest are visited. Prerequisite, junior standing or permission.
- N382 Field Trip (0; Spring Vacation)** **Staff**
A four-day field trip in which various chemical industries in the Pacific Northwest are visited. Prerequisite, senior standing or permission.
- 470, 471, 472, 473 Unit Operations (3, 2 or 4, 2 or 4, 2 or 4; S,A,W,S)** **McCarthy, Johanson, Moulton, Johanson**
470: fundamental unit operations of chemical engineering, beginning with the film theory, fluid flow, flow meters, heat transfer, and evaporation. Prerequisite, 273. 471: a continuation of 470, in which absorption and distillation are studied from the standpoints of equilibria, operating lines, rates, and size of equipment required. The laboratory covers the subject matter of 470. 472: a continuation of 471, with a study of extraction, absorption, air conditioning, drying, and crystallization. The laboratory covers primarily the subject matter of 471. Prerequisite, 471. 473: a continuation of 472, with a study of filtration, sedimentation, classification, crushing, and grinding. The laboratory covers the subject matter of 472 and 473. Prerequisite, 472.
- 474 Research in Electrochemistry (2-5; S)** **Staff**
Prerequisite, permission.
- 477 Advanced Chemical Calculations (3; offered when demand is sufficient)** **Staff**
Mathematical study of chemical operations; use of calculus in typical engineering problems. Prerequisite, Mathematics 251 or equivalent.
- 481 Inorganic Chemical Processes (2,3 or 5; A)** **Moulton**
Fuels; coal distillation; carbon; cement; potassium salts; fertilizers; sodium compounds; chlorine; electrochemical industries; sulfur and sulfuric acid; nitrogen industries; nuclear engineering. Prerequisite, Chemistry 221 or equivalent.

- 482 Organic Chemical Processes (2,3, or 5; W)** **Moulton**
Process instrumentation; paints and protective coatings; oils and fats; waxes; soaps and synthetic detergents; sugar and starch; wood chemicals; pulp and paper; synthetic fibers; plastics and polymers; petroleum chemicals. Prerequisite, Chemistry 221 or equivalent.
- 483 Chemical Engineering Process Design (2,3, or 5; S)** **Moulton**
Comprehensive design problem for a chemical plant; economic study; raw materials; process flow sheet; material and heat balances; design of specific units; sizing of lines and pumps; instrumentation; packaging; warehousing; marketing and sales. Prerequisite, Chemistry 221 or equivalent.
- 485 Industrial Electrochemistry (3; offered when demand is sufficient)** **Moulton**
Theoretical and applied electrochemistry; units and laws; overvoltage and polarization; analysis; oxidation and reduction; deposition; refining; metallurgy; electrothermics. Prerequisite, Chemistry 356 or permission.
- 498 Chemical Engineering Thesis (1-5; AWS)** **Staff**
An assigned problem in unit operations or applied chemistry is investigated first in the literature and then in the laboratory and the results are incorporated into a thesis.

COURSES FOR GRADUATES ONLY

- 520 Seminar (1-5; A)** **Staff**
Offered as desired by various members of the staff.
- 570 Heat Transfer and Fluid Flow (3; W)** **McCarthy**
Measurement of temperature and heat capacity; dimensional analysis; Fourier's law; steady and unsteady heat conduction; radiant energy; energy transfer; fluid flow mechanisms; energy balance; Bernoulli's theorem; viscosity concepts; Poiseuille's and Fanning's equations; friction factors; convection heat transfer; Reynolds' analogy; film coefficient correlations by the use of Nusselt's, Prandtl's, Graetz's, and Reynolds' numbers; over-all heat transfer coefficients; introductory design calculations. Prerequisite, 471.
- 571 Diffusional Processes (3; S)** **Moulton**
Diffusion theory; transfer of material between phases; design of absorption equipment; Kremser method; multicomponent systems; performance of absorption equipment; simultaneous absorption and chemical reaction; solvent extraction. Prerequisite, 472.
- 572 Distillation (3; W)** **Johanson**
Application of fundamental principles to industrial problems in binary and multicomponent distillation. Equilibrium and rate of transfer; ideal and nonideal systems. Graphical and analytical calculation methods. Design, control, and instrumentation of fractionating equipment. Prerequisite, 473.
- 575 Advanced Chemical Engineering Thermodynamics (3; A)** **McCarthy**
General equations for phase equilibrium; applications of thermodynamics to unit operations and to prediction of chemical equilibria developed in some detail. Prerequisite, Chemistry 456 or equivalent.
- 580 Nuclear Engineering (3; A)** **Moulton**
Elementary pile theory; design and construction of nuclear reactors; radioactive waste disposal; isotope separation. Prerequisite, 570.
- 581 Kinetics and Catalysis (3; W)** **Johanson**
Homogeneous and heterogeneous systems, with emphasis on chemical engineering principles applied to industrial reactor design. Prerequisite, 570.
- 582 Multistage Separation Processes (3; S)** **McCarthy**
Theoretical and practical study of special batch and continuous multistage processes for separation of various substances, including isotopes. Ion exchange, chemical exchange, gas and thermal diffusion, chromatographic, electrophoretic, and other processes are considered. Prerequisite, permission.
- 583 Topics in Chemical Engineering Unit Operations (1-3; A)** **Staff**
Discussion of subjects of current interest. Prerequisite, permission.
- 584 Topics in Chemical Engineering Unit Processes (1-3; W)** **Staff**
Discussion of subjects of current interest. Prerequisite, permission.
- 585 Topics in Chemical Engineering Plant Design (1-3; S)** **Staff**
Discussion of subjects of current interest. Prerequisite, permission.
- 586 Chemistry of High Polymers (2; offered when demand is sufficient)** **McCarthy**
Fundamentals of substances with high molecular weight, including study of valence consideration, molecular weight determination, polymerization and condensation reactions, cracking fiber and film formation, glasses, and mechanical properties as related to chemical structure. Prerequisites, 232 and 356.
- 587 Chemistry of High Polymers (2; offered when demand is sufficient)** **McCarthy**
Chemistry and technology of substances with high molecular weight, including natural and synthetic hydrocarbons, vinyls, rubbers, phenolaldehyde resins, lignin, cellulose, starch, glycogen, nylons, proteins, and silicones. Prerequisites, Chemistry 232 and 356.

Thesis (*; AWS)

Staff

596 Topics in Chem.E. Research (3)(1-5)
600 Research (*)

CIVIL ENGINEERING

Executive Officer: ROBERT B. VAN HORN, 201 More Hall

Professors: F. B. Farquharson, R. G. Hennes, A. L. Miller, H. K. Moritz, F. H. Rhodes, Jr., S. I. Sergev, F. C. Smith, R. G. Tyler, R. B. Van Horn, H. E. Wessman.

Professor Emeritus: C. S. Harris.

Associate Professors: T. H. Campbell, H. M. Chittenden, R. A. Hechtman.

Assistant Professors: H. M. Chenoweth, J. R. Clanton, I. L. Collier, M. L. Ekse, H. P. Mittet, R. H. Meese, R. O. Sylvester.

Instructors: J. E. Colcord, E. M. Horwood.

The Department of Civil Engineering offers courses leading to the degrees of Bachelor of Science in Civil Engineering, Master of Science in Engineering (see page 224), Master of Science in Civil Engineering, and Master of Arts in Regional Planning.

BACHELOR OF SCIENCE IN CIVIL ENGINEERING

The curriculum for the first year is administered by the Department of General Engineering (see page 241).

The fourth-year program calls for five 3-credit civil engineering elective courses. Electives in the field of hydraulics are courses 445, 447, 448; in materials, courses 467, 468; in structures, course 485; in sanitary, courses 455, 458, 459; in transportation, courses 315, 403, 422, 423, 424, 426, 428, 429. One of these electives must be in the sanitary engineering field, preferably 458. Students planning graduate work in structures should take Mathematics 421 (Ordinary and Partial Differential Equations) as an elective and those planning to take a degree in industrial engineering should take Accounting 150 (Fundamentals) as an elective.

SECOND YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Civil Engr. 291.....	3	Civil Engr. 292.....	3	Civil Engr. 293.....	3
Econ. 211 General.....	3	Geol. 310 Engineering.....	5	Elect. Engr. 300 Direct	
H.-S.S. 261 Tech. of		H.-S.S. 262 Tech. of		Currents.....	5
Comm.....	1	Comm.....	1	H.-S.S. 263 Tech. of	
Math. 251 Analytic Geom.		Math. 252 Analytic Geom.		Comm.....	1
& Calc.....	5	& Calc.....	3	Mech. Engr. 260 Mechan-	
Physics 217 Engr. Physics 4		Physics 219 Engr. Physics 4		ism, or Mech. Engr.	
P.E. Activity.....	1	P.E. Activity.....	1	220 Heat Engines.....	3
R.O.T.C.....	2 or 3	R.O.T.C.....	2 or 3	Engines.....	3
	17-20		17-20	Physics 219 Engr. Physics 4	
				P.E. Activity.....	1
				R.O.T.C.....	2 or 3
					17-20

THIRD YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Civil Engr. 312.....	3	Civil Engr. 313.....	3	Civil Engr. 314.....	3
Civil Engr. 342.....	5	Civil Engr. 343.....	5	Civil Engr. 321.....	3
Civil Engr. 371.....	3	Civil Engr. 363.....	3	Civil Engr. 350.....	3
Elect. Engr. 301 Alt.		Civil Engr. 372.....	3	Civil Engr. 362.....	3
Currents.....	5	H.-S.S. 491 Nontech.		H.-S.S. 492 Nontech.	
	16	Read.....	1	Read.....	1
			15		16

FOURTH YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Civil Engr. 375.....	3	Civil Engr. 376.....	3	Civil Engr. 377.....	3
Civil Engr. 466.....	3	H.-S.S. 332 Humanities.....	3	Bus. Law 307 Bus. Law.....	3
H.-S.S. 331 Humanities.....	3	Hum. Rel. 365 Indust.		H.-S.S. 333 Humanities.....	3
Psychol. 335 Industrial.....	3	Rel.....	3	Electives.....	6
Electives.....	3	Electives.....	6		15
	15		15		

ADVANCED DEGREES

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School (see page 261).

MASTER OF SCIENCE IN CIVIL ENGINEERING. Graduate work leading to this degree is offered in the fields of hydraulic engineering, sanitary engineering, soil mechanics, structural engineering, and transportation (highway) engineering. The requirements are: a minimum of 45 credits, including 12 to 24 in the major field, 12 in supporting courses, and 9 to 18 for the thesis. No foreign language is required.

MASTER OF ARTS IN REGIONAL PLANNING. This degree is offered as an interdepartmental program utilizing resources of the Departments of Anthropology, Economics, Geography, Political Science, Psychology, and Sociology; the Schools of Architecture, Law, and Medicine (Department of Public Health); the Colleges of Business Administration and Engineering; the Bureau of Governmental Research and Services; and the Office of Population Research.

The program in regional planning includes city planning, such as is done for metropolitan regions or unified urban areas composed of several cities or counties, and also the kind of area development planning that is appropriate for large national regions such as the Tennessee Valley and the Columbia Basin. Adequate undergraduate preparation will be required for admission to candidacy for the regional planning degree, but an attempt will be made to integrate the undergraduate work and the graduate course program for each candidate individually. There is no foreign language requirement for this degree.

The chairman of the regional planning program is Richard G. Tyler, Professor of Civil Engineering, to whom inquiries for further information may be directed.

COURSES FOR UNDERGRADUATES**Mechanics and Surveying**

- 256 Forest Surveying (8; S)** **Hoag**
The use of steel tape, compass, clinometer, level, transit, and plane table. Given at Pack Forest for forestry majors only.
- 291, 292, 293 Mechanics (3,3,3; AWS,AWS,AWS)** **Campbell, Staff**
291: kinetics, kinematics, and applied dynamics. Prerequisites, General Engineering 112, Mathematics 153 or equivalent, and Physics 217 (Physics 217 may be taken concurrently). 292: mechanics of materials. Theory, analysis, and design of machine and structural members. Prerequisites, 291 or permission, and Mathematics 153 or equivalent. 293: dynamics and mechanics of materials, continued. Prerequisites, 291, 292, and Mathematics 252 or equivalent.
- 312 Route Surveying (3; AW)** **Chittenden, Colcord, Collier**
Alignment survey problems associated with the location of highways and railways, including preliminary and final location, staking of curves, compensation for curvature and sight distance, and preparation of location maps for highways. Prerequisite, 256 or General Engineering 121.
- 313 Location and Earthwork (3; WS)** **Chittenden, Colcord, Collier**
Highway and railway grades, profiles, cross sections, earthwork quantities, including shrinkage and swell, and application of the mass diagram to the problems of haul; legal description and estimates. Prerequisite, 256 or General Engineering 121.
- 314 Intermediate Surveying (3; S)** **Chittenden, Colcord, Collier**
Adjustment of instruments; calibration of tapes; horizontal and vertical control of intermediate precision; determination of azimuth; state plane coordinates; mapping. Prerequisite, General Engineering 121.
- 315 Photogrammetry (3; AWS)** **Chittenden, Colcord**
Characteristics of aerial photography; photointerpretation; uses of aerial photographs; map compilation and flight planning. Prerequisite, 256 or 314.

Transportation Engineering

- 321 Roads and Pavements (3; AWS)** **Ekse, Meese**
Road-building methods and materials.
- 403 Principles of Regional Planning (3; AWS)** **Tyler, Horwood**
Land use, development of natural resources, and land settlement.
- 422 Railway Engineering (3; A)** **Ekse**
Locomotive performance and train resistances; permanent way; economics of railway location; sidings and terminals. Prerequisite, 313.
- 423 River and Harbor Engineering (3; W)** **Meese**
Breakwaters, shore protection, channel protection, and channel regulation; theory of waves. Prerequisites, 313, 342.
- 424 Highway Design (3; AS)** **Ekse**
Theories of rigid and flexible pavements; design of bituminous mixtures; intersections and roadway design; culverts. Two lectures and one laboratory period. Prerequisite, 321.

291 Dynamics of Materials
292 Mechanics of Materials
293 Dynamics of Materials

- 426 Airfield Design (3; WS)** **Ekse**
Runway layout, paving, lighting, and drainage of airfields.
- 428 Highway Administration (3; S)** **Hennes, Horwood**
Financing, planning, and operation of highways. Prerequisite, senior or graduate standing or permission.
- 429 Traffic Engineering (3; S)** **Ekse, Horwood**
Operation and development of street or highway facilities to meet the needs of traffic. Prerequisite, senior or graduate standing or permission.

Hydraulic Engineering

- 342 Hydraulics (5; AWS)** **Moritz, Campbell, Staff**
Practical fluid mechanics with engineering application to the energy and flow of real liquids through various orifices, intakes, pipes, reducing and expanding passages, open channels, including streams, over weirs, and in tangential wheels, reaction turbines and centrifugal pumps. Emphasis is on fundamental principles, accompanied by laboratory verification. Three lectures, three hours problems, three hours laboratory. Prerequisite, 291.
- 343 Hydraulic Engineering (5; AWS)** **Moritz, Campbell, Chenoweth**
Complete projects and hydrometric methods; design of gravity spillway; flume intakes; surge; economical design of pipe line. Prerequisite, 342.
- 445 Hydraulic Machinery (3; AWS)** **Moritz**
Application of hydraulic principles to the design, development, and function of hydraulic machinery, with emphasis on hydraulic turbines and centrifugal pumps. Prerequisite, 342.
- 447 Hydraulic Power (3; WS)** **Campbell**
Hydrology; water power development; penstocks and turbines; types of installation. Prerequisite, 343 or 342.
- 448 Reclamation (3; AS)** **Van Horn, Campbell**
Drainage and irrigation engineering; soil conservation. Prerequisite, 343.

Sanitary Engineering

- 350 Introduction to Sanitary Engineering (3; AWS)** **Sylvester**
Basic concepts of water supply, sewerage, refuse disposal, and stream pollution; chemical, bacteriological, and physical analysis of water and sewage. Prerequisite, Chemistry 107 or equivalent.
- 455 Water Supply ~~Problems~~ ^{Treatments} (3; AW)** **Tyler, Sylvester**
Theory, design, construction, operation, and maintenance of water supply sources, conduits, distribution systems, and treatment facilities. Prerequisites, 342 and 350.
- 458 Sewerage and Sewage Treatment (3; AWS)** **Tyler, Sylvester**
Design, operation, and maintenance. Refuse collection and disposal. Prerequisite, 342 and 350.
- 459 Sanitary Designs (3; S)** **Tyler**
Sewers, sewage disposal, and water purification plants. Prerequisites, 455 and 458.

Engineering Materials

- 362, 363 Materials of Construction (3,3; AWS,AWS)** **Mittet, Smith**
362: concrete, Portland cement, and concrete mixtures. Prerequisite, 292. 363: strength and physical characteristics of timber, steel, and structural aluminum alloys. Prerequisite, 292.
- 466 Soil Mechanics (3; AWS)** **Meesse**
Engineering properties of soils; bearing capacity and settlement of foundations. Two hours of laboratory plus four hours of class work.
- 467 Earthwork Engineering (3; AWS)** **Hennes**
Design, construction, and analysis of earthwork. Prerequisite, 466.
- 468 Engineering Properties of Soils (3; AW)** **Hennes, Meesse**
Theory and procedures in soil testing and experimentation. Prerequisite, 466.

Structural Analysis and Design

- 371, 372, 373 Structural Theory (3,3,3; AWS,AWS,AWS)** **Clanton, Mitter**
371: introduction to continuous structures; reinforced concrete members and connections; elastic-line methods. Prerequisite, 293. 372: stresses and deflections of beam and girder spans; wood and steel members and connections; combined stress members. Prerequisite, 293. 373: stresses and deflections of trusses and simple frames; influence lines; moving loads; strain-energy methods. Prerequisite, 371.
- 375, 376, 377 Structural Design (3,3,3; AWS,AWS,AWS)** **Clanton, Miller, Rhodes, Sergeov**
375: reinforced concrete retaining walls and buildings; rigid frames. Prerequisite, 371. 376: reinforced concrete, steel, and wood bridges; girder and truss spans. Prerequisite, 373. 377: wood and steel frame buildings; roof trusses. Prerequisite, 376.
- 485 Applied Structural Analysis (3; WS)** **Millor**
Rigid frames and continuous structures; statically indeterminate assemblies, including space frames; members of nonuniform section. Prerequisite, 375.
- 491 Advanced Professional Design (2-5 each quarter; WS)** **Staff**
Students should register for H (hydraulic), M (materials), S (structural), W (sanitary), or T (transportation). Prerequisite, permission of executive officer.

COURSES FOR GRADUATES ONLY

- 509 Engineering Relations (2; W)** **Staff**
Methods of setting up engineering problems and investigations; written and oral presentation of professional ideas and analysis of current research and investigations, both professional and economic, in the student's major field. Prerequisite, graduate standing.
- 520 Seminar (2; AWS)** **Staff**
- 523 Port Development (4; W)** **Hennes, Moese**
Engineering design of port facilities, river and protective works; study of tides, currents, wave action, layout of channels and anchorage basins, and wharf and other waterfront constructions. Prerequisite, 342 and senior or graduate standing.
- 524 Modern Pavement Theory (4; AS)** **Elko**
Elastic slab and plastic equilibrium applied to roadway surfacing and base; other elements of highway design; laboratory.
- 547 Advanced Hydraulic Power (4; WS)** **Campbell**
Hydrology; water power development; penstocks and turbines; types of installations and special problems in hydraulic power. Prerequisite, 342.
- 560 Photoelasticity (3; AW)** **Sergev**
Use of photoelectric apparatus with applications in the analyses of common engineering problems in two dimensions; modern photoelastic theory; materials and methods. Prerequisite, graduate standing or permission.
- 567 Advanced Soil Mechanics and Foundations (4; AWS)** **Hennes**
Design, construction, and analysis of earthwork. Stress in earth masses; dam foundations; landslide control. Prerequisite, 466.
- 569 Applied Soil Mechanics (3; S)** **Hennes, Moese**
Soil mechanics in engineering practice; the application of theory to the analysis of footings, piling, retaining walls, tunnels, and other sub-structures. Prerequisites, 467 and senior or graduate standing.
- 571 Advanced Strength of Materials (3; A)** **Sergev**
The solution of more complicated problems in strength of materials, with particular emphasis on the technique of breaking down the problems of fundamentals and solving the resultant mathematical expressions.
- 572 Theory of Elasticity (3; W)** **Sergev**
The application of more refined methods of beams, disks, curved bars, thick cylinders, and torsion prismatic solids; study of stress concentration, strain energy, and virtual work.
- 573 Elastic Stability (3; S)** **Sergev**
The study of buckling phenomena in columns, beams, plates, and tubes, with practical applications.
- 581, 582, 583 Advanced Structures (3,3,3; A,W,S)** **Miller**
581: hinged arches and continuous trusses. 582: multi-story and nonrectangular rigid frames; members of nonuniform section. 583: statically indeterminate arches. Prerequisite for each course, graduate standing in civil engineering or permission.
- 585 Structural Model Analysis (3; A)** **Hechtman**
Basic structural theory taught by structural model analysis.
- 586 Structural Materials and Design (3; W)** **Hechtman**
Mechanical properties of structural steel, structural aluminum alloy, and reinforced concrete which affect structural design.
- 587 Design of Welded Structures (3; S)** **Hechtman**
Factors such as the function of the structure, the mechanical properties of the metal, and the structural details which must be considered in the design of a welded structure. Prerequisite, 586.
- 595 Advanced Professional Design (2-5, maximum in one field, 15; AWS)** **Staff**
Special studies under the direction of staff members. Students should register for H (hydraulics), M (materials), S (structural), W (sanitary), or T (transportation).
- 600 Research (*; AWS)** **Staff**
Special investigations by graduate students under the direction of staff members. Students should register for H, M, S, W, or T.
- Thesis (*; AWS)** **Staff**

ELECTRICAL ENGINEERING

Executive Officer: AUSTIN V. EASTMAN, 201 Electrical Engineering

Professors: A. V. Eastman, A. E. Harrison, G. L. Hoard, R. E. Lindblom, E. A. Loew, G. R. Shuck, G. S. Smith.

Associate Professors: F. R. Bergseth, L. B. Cochran, W. R. Hill, L. J. Lewis.

Assistant Professors: F. D. Robbins, W. E. Rogers, H. M. Rustebakke, H. M. Swarm.

Instructors: A. B. Jacobsen, T. M. Stout.

The Department of Electrical Engineering offers courses leading to the degrees of Bachelor of Science in Electrical Engineering, Master of Science in Electrical Engi-

neering, Master of Science in Engineering (see page 224), and Master of Electrical Engineering.

BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING

The curriculum for the first year is administered by the Department of General Engineering (see page 241).

In the third and fourth years, students may either follow the prescribed curriculum or make substitutions in it to take an option in communication or power. In the communication option, Electrical Engineering 360, 361, and 470 may be substituted for 340, 341, and 450; in the power option, Electrical Engineering 440 and 4 credits in electrical electives may be substituted for 460 and 461.

Students with a cumulative grade-point of 3.0 or better who plan to study for an advanced degree may substitute Mathematics 421 and 422 (Ordinary and Partial Differential Equations) for Mechanical Engineering 221 (Laboratory) and 362 (Machine Design).

SECOND YEAR

FIRST QUARTER	CREDITS
Elect. Engr. 220	5
H.-S.S. 261 Tech. of Comm.	1
Math. 251 Analytic Geom. & Calc.	5
Mech. Engr. 201 Metal Castings	1
Physics 217 Engr. Physics	4
P.E. Activity	1
R.O.T.C.	2 or 3
	17-20

SECOND QUARTER	CREDITS
Elect. Engr. 221	2
Civil Engr. 291 Mechanics	3
H.-S.S. 262 Tech. of Comm.	1
Math. 252 Analytic Geom. & Calc.	3
Mech. Engr. 220 Heat Engines	3
Physics 219 Engr. Physics	4
P.E. Activity	1
R.O.T.C.	2 or 3
	17-20

THIRD QUARTER	CREDITS
Elect. Engr. 225	6
Civil Engr. 292 Mechanics	3
H.-S.S. 263 Tech. of Comm.	1
Math. 253 Analytic Geom. & Calc.	3
Mech. Engr. 221 Lab.	3
P.E. Activity	1
R.O.T.C.	2 or 3
	17-20

THIRD YEAR

FIRST QUARTER	CREDITS
Elect. Engr. 320	5
H.-S.S. 331 Humanities	3
Mech. Engr. 202 Welding	1
Mech. Engr. 260 Mechanisms	3
Mech. Engr. 340 Engr. Mater.	3
	15

SECOND QUARTER	CREDITS
Elect. Engr. 340	4
Elect. Engr. 341	4
H.-S.S. 332 Humanities	3
Mech. Engr. 203 Metal Machining	1
Mech. Engr. 361 Machine Design	3
	15

THIRD QUARTER	CREDITS
Elect. Engr. 420	4
Elect. Engr. 450	6
Econ. 211 General	3
H.-S.S. 333 Humanities	3
	16

FOURTH YEAR

FIRST QUARTER	CREDITS
Elect. Engr. 460	5
H.-S.S. 491 Nontech. Read.	1
Mech. Engr. 362 Machine Design	3
Physics 455 Modern Physics	3
Psychol. 336 Industrial	3
	15

SECOND QUARTER	CREDITS
Elect. Engr. 425	4
Elect. Engr. 461	5
Civil Engr. 342 Hydraulics	5
H.-S.S. 492 Nontech. Read.	1
	15

THIRD QUARTER	CREDITS
Elect. Engr. 429	3
Bus. Law 307 Business Law	3
Hum. Rel. 365 Indust. Rel.	3
H.-S.S. 493 Nontech. Read.	1
Electives	6
	16

ADVANCED DEGREES

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School (see page 261). No foreign language is required for these degrees.

MASTER OF SCIENCE IN ELECTRICAL ENGINEERING. A total of 36 credits of course work and a suitable thesis are required for this degree. Course work should be divided between electrical engineering and supporting courses in other fields in the ratio of approximately two to one. Electrical engineering courses must be chosen from those numbered above 500 and must include Electrical Engineering 510, 520, 521, and 522.

MASTER OF ELECTRICAL ENGINEERING. This is a more advanced degree than that of Master of Science in Electrical Engineering. A total of 72 credits of course work and a more extensive thesis are required. Other requirements are similar to those for the Master of Science degree. Certain physics courses may be used in partial satisfaction of the major requirements.

COURSES FOR UNDERGRADUATES

- 200 Elementary Electronics (5; S)** **Staff**
Vacuum and gas-filled tubes; photosensitive devices; amplifiers and simple control circuits; cathode-ray oscillograph; elements of instrumentation. Short course for chemistry students. Not open to engineering students. Prerequisites, Physics 122 and Mathematics 252 or 308.
- 220 Direct-Current Circuits (5; AWS)** **Staff**
Direct-current circuit theory, including Ohm's Law, Kirchoff's Laws, Thevenin's theorem, superposition theorem, effects of temperature, inductance, and capacitance. Beginning course for electrical engineering students. Prerequisites, Mathematics 153 and General Engineering 111.
- 221 Direct-Current Measurements (2; AWS)** **Staff**
Methods of measuring potential, current, resistance, flux, inductance, and capacitance. Prerequisite, 220.
- 225 Direct-Current Machinery (6; AWS)** **Staff**
Construction, operation, and characteristics of direct-current machinery. Prerequisite, 221.
- 300 Direct Currents (5; AWS)** **Staff**
Short course in direct-current circuits and machinery for nonmajors. Prerequisites, Physics 218, Mathematics 153, and General Engineering 111.
- 301 Alternating Currents (5; AWS)** **Staff**
Short course in alternating-current circuits and machinery for nonmajors. Prerequisite, 300.
- 320 Alternating-Current Circuits (5; AWS)** **Staff**
Theory of single-phase and three-phase circuits, including vector notation. Prerequisite, 221.
- 340 Alternating-Current Machinery (4; AWS)** **Staff**
Theory of alternators, induction motors, and transformers. Prerequisites, 225 and 320. To be taken concurrently with 341.
- 341 Alternating-Current Machinery Laboratory (4; AWS)** **Staff**
Experimental work with alternating-current machinery. To be taken concurrently with 340.
- 360 Alternating-Current Machinery (4; AWS)** **Staff**
A condensation of 340 and 450 covering the theory of transformers, induction motors, alternators, synchronous motors, dielectric phenomena, and other power problems. For students specializing in communication. Prerequisites, 225 and 320. To be taken concurrently with 361.
- 361 Alternating-Current Machinery Laboratory (4; AWS)** **Staff**
Experimental work with alternating current machinery. To be taken concurrently with 360.
- 400 Vacuum Tubes and Electronics (5; AS)** **Staff**
Vacuum tubes, rectifiers, amplifiers, oscillators, and other electronic phenomena. Short course for nonmajors. Prerequisite, 301.
- 420 Vacuum Tubes and Electronics (4; AWS)** **Staff**
Fundamentals of vacuum tubes; theory of rectifiers; photoelectric cells; thyratons; applications to power and communication fields. Prerequisite, 320.
- 425 Electric Transients (4; AWS)** **Staff**
Single- and double-energy transients in R, L, and C circuits and with either direct or alternating applied emf's; magnetically coupled circuits and circuits with variable parameters. Prerequisite, 320.
- 429 Field Theory (3; AWS)** **Staff**
Electric and magnetic fields under both static and dynamic conditions; basic field equations such as Maxwell's and Poisson's. Prerequisite, 320.
- 430 Individual Projects (2-5, maximum 10; AWS)** **Staff**
Assigned construction or design projects carried out under the supervision of the instructor.
- 440 Vacuum Tube Circuits (6; AWS)** **Staff**
A condensation of 460 and 461 especially designed for power majors, with applications in power and related fields. Prerequisite, 420.
- 445 Electrical Measurements (3; W)** **Smith**
Theory and operation of practical and precision measuring apparatus, including bridges, potentiometers, watt-hour meters, demand meters, etc. Prerequisite, 340.
- 446 Electrical Machine Design (3; A)** **Lindblom**
Design of two direct-current generators and of a transformer. Prerequisite, 340.
- 450 Advanced Alternating Currents (6; AWS)** **Staff**
Theory of synchronous motors, rotary converters, and mercury arc rectifiers; introduction to symmetrical components, transmission lines, and single-phase motors. Prerequisite, 340.
- 451 Illuminating Engineering (3; S)** **Shuck**
Fundamental principles, including the design of practical lighting installations and a study of characteristics of illuminaries. Prerequisite, 320.
- 453 Electric Power Systems (3; AS)** **Robbins**
Elements and economics of power generation, transmission, and distribution. The laboratory work includes some field trips. Prerequisite, 340.
- 457 Industrial Control (3; AW)** **Hoard**
Theory and operation of control circuits; use of vacuum tubes, synchros, amplidyne, saturable reactors, and other circuit components in various types of control circuits. Prerequisites, 340 and 420.

- 460, 461 Vacuum Tube Circuits (5,5; AWS,AWS)** **Staff**
Theory of vacuum tube amplifiers at both audio and radio frequencies; vacuum tube oscillators, modulators, and detectors; amplitude, frequency, and pulse modulation; communication systems; applications in the communication field. Prerequisite, 420; 460 for 461.
- 470 Communications Networks (6; AWS)** **Staff**
Network theorems; series and parallel resonance; theory of transmission lines; theory and design of filters; equalizers; impedance matching. Prerequisite, 320.
- 473 High-Frequency Circuits and Tubes (5; AWS)** **Cochran**
Special tubes and circuits for use at very high frequencies; trigger circuits, sweep circuits, and other auxiliary control circuits; preliminary study of wave propagation. Prerequisite, 460.
- 479 Radio Design (2; AWS)** **Jacobson**
Problems of designing radio receivers and transmitters and audio and video amplifiers; selection of suitable components; proper layouts. Must be preceded or accompanied by 461.

COURSES FOR GRADUATES ONLY

- 510 Advanced Circuit Theory I (3; A)** **Lewis**
Mathematical concepts applied in circuit analysis, including Fourier integrals, matrices, and complex variable. Prerequisites, 320 and Mathematics 421.
- 511 Network Analysis (4; W)** **Lewis**
Advanced filter theory and applications, including the analysis of feed-back amplifiers. Prerequisites, 460, 470, and 510.
- 512 Advanced Circuit Theory II (3; S)** **Lewis**
Application of operational calculus and the Laplace transformation to studies of the transient behavior of networks. Prerequisite, 510.
- 514 Power System Analysis (5; A)** **Bergsoth**
Methods of analysis for power systems, with emphasis on the interrelations between generation, transmission, and distribution; analysis by symmetrical components, sequence networks, load division, fault studies, transient and steady state behavior, and elements of system protection. Prerequisite, 340.
- 515 Measurements and Circuit Components (3; A)** **Stout**
Measurements of resistance, inductance, capacitance, and frequency at all frequencies from d-c to 10,000 megacycles; use of inductance bridges, r-f bridges, Twin-T circuits, Q meters, susceptance variation methods, frequency standards, and standing wave detectors. Prerequisite, 470.
- 520-521-522 Seminar (0-0-2; A-W-S)** **Lewis**
Required for all graduate students.
- 541 Advanced Transients (5; S)** **Smith**
Transient phenomena in rotating machinery, transmission lines, corona, and lightning; theory and use of impulse generator; precision use of oscillograph. Prerequisite, 425.
- 543 Symmetrical Components (3; W)** **Shuck**
A study of unbalanced three-phase systems, transmission lines, and protection of alternating-current equipment, by means of symmetrical components. Prerequisite, 450.
- 545 Power Transmission (5; W)** **Loew**
Theory, design, and operation of electric-power transmission lines. Prerequisite, 450.
- 547 Advanced Studies in Power Systems (5; S)** **Loew**
Power flow in systems with two voltage sources. General network equations; synchronous machine-power angle characteristics; composite systems. Equivalent reactance of synchronous machines; stability criteria, stability characteristics of turbo-generators; transmission-line electrical loadings and comparative economic study. System design; torque-angle characteristics, two-machine stability. Multi-machine problems. Prerequisite, 545.
- 560 Wave Phenomena (4; W)** **Rogers**
Solution of ordinary differential equations as applied to the vibrations of lumped systems; vector analysis and the solution of the partial differential equations of continuous systems; Fourier series, Bessel's functions, and orthogonality; solution of the field equations for wave guides and radiating systems. Prerequisite, 429.
- 562 Advanced Vacuum Tubes (4; W)** **Hill**
Emission theory, electron ballistics, electrostatic field distribution, and space charge effects; characteristics of triodes, tetrodes, and pentodes; electron optics and cathode-ray tubes. Prerequisite, 510.
- 566 Microwave Measurements (2; A)** **Harrison**
Measurements of wave length, power, admittance, dielectric constant, and losses at microwave frequencies. Prerequisites, 460 and 470.
- 567 Microwave Vacuum Tubes (5; W)** **Harrison**
Theory of ultra-high-frequency vacuum tubes, klystrons, traveling wave tubes, and magnetrons, and their modulation characteristics. Prerequisite, 566 or permission.
- 570 Radiation and Propagation (4; S)** **Swarm**
Ground-wave and sky-wave propagation; characteristics of the ionosphere; antennas and arrays. Prerequisite, 560.
- 580 Electroacoustics (5; A)** **Hill**
Properties of sound and physiology of hearing; acoustics and properties of acoustical materials; electrical transducers and sound reproduction. Prerequisite, 420.

- 582 Servomechanisms in Electrical Engineering (4; S)** **Stout**
 Function of servomechanisms; analysis of transient and frequency response; components and their characteristics; system synthesis; analytic and experimental techniques. Prerequisite, 510 or permission.
- 600 Research (2-5; AWS)** **Staff**
 Thesis (*; AWS) **Staff**

GENERAL ENGINEERING

Executive Officer: E. R. WILCOX, 311 Education Hall

Professors: R. Q. Brown, F. M. Warner, E. R. Wilcox.

Associate Professors: E. D. Engel, T. M. Rowlands.

Assistant Professors: H. Boehmer, C. E. Douglass, A. C. Gullickson, D. E. Avery, D. C. McNeese.

Instructors: V. B. Hammer, A. D. Hoag, T. W. Macartney, R. E. Messor.

Lecturer: R. W. Seed.

The Department of General Engineering administers the first-year curriculum in the College of Engineering. The courses given provide orientation and basic training for all entering students, and special attention is given to advising and personnel work with freshmen. At the beginning of the sophomore year students enter the curriculum of the department in which they have decided to major.

The standard first-year curriculum is outlined below. Exceptions to it are as follows: Students without high school chemistry will substitute Chemistry 111 and 112 (General) for Chemistry 105 and 106. Those who have had high school trigonometry and can pass a qualifying examination may omit Mathematics 104 (Plane Trigonometry) and take Mathematics 105 (College Algebra) in the first quarter. Students who expect to major in ceramic or metallurgical engineering in the School of Mineral Engineering will substitute Chemistry 115, 116, and 325 for Chemistry 105, 106, and 107. Students who expect to enter the Department of Chemical Engineering will also substitute Chemistry 115, 116, and 325 for Chemistry 105, 106, and 107, and in the first quarter omit Physical Education 175, substituting it for General Engineering 121 in the third quarter.

FIRST YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Gen. Engr. 100	1	Gen. Engr. 102	3	Gen. Engr. 103	3
Gen. Engr. 101	3	Gen. Engr. 112	3	Gen. Engr. 121	3
Gen. Engr. 111	3	Chem. 106 General	3	Chem. 107 General	3
Chem. 105 General	3	Math. 105 College Algebra	5	Math. 153 Analytic Geom.	
Math. 104 Plane Trig.	3	P.E. Activity	1	& Calc.	5
P.E. 175 Health	2	R.O.T.C.	2 or 3	H.-S.S. 140 Engr. Report	
P.E. Activity	1			Writing	1
R.O.T.C.	2 or 3		15-18	P.E. Activity	1
				R.O.T.C.	2 or 3
	16-19				16-19

COURSES FOR UNDERGRADUATES

- 100 Engineering Orientation (1; AW)** **Staff**
 Lectures, discussion, and reading assignments on the College of Engineering and on the various fields of professional engineering.
- 101 Engineering Drawing (3; AWS)** **Boehmer, Staff**
 Orthographic projection, including three-view drawing and all related views; use of instruments, sections, sketching, and isometric and scale practice; reading of drawings and techniques of letter and line work. Prerequisite, solid geometry (which may be taken concurrently).
- 102 Engineering Drawing (3; AWS)** **Douglas, Staff**
 Training in making acceptable shop drawings; ink and pencil tracings; standards and conventions; practice in reading commercial drawings. Prerequisite, 101.
- 103 Drafting Problems (3; AWS)** **Warner, Staff**
 Applied descriptive geometry. Practical application of descriptive geometry principles to the solution of problems in the different fields of engineering by drafting-room methods. Prerequisites, 101 and 102.
- 107 Engineering Drawing (3; WS)** **Warner, Hoag**
 Short course for forestry and art students.
- 111 Engineering Problems (3; AWS)** **Brown, Staff**
 Training in methods of analyzing and solving engineering problems, principally dynamics

problems; coaching in proper methods of work and study, including training in systematic arrangement and clear workmanship. The student is helped to orient himself in his engineering work. Prerequisite, high school physics and advanced algebra.

- 112 Engineering Problems (3; AWS)** **Gullikson, Staff**
Elementary mechanics, statics, and graphics; continuation of 111. Prerequisites, 101, 111, and Mathematics 104.
- 121 Plane Surveying (3; AWS)** **McNeese, Staff**
Surveying methods, use of instruments, computations, mapping, and U.S. public land surveys. Prerequisites, 102 and trigonometry.
- 351 Inventions and Patents (1; AWS)** **Seed**
Law and procedures for patenting inventions, employer-employee relationship, and trademarks. Primarily for engineering students.

HUMANISTIC-SOCIAL STUDIES FOR ENGINEERS

Executive Officer: STUART W. CHAPMAN, 312 Engineering Hall

Professor: A. V. Hall.

Associate Professor: S. W. Chapman.

Assistant Professor: J. R. Naiden.

Instructors: R. G. Cowles, B. C. Kirby, N. C. Rupp, J. R. Rustad, D. R. Skeels, J. W. Souther.

The Department of Humanistic-Social Studies provides courses which are required in all engineering curricula, but does not have a full curriculum leading to a degree. It offers an integrated program designed to develop facility in comprehensive reading, in analysis of thought, and in oral and written expression. To ensure establishment and maintenance of these skills, the courses begin in the freshman year and in most of the engineering curricula continue in unbroken sequence through the three years following. The subject matter covered acquaints engineering students with the broad outline of human knowledge, showing them something of the world's cultural development and introducing them to outstanding thinkers, artists, and men of action.

Several nontechnical courses offered in other colleges of the University are also required as part of the various engineering curricula: Business Law 307 (Business Law), Human Relations 365 (Industrial Relations for Engineers), Economics 211 (General), and Psychology 336 (Industrial Psychology for Engineers).

COURSES FOR UNDERGRADUATES

- N10 Rudiments of Writing (0; AWS)** **Staff**
A three-hour course taken without credit by students who fail in the University entrance test in spelling, punctuation, and grammar.
- 140 Engineering Report Writing (1; AWS)** **Staff**
Background of communication; practice in accurate and concise presentation of data through the various forms of technical reports. Prerequisite, N10 or passing of admission test.
- 261 Techniques of Communication (1; AWS)** **Staff**
Studies in subordination and coordination; analysis of lucidly written expository articles; techniques of reading and use of a reference library. Prerequisite, 140.
- 262 Techniques of Communication (1; AWS)** **Staff**
Studies in adaptation of material to readers of unlike levels, with emphasis on analysis of argument and propaganda; the newspaper and public address as media of social control; letters of application and recommendation reports. Prerequisite, 261.
- 263 Techniques of Communication (1; AWS)** **Staff**
Studies in successful communication; the novel and poetry; drama, newspaper, radio, and cinema; analysis of unlike media as employed by individual artists; an attempt to develop the student's individual style. Prerequisite, 262.
- 265 Techniques of Communication (3; AWS)** **Staff**
A substitute for 261, 262, and 263, for students whose schedules are irregular. Prerequisite, 140.
- 301 Modern Reading (3-5; AWS)** **Staff**
Weekly analysis and critical comment upon informative writings, fiction or drama, and current articles, acquainting the student with the main types of literature and art. Taken either in class or by conference alone. Prerequisite, 263 or equivalent.
- 302 Technical Writing (3; AWS)** **Staff**
Practice in writing; brief readings with analysis and critical comment. Taken either in class or by individual conference alone. Prerequisite, 263 or equivalent.
- 331 Humanities (3; AWS)** **Staff**
Broad survey of the fields of knowledge, with stress on basic human outlooks evidenced in science, the great religions, and developing democracy. Prerequisite, 263 or 265.

- 332 Humanities (3; AWS) Staff**
Influence of technology on society; studies of great thinkers, artists, and men of action. Prerequisite, 331.
- 333 Humanities (3; AWS) Staff**
Relationship of technology to contemporary social, intellectual, and artistic trends. Prerequisite, 332.
- 491 Nontechnical Reading (1; AWS) Staff**
Literary and informational material, planned to meet the most obvious needs of the individual student; weekly conference. Prerequisite, 263 or equivalent.
- 492 Nontechnical Reading (1; AWS) Staff**
Great works in literature, and their interpreters and critics; weekly conference. Prerequisite, 491.
- 493 Nontechnical Reading (1; AWS) Staff**
Current views, new outlooks, and contemporary world development. Prerequisite, 492.

INDUSTRIAL ENGINEERING

The industrial engineering curriculum consists of a regular four-year course of study in any engineering department that offers a full curriculum, supplemented by a fifth year devoted to study in industrial management, accounting, quality control, and related subjects. Since the College does not have a department of industrial engineering, students registering for this fifth year of study must have their schedule of courses approved by the department through which they received their first bachelor's degree.

Students who plan to enter the industrial engineering curriculum should take Accounting 150 (Fundamentals) as an elective subject for the first bachelor's degree. Those who fail to do so will need to take Accounting 150, in addition to the courses listed below, during their fifth year. This will require completion of Accounting 330 (Cost Accounting) in extension study or in residence during a fourth quarter.

BACHELOR OF SCIENCE IN INDUSTRIAL ENGINEERING

This second bachelor's degree is granted when 45 credits in the curriculum outlined below are successfully completed. In case of conflicts or other schedule difficulties, Production 301 (Principles of Production) may be substituted for Mechanical Engineering 410, and Production 351 (Production Planning and Control) for Mechanical Engineering 411.

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Acctg. 151 Fundamentals...	3	Acctg. 310 Intermediate...	5	Acctg. 330 Cost Acctg.....	5
Fin. 201 Banking & Bus...	5	Fin. 301 Corporation	5	Mech. Engr. 411 Prod.....	3
Electives	7	Mech. Engr. 410 Prod. Mgt. 3	3	Cost Analysis	3
	15	Electives	3	Electives	6
			16		14

MECHANICAL ENGINEERING

Executive Officer: BRYAN T. McMINN, 316 Guggenheim Hall

Professors: H. J. McIntyre, B. T. McMinn, B. O. Mills, Jr., G. S. Schaller, A. M. Winslow.

Professor Emeritus: E. O. Eastwood.

Associate Professors: E. E. Day, A. M. Hendrickson.

Assistant Professors: L. B. Cooper, R. W. Crain, Sr., J. B. Morrison, W. B. Nordquist, W. W. Philbrick, W. A. Snyder.

Instructors: P. L. Balise, Jr., M. Guidon III, A. R. Konecny, R. P. Krause, W. K. Watson, L. B. Zylstra.

The Department of Mechanical Engineering offers courses leading to the degrees of Bachelor of Science in Mechanical Engineering, Master of Science in Engineering (see page 224), and Master of Science in Mechanical Engineering.

BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING

The curriculum for the first year is administered by the Department of General Engineering (see page 241).

SECOND YEAR

FIRST QUARTER	CREDITS
Mech. Engr. 201	1
Mech. Engr. 220	3
Mech. Engr. 260	3
H.-S.S. 261 Tech. of Comm.	1
Math. 251 Analytic Geom.	
& Calc.	5
Physics 217 Engr. Physics	4
P.E. Activity	1
R.O.T.C.	2 or 3

18-21

SECOND QUARTER	CREDITS
Mech. Engr. 202	1
Civil Engr. 291 Mechanics	3
Econ. 211 General	3
H.-S.S. 262 Tech. of Comm.	1
Math. 252 Analytic Geom.	
& Calc.	3
Physics 218 Engr. Physics	4
P.E. Activity	1
R.O.T.C.	2 or 3

16-19

THIRD QUARTER	CREDITS
Mech. Engr. 203	1
Mech. Engr. 221	3
Bus. Law 307 Business Law	3
Civil Engr. 292 Mechanics	3
H.-S.S. 263 Tech. of Comm.	1
Physics 219 Engr. Physics	4
P.E. Activity	1
R.O.T.C.	2 or 3

16-19

THIRD YEAR

FIRST QUARTER	CREDITS
Mech. Engr. 305	1
Mech. Engr. 320	5
Mech. Engr. 340	3
Civil Engr. 293 Mechanics	3
H.-S.S. 331 Humanities	3

15

SECOND QUARTER	CREDITS
Mech. Engr. 306	1
Mech. Engr. 322	3
Mech. Engr. 361	3
Mech. Engr. 365	2
Elect. Engr. 300 Direct	
Currents	5
H.-S.S. 332 Humanities	3

17

THIRD QUARTER	CREDITS
Mech. Engr. 307	1
Mech. Engr. 323	3
Mech. Engr. 362	3
Mech. Engr. 366	2
Elect. Engr. 301 Alt.	
Currents	5
H.-S.S. 333 Humanities	3

17

FOURTH YEAR

FIRST QUARTER	CREDITS
Mech. Engr. 481	3
Civil Engr. 342 Hydraulics	5
H.-S.S. 491 Nontech.	
Reading	1
Psychol. 336 Industrial	3
Electives	3

15

SECOND QUARTER	CREDITS
Mech. Engr. 463	2
Mech. Engr. 482	3
Hum. Rel. 365 Indust. Rel.	3
H.-S.S. 492 Nontech.	
Reading	1
Electives	6

15

THIRD QUARTER	CREDITS
H.-S.S. 493 Nontech.	
Reading	1
Electives	14

15

MASTER OF SCIENCE IN MECHANICAL ENGINEERING

Students who intend to work toward this advanced degree must meet the requirements of the Graduate School (see page 261).

Although options are not designated, graduate offerings in mechanical engineering are so arranged that candidates for the master's degree who are interested in the special fields of heat power, air conditioning and refrigeration, and advanced engineering materials and design will find well-integrated programs available. Subject to the approval of the candidate's committee, work beyond bachelor requirements in physics, mathematics, and civil and electrical engineering is permitted, and sometimes required. The thesis is normally the equivalent of 9 credits, in which case 36 credits of course work are required for the master's degree. No foreign language is required.

COURSES FOR UNDERGRADUATES

- | | |
|--|--------------------------------------|
| 201 Metal Castings (1; AWS) | Snyder |
| Theory and application of the science of producing metal castings. Three-hour period. | |
| 202 Welding (1; AWS) | Zylstra |
| Fundamentals of electric arc, gas and resistance welding, and brazing; flame cutting, heat bending, and welding design. Three-hour period. | |
| 203 Metal Machining (1; AWS) | Konocny |
| Theory of metal-cutting machine-tool operation. Three-hour period. | |
| 220 Heat Engines (3; AWS) | Cooper, Crain, Krause, Watson |
| Various apparatus used in modern power plants; construction, use, and reason for installation. Prerequisite, General Engineering 102. | |
| 221 Mechanical Engineering Laboratory (3; AWS) | Crain, Krause, Owens, Watson |
| Calibration of instruments; tests of heat engines and mechanical equipment. Prerequisite, 220 (which may be taken concurrently). | |
| 260 Mechanism (3; AWS) | Balise, Day, Watson |
| Velocity analysis of linkages and other mechanisms; geometry of gearing; transmission of motion by links, gears, cams, and flexible couplings. Prerequisites, General Engineering 103 and Mathematics 105. | |
| 305 Tooling for Production (1; AWS) | Schaller |
| Applied tooling and production of a mechanical project. Prerequisite, 203. | |
| 306 Production Techniques (1; AWS) | Schaller |
| Machining, heat treatment, forging, and metal-stamping techniques. Prerequisite, 305. | |

- 307 Production Planning (1; AWS)** Schaller
Design and equipment of a representative manufacturing plant. Prerequisite, 305.
- 320 Thermodynamics (5; AWS)** McMinn, Nordquist
Fundamental principles underlying the transformation of heat into work; special application to engineering. Prerequisite, 221.
- 322, 323 Experimental Engineering (3,3; AWS,AWS)** McIntyre, Cooper, Crain, Krause
Continuation of 221 involving more extended and complete investigations. Prerequisite, 320 (which may be taken concurrently).
- 340 Engineering Materials (3; AWS)** Mills, Balise, Cooper, Day
Properties of the various materials used in engineering construction. Prerequisite, Civil Engineering 292.
- 341 Aircraft Materials (2; S)** Schaller
Fabrication, processing, and heat treatment of nonferrous and ferrous metals and nonmetallics in aircraft construction. Prerequisites, 201, 202, and 203.
- 342 Industrial Materials and Processes (3; W)** Mills, Philbrick
Studies of the properties and uses of wood, metals, glass, and plastics in the manufacture of products of interest to industrial designers. Not open to engineering students. Prerequisite, junior standing in industrial design or permission.
- 361, 362 Machine Design (3,3; AWS,AWS)** Balise, Day, Morrison, Watson
Six-hour laboratory. Prerequisites, 340 (which may be taken concurrently) and Civil Engineering 292.
- 365, 366 Dynamics of Engines (2,2; AWS,AWS)** Morrison, Nordquist, Winslow
Investigation of governors, fly wheels, and balancing. Prerequisites, 320 and Civil Engineering 291.
- 410 Production Management (3; AWS)** Schaller
Organizational, operating, and management problems of industrial enterprises. Prerequisite, junior standing.
- 411 Production Cost Analysis (3; AWS)** Philbrick
Economy studies; estimating and cost analysis. Prerequisite, junior standing.
- 415 Quality Control (3; AWS)** Philbrick, Schaller
Control of manufacturing processes to make quality of the end product a function of production; application of statistical methods to sampling control, charts, and analysis of variance.
- 417 Methods Analysis (3; AWS)** Philbrick, Schaller, Owens
Survey and measurement of factors concerning the human element in its relationship to standards of performance and production.
- 424 Power Plants (5; AWS)** Winslow, Cooper
Selection of prime movers and auxiliaries for steam power plants; theory of turbine operation. Prerequisite, 366.
- 425 Air Conditioning (3; AWS)** Hendrickson, Crain
Theory and practice of temperature and humidity control for industrial and comfort purposes. Prerequisite, 220.
- 428 Refrigeration (3; WS)** McMinn, Hendrickson
Field trips. Prerequisite, 320.
- 433 Marine Engineering (3; W)** McMinn
Application of mechanical engineering to ships, including propulsion. Prerequisite, 491.
- 463, 464 Machine Design (2,2; AWS,AWS)** Winslow, Morrison
Advanced problems. Prerequisite, 362.
- 481 Internal Combustion Engines (3; AWS)** Cooper, Guidon
Analysis and practice; stationary, marine, automotive, and airplane engines. Prerequisite, 320.
- 482 Internal Combustion Engine Laboratory (3; AWS)** McIntyre, Guidon, Krause
Tests and investigations of various internal combustion units. Prerequisite, 481.
- 483 Internal Combustion Engine Design (3; AWS)** Cooper, Guidon
Prerequisite, 481.
- 490, 491, 492 Naval Architecture (3,3,3; AW,W,S)** Rowlands
490: theory of naval architecture; displacement, stability, strength, and construction. Prerequisite, junior standing. 491: theory of naval architecture; displacement, stability, strength, and performance. Prerequisite, 490. 492: applications of principles of naval architecture; calculations and design. Prerequisites, 362 and 491.

499 Undergrad Research (2-5)

COURSES FOR GRADUATES ONLY

- 521 Thermodynamics (3; S)** Nordquist
A critical study of the fundamental concepts of thermodynamics; nonflow and steady-flow process; enthalpy; point properties; reversibility; vapors vs. perfect gases. Prerequisites, 320, and graduate standing or permission.

- 526 Air Conditioning (3; W)** **Hendrickson**
Study at the graduate level of heat-transfer aspects of air-conditioning problems; special problems in humidifying and dehumidifying; automatic control and zoning; noise and vibration control; laboratory and field tests of air-conditioning installations. Prerequisites, 425, and graduate standing or permission.
- 529 Refrigeration (3; S)** **Hendrickson**
Review of basic cycles and equipment; cold storage practices; problems of refrigeration, food preparation and distribution; industrial refrigeration; frozen foods; economics of refrigeration; study of recent installations. Prerequisites, 428, and graduate standing or permission.
- 531 Heat Transfer (3; W)** **Watson**
Study of conduction, convection, and radiation, separately and in combination; steady and unsteady states; mathematical treatments; dimensional analyses; graphical solutions; change-of-phase problems. Prerequisites, 320, and graduate standing or permission.
- 541 Advanced Engineering Materials (3; AWS)** **McMinn, Mills**
Properties of engineering materials, including physical, magnetic, and X-ray methods of inspecting and testing. Prerequisite, 340.
- 543 Experimental Mechanics of Materials (3; WS)** **Day**
Prerequisite, graduate standing in engineering, or permission.
- 544 Engineering Instrumentation (3; S)** **Baliso, Day**
Prerequisite, graduate standing in engineering, or permission.
- 568 Vibrations of Machinery (3; WS)** **Winslow, Mills**
Mathematical investigation of vibration phenomena, with emphasis on applications to operating conditions of machines. Prerequisite, permission.
- 584 Advanced Internal Combustion Engines (2; WS)** **Guidon**
Prerequisite, 481.
- 600 Research (2-5 each quarter; AWS)** **Staff**
Thesis (*; AWS) **Staff**

MINERAL ENGINEERING

Director: DRURY A. PIFER, 328 Roberts Hall

Dean Emeritus: M. Roberts.

Professors: J. Daniels, D. A. Pifer

Associate Professors: E. A. Rowe, J. I. Mueller.

Assistant Professors: F. Aplan, J. A. Finley.

Lecturers: M. R. Geer, H. J. Kelly, H. F. Yancy.

Instructors: M. S. Pechet, R. E. Rockwell, H. A. McDonald.

The School of Mineral Engineering, through the Divisions of Ceramic, Metallurgical, and Mining Engineering, offers courses leading to the degrees of Bachelor of Science in Mining Engineering (with options in mineral preparation engineering and geological engineering); Bachelor of Science in Metallurgical Engineering (with an option in mineral preparation engineering); Bachelor of Science in Ceramic Engineering; Master of Science in Engineering (see page 224); Master of Science in Mining, Coal Mining, Metallurgical, or Ceramic Engineering; and Master of Science in Ceramics or Metallurgy.

A one-quarter Prospector's Course which carries no academic credit is offered through the Division of Mining Engineering (see page 255).

CERAMIC ENGINEERING

BACHELOR OF SCIENCE IN CERAMIC ENGINEERING

The curriculum for the first year is administered by the Department of General Engineering (see page 241). Chemistry 115, 116, and 325 should be taken instead of Chemistry 105, 106, and 107. Students who decide to transfer into ceramic engineering may complete the chemistry requirements by rearranging the required curriculum in consultation with the Director of the School.

As a part of their course, students have ceramics industrial practice during the summer vacations following their sophomore and junior years, and must participate in scheduled field excursions.

SECOND YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Cer. Engr. 201	2	Cer. Engr. 202	3	Cer. Engr. 203	3
Chem. Engr. 271 Intro- duction	2	Chem. Engr. 272 Intro- duction	3	H.-S.S. 331 Humanities	3
Math. 251 Analytic Geom. & Calc.	5	H.-S.S. 265 Tech. of Comm. Math. 252 Analytic Geom. & Calc.	3	Math. 253 Analytic Geom. & Calc.	3
Mech. Engr. 202 Welding	1	Physics 218 Engr. Physics	4	Mech. Engr. 203 Metal Mach.	1
Physics 217 Engr. Physics	4	P.E. Activity	1	Physics 219 Engr. Physics	4
P.E. Activity	1	R.O.T.C.	2 or 3	P.E. Activity	1
R.O.T.C.	2 or 3			R.O.T.C.	2 or 3
	15-18		17-20		15-18

THIRD YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Cer. Engr. 302	3	Cer. Engr. 303	3	Cer. Engr. 304	3
Cer. Engr. N306	0	Cer. Engr. 311	3	Cer. Engr. 312	3
Cer. Engr. 331	4	Chem. 356 Physical	4	Chem. 357 Physical	3
Chem. 355 Physical	3	Civil Engr. 292 Mechanics	3	Physics 229 Pyrometry	2
H.-S.S. 332 Humanities	3	H.-S.S. 333 Humanities	3	Electives	5
Electives	3		16		16
	16				

FOURTH YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Cer. Engr. N307	0	Cer. Engr. 402	2	Cer. Engr. 403	2
Cer. Engr. 411	3	Cer. Engr. 421	3	Cer. Engr. 441	1
Cer. Engr. 441	1	Cer. Engr. 441	1	Cer. Engr. 498	1
Cer. Engr. 470	1	Cer. Engr. 498	2	Psychol. 336 Indust.	3
Cer. Engr. 498	2	Hum. Rel. 365 Indust. Rel.	4	Electives	8
H.-S.S. 291 Nontech. Read.	1	Electives	4		15
Electives	5		15		
	15				

ADVANCED DEGREES

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School (see page 261). No foreign language is required for these degrees.

MASTER OF SCIENCE IN CERAMIC ENGINEERING. Candidates for this degree select courses and research in accordance with their special interests and objectives. A study of advanced theory is usually part of the work. Courses may be selected in preparation for plant operation, production and management, sales engineering, or research and product development. Graduates of accredited ceramic engineering curricula and graduates of other accredited engineering curricula who complete the basic undergraduate courses in ceramic engineering may become candidates.

MASTER OF SCIENCE IN CERAMICS. Students with undergraduate majors in science, particularly chemistry or physics, may become candidates for this degree after completing basic undergraduate courses in ceramics.

COURSES FOR UNDERGRADUATES

- | | |
|---|---|
| <p>201 Introduction to Ceramics (2; A)
History and scope of the ceramics industries; industrial growth and scientific development; economic importance; place in modern civilization.</p> <p>202 Ceramics Raw Materials (3; W)
Rocks and minerals used in ceramics industries; their mineralogy, physical properties, compositions, sources, and origins.</p> <p>203 Process Ceramics: Preparation (3; S)
Production and preparation of raw materials; outlines of manufacturing procedures for ceramic products.</p> <p>302 Process Ceramics: Forming (3; A)
Principles and practices: casting from slips; hand and mechanical forming of unfired bodies; forming from melts.</p> <p>303 Process Ceramics: Coatings (3; W)
Preparation, composition, and application of glazes and colors: color theory; solution, colloidal, transition, and stain coloring. Prerequisite, 202.</p> <p>304 Process Ceramics: Drying and Firing (3; S)
Drying: evaporation; fluid flow through particles; solid-liquid system structure; heat and humidity requirements; air circulation; time relationships; methods. Firing: time-temperature concepts; reaction rates and physical-chemical changes; type of reactions; firing techniques; heat requirements.</p> | <p>Mueller</p> <p>Mueller</p> <p>Mueller</p> <p>Mueller</p> <p>Staff</p> <p>Mueller</p> |
|---|---|

- C.E. 421 Ceramic Bodies Lab. (3)
" 422 " Petrography (2)*
- N306 Ceramic Engineering Excursion (0; A)** **Staff**
Plant inspection trip; junior year.
- N307 Ceramic Engineering Excursion (0; A)** **Staff**
Plant inspection trip; senior year.
- 311 Physical Ceramics: Structure and Reactions (3; W)** **Mueller**
Laws of chemistry and physics applied to ceramic research and production control; crystalline and glassy state; physical-chemical reactions of ceramic materials. Prerequisite, Chemistry 357 or permission.
- 312 Physical Ceramics: Colloids and Rheology (3; W)** **Mueller**
Structural chemistry; colloidal and rheological phenomena and their effects on ceramic materials. Prerequisite, 311.
- 331 General Ceramics: Pottery Techniques (4-5; AWS)** **Rockwell**
Craftsmanship methods of forming ceramic bodies: slab, hand molding, slip casting, turning and jiggering; drying and small kiln firing.
- 332 General Ceramics: Elementary Glazes (4-5; AWS)** **Rockwell**
Simple glazes and their application to ware; practice in firing; fitting glazes to bodies; textures.
- 333 General Ceramics: Decoration (4-5; AWS)** **Rockwell**
Glaze studies; methods of color production; practice in color production with test tiles; methods of decorating ware. Prerequisite, 332.
- 402 Dryer and Kiln Design (2; W)** **Staff**
Application of the theory of drying and firing to the calculation and design of dryers and kilns.
- 403 Ceramic Plant Design (2; S)** **Staff**
Equipment selection, layout plans, and economics applied to specific problems.
- 411 Physical Ceramics: Ceramic Equilibria (3; A)** **Mueller**
Equilibrium diagrams and their application to ceramic research and control problems. Prerequisite, 312 or permission.
- 420 Abrasives (2; W)** **Staff**
Production, preparation, products, and uses; natural and manufactured abrasives; physical properties characteristic of kinds. Prerequisites, junior standing and permission.
- 430 Foundry Sands (2; W)** **Staff**
Physical properties and testing; compositions and compounding; uses and special applications; sources; technology of use. Prerequisites, junior standing and permission.
- 440 Glass Technology (2; W)** **Staff**
Raw materials; chemistry and physics of glass; batches and calculations; melting and fabrication practices; physical properties; special glasses. Prerequisites, junior standing and permission.
- 441 Undergraduate Seminar (1, maximum 3; AWS)** **Staff**
- 450 Cements, Limes, and Plasters (2; S)** **Staff**
Composition; reactions; plant control; grinding and burning; manufacture; chemistry and physics of processes. Prerequisites, junior standing and permission.
- 460 Ceramic Coatings for Metals (2; S)** **Staff**
Production techniques for porcelain and other ceramic coatings; enamels, insulation coatings, refractory coatings. Prerequisites, junior standing and permission.
- 470 Refractories (3; A)** **Mueller**
Physical and chemical composition; properties under service conditions; testing; utilization.
- 498 Undergraduate Thesis (*, maximum 5; AWS)** **Staff**
Problems in ceramics; laboratory investigations and bibliographic research. A total of 5 credits is required.

COURSES FOR GRADUATES ONLY

- 501 Process Ceramics: Production Control (3; A)** **Mueller**
Application of industrial management and production control methods in the ceramics industry; production characteristics and their effects on the product; explanation and analysis of standards for products and their effects on manufacturing methods in the industry.
- 502 Process Ceramics: Unit Process Control (3; S)** **Mueller**
Principles of process control as applied in the ceramics industry; methods of measurement and evaluation of data for the control of partial size, viscosity, moisture content, fusion points, workability, humidity, temperature, drying rates, furnace atmospheres and pressures, time-temperature relationships, body and glaze textures, and imperfection causes; application of control data to plant production.
- 511, 512 Theoretical Physical Ceramics (3,3; W,S)** **Mueller**
511: theory and application of colloidal phenomena to the use of ceramic raw materials; colloidal state; colloidal crystal structure; surface phenomena; electrokinetics; base exchange. Prerequisite, 312. 512: theory and measurement of physical properties of ceramics; reactions of ceramic materials; surface area determinations; zeta potentials; particle size measurement; thermal analysis; laboratory measurements. Prerequisite, 511.
- 513 Applied Physical Ceramics (3; S)** **Mueller**
Application of physical ceramics principles to the control of ceramic production; instrumentation studies. Prerequisite, 512.

- 520 Seminar (1, maximum 3; AWS)** **Staff**
Required for all graduate students.
- 521 Identification of Ceramic Materials (3; A)** **Mueller**
Theory and use of X-ray diffraction techniques for qualitative identification. Prerequisite, Physics 355 or equivalent.
- 522 Structure and Analysis of Ceramic Materials (3; W)** **Mueller**
Theory and laboratory practice in use of X-ray diffraction for quantitative analysis; structure determinations. Prerequisite, 521 or equivalent.
- 523 Identification and Structure Problems (3; S)** **Mueller**
Laboratory practice in X-ray diffraction techniques applied to ceramic research. Prerequisite, 522 or equivalent.
- 590 Industrial Minerals Research (*; AWS)** **Staff**
- 600 Research (*; AWS)** **Staff**
Special problems investigated under staff direction; new products and processes; ceramic resources of the Pacific Northwest.
- Thesis (*; AWS)**

METALLURGICAL ENGINEERING

BACHELOR OF SCIENCE IN METALLURGICAL ENGINEERING

The curriculum for the first year is administered by the Department of General Engineering (see page 241). Chemistry 115, 116, and 325 should be taken instead of Chemistry 105, 106, and 107. Students who decide to transfer into metallurgical engineering may complete the chemistry requirements by rearranging the required curriculum in consultation with the Director of the School.

As part of their course, students have practice in metallurgy, foundry, smelting, milling, or industrial plants during the summer vacations following their sophomore and junior years, and must participate in scheduled field excursions.

Students who want to take an option in mineral preparation engineering may choose electives and make substitutions in the curriculum to meet the requirements for that option (see page 252).

SECOND YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Met. Engr. 201	3	Met. Engr. 203	3	H.-S.S. 263 Tech. of Comm.	1
Civil Engr. 291 Mechanics	3	Chem. 325 or 221 Quant.	5	Geol. 221 Mineralogy	5
H.-S.S. 261 Tech. of Comm.	1	Analysis	5	Math. 253 Analytic Geom.	3
Math. 251 Analytic Geom.	5	Civil Engr. 292 Mechanics	3	and Calc.	3
and Calc.	5	H.-S.S. 262 Tech. of Comm.	1	Physics 219 Engr. Physics	4
Mech. Engr. 201 Metal	1	Math. 252 Analytic Geom.	3	P.E. Activity	1
Casting	1	and Calc.	3	R.O.T.C.	2 or 3
Physics 217 Engr. Physics	4	Physics 218 Engr. Physics	4		
P.E. Activity	1	P.E. Activity	1		14-17
R.O.T.C.	2 or 3	R.O.T.C.	2 or 3		
	16-19		20-23		

THIRD YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Met. Engr. 321	3	Met. Engr. 362	3	Met. Engr. 301	3
Met. Engr. 361	3	Chem. 351 Physical	3	Met. Engr. 306	1
Chem. Engr. 271 Introduction	2	Chem. Engr. 272 Indust.	2	Met. Engr. 363	3
Elect. Engr. 300 Direct	5	Calc.	2	Chem. 352 Physical	3
Currents	5	H.-S.S. 302 Tech. Writing	3	Elect. Engr. 301 Alt.	5
Mining Engr. 461 Min.	3	Mining Engr. 462 Min.	4	Currents	5
Dressing	3	Conc.	4	Physics 229 Pyrometry	2
	16		15		17

FOURTH YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Met. Engr. 455	3	Met. Engr. 322	3	Met. Engr. 307	1
Met. Engr. 498	2	Met. Engr. 471	3	Met. Engr. 323	3
Cer. Engr. 470 Refractories	3	Met. Engr. 472	1	Met. Engr. 498	1
Chem. Engr. 375 Thermo-	3	Met. Engr. 481J	3	H.-S.S. 333 Humanities	3
dynamics	3	Met. Engr. 498	2	Electives	5
H.-S.S. 331 Humanities	3	H.-S.S. 332 Humanities	3		13
Electives	2		15		
	16				

ADVANCED DEGREES

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School (see page 261). No foreign language is required for these degrees.

MASTER OF SCIENCE IN METALLURGICAL ENGINEERING. Candidates for this degree select courses in physical or extractive metallurgy in accord with their particular interests and objectives. Special fields of study include metallurgical research, application metallurgy, chemical and extractive metallurgy, foundry metallurgy, and plant operation and management. Graduates of accredited metallurgical engineering curricula and graduates of other engineering curricula who complete the basic undergraduate courses in metallurgical engineering may become candidates.

MASTER OF SCIENCE IN METALLURGY. Students with undergraduate majors in science, particularly physics or chemistry, may become candidates for this degree after completing basic undergraduate courses in metallurgy.

COURSES FOR UNDERGRADUATES

- 201, 202 General Metallurgy (1,1; A,S)** **Finley, Rowe**
201: an introductory study of metallurgical operations; fundamental principles of production and treatment of metals and alloys; historical development of the metallurgical industry and its applications to other industry. 202: relationship between the constitution and the structure of metals and alloys in the concepts of modern physical metallurgy; significance of static and dynamic properties of metallic materials. Prerequisite, 201.
- 203 Elements of Metallurgy (3; W)** **Finley**
Technology of basic unit process in smelting and refining: roasting; calcining; smelting in reverberatory and blast furnace; fluxing; oxidizing; elementary fuels; refractories. Not open to students who have taken 403.
- 301 Fire Assaying (3; S)** **Finley**
Quantitative determination of gold and silver in ores and mill products; testing of reagents; sampling methods; problems of slagging, fluxing, refractory reactions, and furnace conditions. Prerequisite, Chemistry 221 or 325.
- 302 Wet Assaying (3; S)** **Finley**
Commercial and industrial methods of technical analysis of ores, metals, and furnace products. Rapid control methods are stressed. Prerequisite, Chemistry 221 or 325.
- 306 Metallurgy Excursion (1; S)** **Staff**
Plant inspection trip; junior year.
- 307 Metallurgy Excursion (1; S)** **Staff**
Plant inspection trip; senior year.
- 321 Nonferrous Metallurgy (3; S)** **Finley**
Principles and technology of the extractive metallurgy of copper, lead, zinc, aluminum, and magnesium. Prerequisite, 203.
- 322 Metallurgical Calculations (3; A)** **Finley**
Physical chemistry of extractive metallurgy; thermodynamics and reaction principles in smelting and allied processes. Prerequisite, 321.
- 323 Advanced Nonferrous Metallurgy (3; W)** **Finley**
Electrometallurgy; hydroelectric principles and applications to copper, zinc, and cadmium recovery; electrothermal refining and smelting practice; plating and electroforming. Prerequisite, 322.
- 324 Metallurgical Laboratory (2; A)** **Finley**
- 361, 362, 363 Physical Metallurgy (3,3,3; A,W,S)** **Rowe**
361: fundamental principles and theory: construction and interpretation of equilibrium diagrams; plastic deformation; stress relief; recrystallization and grain growth; solid state reactions; general and cooling properties of alloys. Laboratory practice in physical testing, temperature measurement, alloy preparation, and introduction to metallography. Prerequisite, Physics 219. 362: phase transformation in ferrous alloys; correlation of resulting structures with properties, iron-carbon constitution diagram; annealing, normalizing, quenching, and tempering ferrous alloys; surface treatments and metallurgy of cast irons. Metallographic laboratory practice in preparation and examination of specimens. Prerequisite, 361 or 441. 363: modern concepts in metallurgy of alloys; high-temperature metallurgy of metals and alloys; stress analysis; principles of corrosion; gas-metal equilibria and controlled atmospheres; application of physical metallurgy to industrial problems. Laboratory practice in physical and metallographic examination and interpretation. Prerequisite, 362.
- 403 Elements of Metallurgy (3; W)** **Finley**
Same as 203. Prerequisite, upper-division standing. Not open to students who have taken 203. Term paper required.
- 431 Light Metal Alloys (2; A)** **Finley**
Detailed study of aluminum, magnesium, beryllium, and their alloys: constitution, microstructure, heat treatment, physical properties, and industrial application. Prerequisite, 361 or 441.

- 441 Engineering Physical Metallurgy (4; AS)** **Rowe**
Elementary physical metallurgy and metallography. Properties and engineering applications of important metals and their alloys: solidification and atomic structure; relationships of constitution and structure to properties; constitution equilibrium diagrams; influence of composition, heat treatment, recrystallization and grain growth, deformation, and finish on structure and properties; phase transformations, equilibrium and nonequilibrium, in the solid state; selection of metals for specialized engineering interest, such as high strength-weight ratio alloys, bearing metal, corrosion resistance, magnetic alloys, etc. Laboratory practice in metallographic examination and testing. For mechanical and civil engineering students and other nonmajors.
- 451 Powder Metallurgy (2; W)** **Finley**
Production of metallic powders by physical and chemical methods: consolidation and subsequent treatment of powder compacts; properties of powder metallurgical products as related to processing conditions; fundamentals relating to powder size, diffusion, adhesion, recrystallization, grain growth, and impurity effects; applications to industrial problems. Prerequisite, 362 or 441.
- 455 Iron and Steel (3; A)** **Daniels**
Raw materials; furnaces; melting practices; forming; irons, plain carbon and alloy steels; properties and uses in engineering work. Prerequisite, junior standing in engineering.
- 461 Foundry Metallurgy (2; W)** **Rowe**
Chemistry, metallurgy, and technology of cast alloys: raw materials, equipment, molding, and casting practices; effects of melting practices, composition, and heat treatment upon physical and mechanical properties of ferrous and nonferrous alloys. Prerequisites, 441, and Mechanical Engineering 201 or equivalent.
- 464 Metallurgical Analysis (2; A)** **Rowe, Finley**
Industrial methods of iron and steel analysis for carbon, sulphur, manganese, silicon, phosphorus, and special alloying elements; constituents of nonferrous alloys, slags, and furnace products. Prerequisite, Chemistry 221 or 325.
- 465 Metallurgical Inspection of Metals (3; A)** **Rowe**
Elements of industrial X-ray and gamma-ray radiography; magnetic, magnaglo, zygo, and cylographic methods. Laboratory practice in application and interpretation. Prerequisite, 361 or 441.
- 466 Ferrous Alloy Technology (2; W)** **Rowe**
Constitution, microstructure, heat treatment, and properties of alloy steels in relation to the mechanism by which alloying elements function in low- and medium-alloy steels. Prerequisite, 362 or 441.
- 467 Alloy Steels (2; S)** **Rowe**
Theoretical study of steels containing chromium, tungsten, nickel, cobalt, silicon, manganese, molybdenum, vanadium, and other metals as definite alloy systems; heat treatment of complex steels. Special-purpose alloys, such as high-speed-tool, corrosion-resistant, and high-temperature steels, are especially considered. Prerequisite, 361 or 441.
- 471 Fuel Technology (3; W)** **Daniels**
Primary and manufactured fuels: coals, oils, gases, and chemicals as fuels; their sources, production, and manufacture; their combustion properties; methods of utilization and elements of applied thermodynamics; specifications and economics of fuel use. Prerequisite, junior standing.
- 472 Fuel Technology Laboratory (1; W)** **Finley**
Proximate and thermal analysis of solid, gaseous, and liquid fuels. To be taken concurrently with 471.
- 481J Mineral Industry Economics (3; W)** **Pifer**
Mineral resources, distribution, utilization, and depletion; government policies, taxation, and tariffs; industrial organization, cartels, and international control; markets and prices; financial provisions in the mineral industry; elements of costs in production. Prerequisite, upper-division standing or permission.
- 498 Undergraduate Thesis (*, maximum 5; AWS)** **Staff**
Problems in metallurgy; laboratory investigations and bibliographic research. Total of 5 credits required.

COURSES FOR GRADUATES ONLY

- 520 Seminar (1, maximum 3; AWS)** **Staff**
Review of research problems and recent articles in the literature. Required for all graduate students.
- 521, 522, 523 X-Ray Metallography (3,3,3; A,W,S)** **Mueller**
521: theory and use of the diffraction X-ray in the study of metals: physical properties; generation and diffraction of X-rays; diffraction equipment; diffraction crystallography; single crystals and powders; interpretation and qualitative analysis. Prerequisite, Physics 355 or equivalent. 522: precision diffraction methods and their application to simple crystal structure and parameter determinations: chemical composition; grain size and distortion measurements; single-crystal orientation; determination of preferred orientation in polycrystalline metals; stress measurements. Prerequisite, 521 or equivalent. 523: laboratory practice on specific problems; application technique studies; research methods. Prerequisite, 522.
- 531 Advanced Metallurgy (*; AWS)** **Staff**
Special problems and research.
- 561, 562, 563 Theory of Metals and Alloys (3,3,3; A,W,S)** **Rowe**
561: modern concepts of metallurgy: atomic arrangement in metals; metallurgical periodic tables; strain vs. solid state reactions; substitution and interstitial alloys; phase transforma-

tions; physical form of alloys; crystal elasticity; plasticity of single and polycrystalline media and alloys; creep and secondary plastic effects; twinning. Prerequisite, 362. 562: internal friction; rupture and fatigue; metal diffusion; solubility of gases in metal; theory of the iron-carbon system; electron theory of solids and its metallurgical applications; band theory; cohesion of solids; electrical and magnetic properties of metals. Prerequisite, 561. 563: crystal structure and phase boundaries; order-disorder transformation; nucleation and grain growth; precipitation phenomena; orientation and shape of new phases; causes of phase change by electronic and potential energy. Prerequisite, 562.

571 Fuels and Combustion (*; S)

Daniels

Advanced studies in combustion technology; physics and chemistry of combustion; combustion calculations; technology of coal, oil, and gaseous fuel burning. Prerequisite, 471.

Thesis (*; AWS)

Staff

600 Research (*)

MINING ENGINEERING

BACHELOR OF SCIENCE IN MINING ENGINEERING

The curriculum for the first year is administered by the Department of General Engineering (see page 241).

As part of their course, students have practice in mining, geology, or milling during the summer vacations following their sophomore and junior years, and must participate in scheduled field excursions.

Students working toward this degree may take the regular curriculum or choose an option in either mineral preparation engineering or geological engineering.

SECOND YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Mining Engr. 221	3	Mining Engr. 222	3	Chem. 221 Quant. Analysis	5
Geol. 205 Rocks and Minerals	5	H.-S.S. 265 Tech. of Comm.	3	Civil Engr. 314 Survey	3
Math. 251 Analytic Geom. & Calc.	5	Math. 252 Analytic Geom. & Calc.	3	Geol. 221 Mineralogy	5
Physics 217 Engr. Physics	4	Met. Engr. 203 Elements	3	Physics 219 Engr. Physics	4
P.E. Activity	1	Physics 218 Engr. Physics	4	P.E. Activity	1
R.O.T.C.	2 or 3	P.E. Activity	1	R.O.T.C.	2 or 3
	18-21	R.O.T.C.	2 or 3		18-21

THIRD YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Mining Engr. 461	3	Mining Engr. 462	4	Mining Engr. 306	1
Civil Engr. 291 Mechanics	3	Civil Engr. 292 Mechanics	3	Mining Engr. 430	2
Econ. 211 General	3	Elect. Engr. 300 Direct Currents	5	Met. Engr. 301 Fire Assay	3
Geol. 323 Optical	5	Geol. 324 Petrology	5	Elect. Engr. 301 Alt. Currents	5
H.-S.S. 331 Humanities	3		17	H.-S.S. 332 Humanities	3
	17			Electives	3
					17

FOURTH YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Mining Engr. 431	1	Mining Engr. 223	1	Mining Engr. 307	1
Mining Engr. 480	2	Mining Engr. 481J	3	Mining Engr. 426	3
Mining Engr. 498	2	Mining Engr. 485	3	Mining Engr. 432	4
H.-S.S. 333 Humanities	3	Mining Engr. 498	2	Mining Engr. 482	3
Met. Engr. 441 Engr. Physical	4	Geol. 427 Ore Deposits	5	Mining Engr. 498	1
Electives	3	Electives	3	H.-S.S. 491 Nontech. Reading	1
	15		17	Electives	3
					16

GEOLOGICAL ENGINEERING OPTION. Work in the geological engineering option should begin during the sophomore year. The requirements are fulfilled by substitution and elective selection in the regular mining curriculum. The following courses are the technical electives for this option: Geology 206 (Physiography), 207 (Historical), 308 (Structural), 330 (Paleontology), 361 (Stratigraphy), 425 (Petrography and Petrology), 429 (Advanced Ore Deposits), and 443 (Advanced Structural).

MINERAL PREPARATION ENGINEERING OPTION. Work in the mineral preparation engineering option should begin during the junior year. The requirements are fulfilled by substitution and elective selection in either the mining or the metallurgical engineering curriculum. The following courses are the technical electives for this option: Mining Engineering 461, 462, 463, 464, 465, 466, 467, and 476; and Chemistry 351 and 352 (Physical).

ADVANCED DEGREES

Students who intend to work toward advanced degrees must meet the requirements of the Graduate School (see page 261). No foreign language is required for these degrees.

MASTER OF SCIENCE IN MINING ENGINEERING. Candidates for this degree may elect work in mining or mineral dressing in accordance with their special interests. Special study in the fields of labor relations and management is available. The student may select courses in preparation for exploration and development, operation and management, or engineering and mining geology. Graduate studies in mineral dressing cover the fields of metallic and nonmetallic minerals and coal, with special work on advanced theory and practice. Graduates of accredited mining engineering curricula and graduates of other accredited engineering curricula who complete the basic undergraduate courses in mining engineering and geology may become candidates.

MASTER OF SCIENCE IN COAL MINING ENGINEERING. Candidates for this degree must undertake research in the laboratories of the United States Bureau of Mines Northwest Experiment Station in cooperation with the staff of the Bureau. Study is available in mine engineering, operation, labor relations and management. Graduates of other accredited engineering curricula must complete basic undergraduate courses in mining engineering, mineral preparation, and fuels technology in order to become candidates.

COURSES FOR UNDERGRADUATES

- 221 Elements of Mining (3; A)** **Daniels**
Prospecting, boring, drilling, explosives, rock breaking, shaft sinking, hoisting, development, and fundamentals of mining methods. Not open to students who have taken 421. Prerequisite, General Engineering 102.
- 222 Methods of Mining (3; W)** **Daniels**
Working of placer, metal, coal, and nonmetallic deposits; haulage, air compression, ventilation, sampling and estimating, organization, and safety. Not open to students who have taken 422. Prerequisite, 221.
- 223 Mine Rescue Training (1; W)** **Daniels, U. S. B. M. Safety Station Staff**
Instruction and practice in use of oxygen rescue apparatus; first aid; safety; U.S. Bureau of Mines course. Physical examination required.
- 306 Mine Excursion (1; S)** **Staff**
Five-day trip to a neighboring mining region.
- 307 Mine Excursion (1; S)** **Staff**
Five-day trip similar to 306.
- 421 Elements of Mining (3; A)** **Daniels**
Same as 221. Not open to students who have taken 221. Prerequisite, junior standing.
- 422 Methods of Mining (3; W)** **Daniels**
Same as 222. Not open to students who have taken 222. Prerequisite, 421 and junior standing.
- 423 Coal-Mining Methods (3; W)** **Daniels**
Prospecting, development, and operation of coal and stratified-deposit mines. Principles of mechanized breaking, loading, and transportation.
- 426 Exploration and Development of Mineral Deposits (3; S)** **Pechot**
Procurement of data by mapping, drilling, and geophysical methods; principles of geophysical methods; solution of mine structural and fault problems; physiographic, mineralogical, and structural guides to ore applied to mine exploration; exploration and development programs for evaluation and delineation. Prerequisite, Geology 427.
- 430 Mine Surveying (2; S)** **Pechot**
Practice in underground methods, use of special instruments, slope measurements, underground curves, shaft surveying, solar observations, and carrying of meridian underground. Prerequisite, Civil Engineering 314.
- 431 Mine Mapping (1; A)** **Pechot**
Plotting of underground field notes made in 430; production of working and geological maps and sections. Prerequisite, 430.
- 432 Mining Engineering (4; S)** **Pifer**
Principles and application; mechanisms in mine machinery—foundations and erection of equipment; air compression thermodynamics—practice and distribution; pumping plant and hydraulics; electrical equipment and distribution systems in mines; plant design and construction. Studies at nearby mines and plants. Two hours lecture, six hours lab. Prerequisite, 222 and Electrical Engineering 301.
- 433 Mine Ventilation (3; S)** **Daniels**
Principles and practices. Physical and chemical aspects of mine atmospheres, gases, and dusts; physiological considerations and air flow and measurement; mechanical ventilation, equipment, and systems. Prerequisite, 222.

- 461 Mineral Dressing: Preparation (3; A)** **Aplan**
Elementary principles of mineral dressing. Technology, equipment, and costs for unit process operations; comminution, sizing, classification, thickening, dewatering, filtration, and related auxiliary processes. Prerequisite, junior standing.
- 462 Mineral Dressing: Concentration (4; W)** **Aplan**
Fundamental principles of ore concentration. Flotation, gravity, magnetic, electrostatic, sink and float methods, and related methods of mineral separation; general concentrator arrangements and flow diagrams. Prerequisite, 461.
- 463 Mineral Dressing: Flotation (3; S)** **Aplan**
Flotation theory and practice. Applied surface chemistry and technology of flotation concentration for sulfide and nonmetallic minerals. Prerequisite, 461 and Chemistry 221.
- 464 Mineral Dressing: Leaching (3; A)** **Aplan**
Cyanidation of gold and silver ores; sand and slime leaching of copper ores; leach-precipitation-flotation methods. Chemical principles; plant detail—operation and control; economics. Prerequisite, 461 and Chemistry 221 or 325.
- 465 Mineral Dressing: Microscopy (2; A)** **Pechet**
Elements of quantitative mineralogy, microchemistry, and mineral liberation studies of polished ore sections; index-liquid determinations for industrial minerals and grain-count studies of mineral dressing products. Prerequisites, 461 and Geology 323.
- 466 Mineral Dressing Practices (2; W)** **Aplan**
Study of plant flowsheets for the principal sulfide, oxide, and industrial mineral operations. Prerequisites, 461 and Chemistry 231 or 325.
- 467 Mineral Dressing Design (2; S)** **Aplan**
General arrangement planning of beneficiation plants on a project basis. Prerequisite, 466.
- 476 Coal Preparation (3; A)** **Daniels**
Dry and wet cleaning processes; control by float-and-sink methods; characteristics of coal and associated impurities; economics of preparation; market requirements. Prerequisites, 461 and Metallurgical Engineering 471.
- 478 Coal Preparation Machinery (2; W)** **Daniels**
Laboratory work in float-and-sink methods; screening, classification, tabling, jigging, and other cleaning methods. Prerequisites, 461, 476, and Metallurgical Engineering 471.
- 480 Mineral Land Valuation (2; A)** **Pifer**
Mine examination methods; estimation of mineral deposits and reserves; financial calculations; reports; professional ethics; mineral land laws.
- 481J Mineral Industry Economics (3; W)** **Pifer**
Mineral resources, distribution, utilization, and depletion; government policies, taxation, and tariffs; industrial organization, cartels, and international control; markets and prices; financial provisions; elements in cost of plant and production. Prerequisite, upper-division standing or permission.
- 482 Mineral Industry Management (3; S)** **Daniels**
Administrative methods; personnel selection; methods of payment; labor relations; scientific management; social and economic aspects.
- 485 Industrial Minerals (3; W)** **Aplan**
Nonmetallic mineral industry; sources of raw materials; processing technology and product specifications; marketing; economics and utilization. Prerequisite, 461 or equivalent.
- 498 Undergraduate Thesis (*, maximum 5; AWS)** **Staff**
Problems in mining or mineral dressing; laboratory studies and bibliographic research. Total of 5 credits required.

COURSES FOR GRADUATES ONLY

- 520 Seminar (1, maximum 3; AWS)** **Staff**
Lectures and discussions; review of research problems and recent literature. Required for all graduate students.
- 521 Metal Mining (*; AW)** **Pifer**
Production methods; mining control; support; subsidence; pressure burst control; applied efficiency methods; administration; equipment and machinery; deep-level mining; health and safety; special problems. Arranged in accordance with student's major interest.
- 522 Mine Shafts (3; W)** **Pifer**
Location and design, surface plant, and collar preparation; sinking, support, stations and bottoms, and equipment and maintenance; safety and costs; rectangular, square, and circular shafts.
- 523 Coal Mining (*; S)** **Daniels**
Studies in coal mining, preparation, or coking with particular reference to the Pacific Northwest. Prerequisite, graduate standing.
- 560 Mineral Dressing (*; AWS)** **Aplan**
Special problems and research.
- 561 Advanced Mineral Dressing Preparation (*; A)** **Aplan**
Unit process studies in comminution, sizing, classifying, and auxiliary processes.
- 562 Advanced Mineral Dressing Laboratory (*; AW)** **Aplan**
- 563 Advanced Mineral Dressing Theory (*; W)** **Aplan**
Physics and chemistry of beneficiation.

564 Advanced Mineral Dressing Design (*; S)	Poolo
Plant layout studies, economics, and equipment design.	
571 Cooperative Research with United States Bureau of Mines (6; AWS)	Staff
Thesis (*; AWS)	Staff

PROSPECTOR'S COURSE

The Prospector's Course is open without examination to anyone past high school age. It is repeated Autumn, Winter, and Spring Quarters and the fee for each quarter is \$10, payable upon registration. The G. I. Bill of Rights applies to this course. The course occupies full time Monday through Friday, with occasional Saturday trips to mines and plants. A certificate is given upon completion of each quarter. Further information about the Prospector's Course is available from the Director of the School of Mineral Engineering.

N10 Prospecting and Mining (0; AWS)	Pechot
Lecture, laboratory, and field trips; mineralogy.	
N11 Advanced Prospecting and Mining (0; AWS)	Pechot
N20 Milling (0; AWS)	Pechot
Practice in operating standard equipment; lectures.	
N21 Advanced Milling (0; AWS)	Pechot
Metallurgical Engineering N30 Metals (0; AWS)	Daniels

COLLEGE OF FORESTRY

Dean: GORDON D. MARCKWORTH, 206 Anderson Hall

Professors: B. L. Grondal, G. D. Marckworth, J. K. Pearce.

Associate Professors: C. F. Brockman, H. D. Erickson, J. C. H. Robertson.

Assistant Professors: B. S. Bryant, S. P. Gessel, P. G. Hardeck, K. M. Macdonald, G. Stenzel, D. P. Thomas.

Instructor: D. M. Covington.

THE College of Forestry offers courses leading to the degrees of Bachelor of Science in Forestry (with specialization in forest management, logging engineering, or forest products), and to the Master of Forestry, Master of Science in Forestry, and Doctor of Philosophy. The College is fully accredited by the Society of American Foresters.

ADMISSION

The University requirement for entrance is 16 high school units with a grade-point average of at least 2.0 (see page 15 for other admission regulations). The College of Forestry requires that the 16 units include 1 unit of plane geometry and 1½ units of elementary and advanced algebra.

Since the forestry curriculum is one of specialized training, students entering from junior colleges or similar institutions cannot complete the requirements for graduation in less than three years. Forestry courses, other than an introductory course, will be accepted only from accredited forestry schools. Exceptions may be made only upon approval of the faculty.

BACHELOR OF SCIENCE IN FORESTRY

The graduation requirements of the University are 180 academic credits (including Physical Education 110 or 175); the required quarters of physical education activity and/or military training; the senior year spent in residence; 60 upper-division credits; and a cumulative grade-point average of 2.0 (see page 28 for more detailed information about these requirements). The College of Forestry requires the completion of a prescribed curriculum totaling 191 academic credits.

The lower-division curriculum is the same for all forestry students. Requirements for the first two years are as follows:

FIRST YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
For. 101	3	For. 130	3	For. 103	3
Bot. 114 Forestry Bot.	3	Bot. 115 Forestry Bot.	3	For. 106	3
Math. 154 Math.	3	Engl. 101 Composition	3	G.E. 107 Engr. Drawing	3
Physics 101 or 104 General	5	Math. 155 Math.	3	Math. 156 Math.	3
P.E. 175 Health	2	Physics 102 or 105 General	5	Physics 103 or 106 General	5
P.E. Activity	1	P.E. Activity	1	P.E. Activity	1
R.O.T.C.	2 or 3	R.O.T.C.	2 or 3	R.O.T.C.	2 or 3
	17-20		18-21		18-21

SECOND YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
For. 107	3	For. 260	5	For. 220	2
For. 205	3	Bot. 116 Forestry Bot.	3	For. 261	6
Chem. 111 or 115 General	5	Chem. 112 or 116 General	5	Civil Engr. 256 Surveying	8
Econ. 211 General	3	Geol. 215 Soils & Water	3	P.E. Activity	1
Engl. 102 Composition	3	P.E. Activity	1	R.O.T.C.	2 or 3
P.E. Activity	1	R.O.T.C.	2 or 3		
R.O.T.C.	2 or 3		17-20		17-20
	18-21				

With the approval of their faculty advisers, third-year students choose a specialty and enter one of the three upper-division curricula in forestry.

CURRICULUM IN FOREST MANAGEMENT.

THIRD YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
For. 306	4	For. 322	3	For. 423	4
For. 310	3	For. 373	5	For. 430	3
For. 321	3	For. 440	4	Bot. 361 Forest Pathol.	5
For. 403	3	Electives	3	Civil Engr. 315 Pho-	
Engl. 253 Factual Writing. 3				togrammetry	3
	<u>16</u>		<u>15</u>		<u>15</u>

FOURTH YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
For. 408	5	For. 335	3	For. 466	5
For. 441	5	For. 409	3	For. 467	5
Acctg. 150 Accounting	4	For. 460	5	For. 468	4
Electives	2	Electives	3	For. 469	2
	<u>16</u>		<u>14</u>		<u>16</u>

CURRICULUM IN LOGGING ENGINEERING.

THIRD YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
For. 306	4	For. 322	3	For. 335	3
For. 321	3	For. 373	5	For. 430	3
For. 404	5	For. 440	4	Bot. 361 Forest Pathol.	5
Civil Eng. 312 Route Surv. 3		Civil Engr. 313 Location		Civil Engr. 315 Pho-	
		& Earthwork	3	togrammetry	3
	<u>15</u>		<u>15</u>		<u>14</u>

FOURTH YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
For. 401	2	For. 442	5	For. 446	3
For. 408	5	For. 460	5	For. 447	5
For. 441	5	Bus. Law 307 Bus. Law. 3	3	For. 448	5
Acctg. 150 Accounting.	4	Electives	3	For. 449	3
	<u>16</u>		<u>16</u>		<u>16</u>

CURRICULUM IN FOREST PRODUCTS.

THIRD YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
For. 306	4	For. 307	3	For. 320	3
Bot. 361 Forest Pathol.	5	For. 404	5	For. 370	3
Electives	0	Mech. Engr. 220 Heat		For. 371	2
		Engines	3	For. 471	3
	<u>15</u>	Electives	5	Acctg. 150 Accounting	4
			<u>16</u>		<u>15</u>

FOURTH YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
For. 408	5	For. 470	3	For. 406	3
For. 481	5	For. 472	4	For. 476	5
Bus. Law 307 Bus. Law. 3	3	For. 483	3	For. 482	5
Electives	2	Electives	5	Electives	3
	<u>15</u>		<u>15</u>		<u>16</u>

ADVANCED DEGREES

Students who intend to work toward the degree of Master of Forestry, Master of Science in Forestry, or Doctor of Philosophy must meet the requirements of the Graduate School (see page 261).

COURSES FOR UNDERGRADUATES

- 101 Development of Forestry (3; A)** **Macdonald**
History of forestry and its present status in the United States. Orientation course required of all freshman forestry students; not open to others.
- 102, 103 Forestry Problems (2,3; W,AS)** **Macdonald**
Methods of attack, emphasizing accuracy, analysis, and interpretation of forestry data. Prerequisites, Mathematics 154 and 155.

- 106, 107 Dendrology (3,3; S,A)** **Brockman**
Identification, classification, and distribution of the trees of North America. Prerequisite, Botany 114.
- 130 Elementary Forest Fire Control (3; W)** **Macdonald**
Factors influencing spread, methods of presuppression, detection, and suppression of fires. Prerequisite, 101 or 301.
- 201 First Aid to the Injured (2; W)** **Staff**
- 205 General Lumbering (3; AW)** **Stenzel**
Comparative methods in the lumbering regions of the U.S. Prerequisite to all courses in logging and milling. Prerequisites, 106 and 107.
- 220 Silvicultural Field Studies (2; S)** **Gessel, Covington**
Field problems in silviculture and in nursery practice. Given at Pack Forest. A five-day field trip is required. Prerequisite, 106.
- 260 Forest Mensuration (5; AW)** **Stenzel**
Theory of scaling; volume and taper tables; sample-plot methods; determination of contents of stands; growth; yield. Prerequisites, 101, 103, and Mathematics 156.
- 261 Field Problems in Forest Mensuration (6; S)** **Stenzel**
Field problems, including site, stocking, volume tables, timber cruising, and growth. Given at Pack Forest. Prerequisites, 107, 260, and General Engineering 107.
- 301 Survey of Forestry (3; W)** **Brockman**
History of the development of forestry, its aims and objectives; interrelationship between forestry and other phases of land use. For nonmajors.
- 303 Forest Geography (3; W)** **Grondal**
Economic geography of the forest regions of the world.
- 306 Wood Technology (4; W)** **Erickson, Thomas**
Identification, uses, basic physical and chemical properties of wood. Prerequisites, 106, 107, Physics 103 or 106, 10 credits in chemistry, and Botany 116.
- 307 Wood Structure (3; W)** **Thomas**
Identification, xylotomy, and elementary microtechnique. Prerequisite, 306.
- 310 General Forest Soils (3; A)** **Gessel**
Physical, chemical, biological, and profile characteristics of soils as related to soil formation; soil classification and soils of the United States. Three field trips are required. Prerequisites, Botany 116, Chemistry 112 or 116, Geology 215, Physics 101 or 104, and Mathematics 156.
- 320 Elements of Silviculture (3; S)** **Haddock**
The natural basis of silviculture; methods of controlling growth and reproduction of forests. For students specializing in forest products only. Prerequisites, 106, 107, 220, 261, Botany 116, and Geology 215.
- 321 Silvics (3; W)** **Haddock**
Relation of trees and forests to soil, moisture, light, and temperature; forest ecology. Two Saturday field trips are required. Prerequisites, 101, 106, 107, 220, 261, Botany 116, and Geology 215.
- 322 Silvicultural Methods (3; W)** **Haddock**
Type and site classification; intermediate and final cuttings; natural and artificial regeneration. One Saturday field trip is required. Prerequisites, 220 and 321.
- 335 Forest Insect Control (3; W)** **Brockman**
Forestry practice in the control of insect attacks. Prerequisite, 320 or 322.
- 350 Wildlife Management (3; W)** **Brockman**
Interrelations between forests and wildlife; life histories and habits of animals involved.
- 353 Range Management (3; A)** **Gessel**
Fundamentals of range management; interrelations of plants, animals, and man. Methods and economics of proper management. Two Saturday field trips are required. Prerequisites, Botany 114, 115, 116, and permission of instructor.
- 356 Forest Recreation (3; A)** **Brockman**
Recreational needs, values, resources, and objectives; planning and development of outdoor recreational resources. Prerequisite, 101 or 301.
- 370 Wood Preservation (3; S)** **Erickson**
Classification and control of wood-destroying agencies; pressure and nonpressure treating methods; fire-retardant technique. Prerequisite, 307.
- 371 Wood-Preservation Laboratory (2; S)** **Erickson**
Evaluation of preservatives; methods of testing and inspecting treated material. Field trips are required. Must be preceded or accompanied by 370.
- 373 Forest Utilization (5; W)** **Erickson, Thomas**
Secondary and derived forest products; principles of seasoning and preservation. Field trips are required. Prerequisite, 306.
- 380 Lumber Grading (2; S)** **Bryant**
Principles and practice of lumber and shingle grading; field trips. Prerequisites, 205, 306, and 403 or 404.
- 401 Safety Practices in Forest Industries (2; A)** **Pearce**
Frequency and cost of accidents; methods of accident prevention.

- 424 Adv. Practices in Silviculture (3)*
- 403 Timber Physics (3; A)** **Bryant**
The mechanical properties of wood; solution of design problems by graphic statics; timber testing. For forest management students only. Prerequisites, 103, Mathematics 156, and Physics 101 or 104.
- 404 Timber Physics (5; AW)** **Bryant**
The mechanical properties of wood; statics; timber testing; introduction to beam and truss design. Prerequisites, Mathematics 156 and Physics 101 or 104.
- 406 Microtechnique (3; WS)** **Thomas**
Preparation, sectioning, staining, and mounting of woody tissues and fibers. Prerequisite, 307.
- 408 Forest Economics and Finance (5; A)** **Robertson**
Position of forests in the economic structure; cost of growing timber; valuation of land for forest production. Prerequisites, 260 and Economics 211.
- 409 Forest Policy and Administration (3; W)** **Marckworth**
Development of forest policies and forest laws in the United States.
- 410 Advanced Forest Soils (3; W)** **Gossel**
Relations of soils to plant growth. Laboratory study of some physical, chemical, and biological properties of forest soils. Prerequisite, 310.
- 420 Artificial Regeneration (3; W)** **Haddock**
Establishment of forests by artificial methods; biological and economic aspects of forest planting. One all-day field trip is required. Prerequisites, 310 and 321.
- 423 Application of Silvicultural Methods (4; S)** **Haddock**
Principles and practice of silviculture applied to the forest regions of the United States. Three Saturday and three half-day field trips are required. Prerequisite, 322.
- 430 Advanced Forest Fire Control (3; WS)** **Macdonald**
Fire suppression; suppression; training methods; analysis of protection facilities; proper methods of slash disposal and hazard removal; fire behavior; organization for large fires. Prerequisite, 130.
- 440 Construction (4; W)** **Pearce**
Design and construction of forest roads and bridges. Prerequisites, 403 or 404, General Engineering 107, and Civil Engineering 256.
- 441 Forest Engineering (5; A)** **Pearce**
Logging plans and cost analysis; surveys, subdivision and boundaries. Prerequisites, 322 and 440.
- 442. Logging Engineering (5; W)** **Pearce**
Machinery, equipment, and problems. Prerequisites, 205 and 441.
- 446, 447, 448, 449 Logging-Engineering Field Studies (3,5,5,3; S,S,S,S)** **Pearce**
446: logging plans. Prerequisites, 442 and Civil Engineering 313 and 315. 447: topographic and timber surveys. Prerequisite, 446. 448: road location surveys. Prerequisite, 447. 449: logging cost analysis. Development of a complete logging plan and cost analysis in a large operation. Prerequisite, 448.
- 460 Forest Management (5; W)** **Robertson**
Economic and technical principles involved in the management of forest lands for sustained yield. Prerequisites, 261, 408, and 423.
- 466, 467, 468, 469 Senior Management Field Studies (5,5,4,2; S,S,S,S)** **Robertson**
466: surveys, use of aerial photographs in mapping vegetative types, and estimating timber volumes. 467: forest and land inventory. 468: growth and yield studies, permanent sample plots. 469: reports and summary of work accomplished by field studies. The courses lead to the development of a working plan for a large operation. They are taken during the same quarter and the entire quarter is spent off campus. Prerequisites, 460 and Civil Engineering 315.
- 470 Forest-Products Industries (3; W)** **Erickson**
Secondary and derived forest products, other than lumber, plywood, and pulp. Prerequisite, 307.
- 471 Timber Design (3; S)** **Bryant**
Beams, columns, trusses, timber connectors and fastenings; design, fabrication, and erection of timber structures. Prerequisite, 403 or 404.
- 472 Plywood, Lamination, and Glues (4; W)** **Bryant**
Manufacture of plywood and laminated wood; theory and use of wood adhesives. Prerequisites, 307 and 404.
- 476 Wood Pulp (5; S)** **Gronal**
Design of waste conversion plants; wood-pulp manufacture. Prerequisites, 306, and 373 or 470.
- 478 Advanced Wood Technology (5; S)** **Erickson, Bryant**
The physical and chemical nature of the constituents of wood; surface properties; fundamentals of its behavior; chemical modification. Prerequisites, 370, 470, 472, 483, and permission.
- 481 Milling (5; A)** **Thomas**
Organization, planning, operation, and administration of sawmills. Prerequisites, 403 or 404, 306, and Mechanical Engineering 220.
- 482 Manufacturing Problems (5; S)** **Thomas**
Distribution and marketing of lumber and other forest products; regional competition; industry problems. Prerequisites, 481 and Accounting 150.

- 510 *Turning in Forest Soils (2)*
- 483 **Theory and Practice of Kiln Drying (3; W)** **Grondal**
Wood-liquid relationships and hygrometry; application of gas laws. Problems in the design of dry kilns. Prerequisites, 306, and 373 or 470.
- 490, 491, 492 **Undergraduate Studies (1-5 each quarter; AWS,AWS,AWS)** **Staff**
Preparation for work in fields for which there is not sufficient demand to warrant the organization of regular classes. Instructors are assigned according to the nature of the work.

COURSES FOR GRADUATES ONLY

- 512 **Soil Morphology and Classification (3; W)** **Gessel**
An advanced study of the principles of soil formation and classification; intensive coverage of these principles as applied to the survey and classification of forested lands; the factors of the environment that determine soil properties. Prerequisites, 410, Botany 114 and 450, Microbiology 101, and permission of instructor.
- 513 **Methods of Forest Soil Survey (5; S)** **Gessel**
A course of field studies to acquaint the student with methods of determining the productive capacity of forested lands from soil properties. Prerequisites, 512 and permission of instructor.
- 520 **Seminar (1, maximum 3; AW)** **Staff**
Required of graduate students.
- 521 **Advanced Silvics (5; A)** **Haddock**
A study of recent advances in the field of forest tree physiology and ecology, with special reference to the silviculture of western forest types. Prerequisites, 410, 423, and permission of instructor.
- 522 **Advanced Silviculture (5; S)** **Haddock**
The use of ecological principles in controlling reproduction and growth of forests; the application of cultural methods to existing forests; a study of research methods and case histories. Prerequisites, 423 and permission.
- 540 **Advanced Forest Engineering (5; A)** **Pearce**
Logging management, cost analyses, stumpage and logging appraisal, financial reports. Prerequisites, 446, 447, 448, and 449.
- 555 **Forest Influences (4; A)** **Gessel, Haddock**
A study of the effects of vegetation on climate, water, and soil, with application to the conservation of water and soil and the control of floods. Prerequisites, 321, 322, 353, 410, and permission of instructor.
- 560 **Forest History and Policy (3; AWS)** **Marckworth**
The development of forestry policy in the U. S. and other countries. Prerequisites, 409 and 460.
- 562 **Forest-Management Plans (3-5; AW)** **Robertson**
Preparation of management plans for large areas, public and private. Prerequisite, 469.
- 570 **Advanced Wood Preservation (3; WS)** **Erickson**
Theory of penetrance; design of treating plants; fireproofing and fireproofing compounds. Prerequisites, 370 and 371.
- 590, 591, 592 **Graduate Studies (2-5 each quarter; AWS,AWS,AWS)** **Staff**
Study in fields for which there is not sufficient demand to warrant the organization of regular courses.
- 600 **Research (*; AWS)** **Staff**
Thesis (*; AWS) **Staff**

GRADUATE SCHOOL

Dean: HAROLD W. STOKE, 3 Administration Building

Assistants to the Dean: Ruby S. Hughes, Henrietta Wilson.

THE Graduate Faculty of the University of Washington consists of those persons in the various departments and colleges who are engaged in graduate instruction or in directing the research of graduate students.

The Graduate School is administered through the office of the Dean, the Graduate Faculty Council, and the Executive Committee of the Graduate School. The Graduate Faculty Council is composed of representatives elected by the departments and colleges offering graduate work; it serves as the legislative and policy-making body of the Graduate Faculty. The Executive Committee of the Graduate School, composed of members elected by the Graduate Faculty Council and appointed by the Dean, serves as an advisory group to the Dean and as an administrative committee for the Graduate Faculty Council.

ADMISSION

Properly qualified students who are graduates of the University of Washington or of other accredited colleges may be admitted to the Graduate School in one of the following classifications:

FULL STANDING. The requirement for full standing is a grade-point average during the senior year of 2.75, with the necessary prerequisites for work in the chosen graduate field.

PROVISIONAL STANDING. A grade-point average during the senior year of less than 2.75, or graduation from a nonaccredited college, or undergraduate deficiency in preparation for advanced work, will, if the student is admitted, result in provisional standing. Provisional standing may be changed to full standing upon the successful completion of two quarters of acceptable graduate work, and such work is fully applicable toward advanced degrees. Students may not, however, become candidates for advanced degrees while on provisional standing.

Forms for making application for admission may be obtained from the office of the Graduate School.

REGISTRATION

A student accepted for admission to the Graduate School is issued a permit to register. After receiving this permit the student should confer with his departmental adviser, not only about the program for his current registration, which must be approved by the adviser before it is presented to the Graduate School Office, but about plans for his entire graduate work. It is primarily to his major department that the student must look for individual counsel, guidance, and instruction in the scholarly study and research which characterize graduate work.

Fifteen credits per quarter are regarded as the maximum load in graduate work; the normal load is 12 credits. Students are advised not to register for more credits than necessary to ensure normal progress. The programs of students employed in the University or elsewhere will be limited; such students must discuss their schedules with the Dean of the Graduate School when they register.

Only courses numbered in the 400's, 500's, and 600's may be taken for graduate credit in the major field; courses in the 300's may be taken for graduate credit in the minor.

RESIDENCE

The residence requirement for the master's degree is three quarters; for the doctor's degree, three years, two of which must be spent at the University of Washington with at least one year in continuous full-time residence. The residence requirement for the doctor's degree may not be met solely with summer study.

A longer period of residence is required of candidates whose graduate work is pursued on a part-time basis. To obtain full residence credit in any quarter, students must be registered for a minimum of 9 credits in course, research, or thesis work.

Students who carry less than the number of credits required for full residence will increase proportionately the amount of time which they must spend to obtain a graduate degree. For a master's degree, all work must be completed within a period of six years; for the doctor's degree, within ten years.

Students who are engaged in research and thesis work must register for such work in order to obtain residence credit toward their degrees. The number of credits indicated in such registrations should be the proportion of the normal load which the student is devoting to research or thesis work. For example, if a student is on a half-time basis and is devoting himself exclusively to the preparation of his thesis, the registration for thesis should be one-half the normal load, or 6 credits. Registration for thesis should always be indicated separately from registration for research: in other words, registration for graduate research (courses numbered 600) must be for work other than that covered by registration for thesis. Total credit for thesis alone should ordinarily not exceed more than one-third of the work for the doctor's degree or more than one-fourth for the master's degree.

A student who is completing a thesis *in absentia* must be registered for such work during the quarter in which he expects to receive his degree.

MASTER'S DEGREES

In order to qualify for a master's degree, the candidate must:

1. Present at least 27 credits of course work successfully completed.
2. Present a minimum of three quarters of residence credit.
3. Present a certificate of proficiency in a foreign language unless specifically excepted for particular degrees.
4. Prepare a thesis which is approved by the department.
5. Satisfy such additional requirements as the major department or college may impose. (Requirements are outlined in the curricula announcements of the departments and colleges.)

While it is expected that a candidate for the master's degree will take work outside his major department, whether minors or supporting courses will be required will be determined by the major department.

Candidates for master's degrees are expected to attend Commencement exercises.

ADMISSION TO CANDIDACY. The candidate for the master's degree must make application to the Graduate School *within the first two weeks of the quarter in which he expects the degree to be conferred.* At the time the application is received, the Graduate School Office will review the candidate's record together with his current registration and will notify him and his department promptly as to whether he will have satisfied the requirements for the degree at the end of the quarter. The previous work taken by the candidate, together with his current registration as planned with the approval of his department, must meet the requirements for the degree if the application is to be approved. Failure to meet the requirements of the Graduate School or of the department will necessarily prolong the student's candidacy for his degree. The candidate and the departmental adviser should be thoroughly acquainted with the requirements for the particular degree involved.

TRANSFER AND EXTENSION CREDIT. Nine credits of work taken at another accredited university may be applied toward the master's degree at the University of Washington. Six credits of extension work may be similarly applied, but only if taken at the University of Washington. A combination of transfer and extension work not to exceed 9 credits may be applied to the master's degree. Neither correspondence credit nor credit by examination is accepted at the graduate level.

EXAMINATION. When the student's application for the master's degree has been approved, his major department appoints a committee consisting of not less than three members, including a member from the minor department, if any. The chairman of this committee arranges for the time and place of the final examination, the results of which must be reported to the Graduate School Office at least two weeks before the date on which it is expected that the degree will be conferred. The examination may be oral or written. All members of the committee must certify its results. If the examination is not satisfactory, the committee may recommend to the Graduate School that the candidate be allowed to take another examination after a further interval of study.

THESIS. The thesis should be evidence of the candidate's ability to do independent investigation and to present the results in clear and systematic form. Two copies of the thesis, with approved forms signed by the members of the examining committee from the major department, must be deposited in the library at least two weeks before the date on which it is expected that the degree will be conferred. The department may require the candidate to present an additional copy for its own use. Instructions for the preparation of theses in acceptable form may be obtained from the Graduate School Office or the library.

DOCTOR'S DEGREES

The doctor's degree is by nature and tradition the highest certificate of membership in the academic community. As such it is meant to indicate the presence of superior qualities of mind and intellectual interests, and of high attainments in a chosen field. It is not conferred merely as a certificate to a prescribed course of study and research, no matter how long or how faithfully pursued. All requirements and regulations leading to the doctor's degree are devices whereby the candidate may demonstrate his present capacities and his future promise for scholarly work. The University of Washington offers the degree of Doctor of Philosophy through the following departments: Anatomy, Anthropology, Biochemistry, Botany, Chemistry and Chemical Engineering, Economics, English, Fisheries, Geography, Geology, Germanic Languages and Literature, History, Mathematics, Microbiology, Pharmacology, Philosophy, Physics, Physiology and Biophysics, Political Science, Psychology, Romance Languages and Literature, Sociology, and Zoology; through the Colleges of Education, Forestry, and Pharmacy; and in the following fields: Chinese languages and literature, comparative literature, Latin-American studies, and linguistics.

The Doctor of Commercial Science is offered as a professional degree primarily for students preparing for teaching and research positions in business administration and for administrative and policy-making positions in business.

The Doctor of Education is offered as a professional degree primarily for teachers and school administrators.

In order to qualify for the degree of Doctor of Philosophy, the candidate must meet the following minimum requirements:

1. Complete a program of study and research as planned by the major department or college. (Requirements are outlined in the curricula announcements of the departments and colleges.)
2. Present a minimum of three academic years of resident study, two of them at the University of Washington.
3. Demonstrate a reading knowledge of two foreign languages related to the major field of study.
4. Prepare a thesis which is a significant contribution to knowledge and which clearly indicates training in research.
5. Pass creditably a general examination in the major field, and, when a part of the program of study, in the minor field or in supporting courses.
6. Pass creditably a final examination, which is generally devoted to the thesis and the field with which it is concerned.

While it is expected that a candidate for the doctor's degree will take work outside his major department, requirements for minors and supporting courses will be determined by the major department.

Candidates for doctor's degrees are expected to attend Commencement exercises.

ADMISSION TO CANDIDACY. Not later than the end of the second year of the student's graduate work, the major department will request the Graduate School to appoint a supervisory committee to assume general sponsorship of the prospective candidate. At the end of two full years of graduate study as approved by the major department, and after a successful demonstration of proficiency in two foreign languages, the chairman of the supervisory committee may request the Graduate School to issue a warrant permitting the candidate to take the general examination for admission to candidacy. This request is taken by the Graduate School Office to mean that, in the opinion of the committee, the candidate's background of study and preparation is sufficient to justify his undertaking the examinations. The warrant is issued by the Graduate School Office only after the prescribed requirements of residence and study

have been met. The department then sets the time, place, and manner of the general examination. If the general examination is oral, a majority of the examining committee must be present during the entire examination. No student is regarded by the Graduate School as a candidate for the doctor's degree until after the warrant certifying the successful completion of the general examinations has been filed with the Graduate School Office by the chairman of his supervisory committee. After admission to candidacy, the time of the candidate is ordinarily devoted to the completion of his research work as embodied in the thesis and to preparation for his final examination.

THESIS. The candidate must present a thesis representing original and independent investigation; it should reflect not only his mastery of research techniques, but his ability to select an important problem for investigation and to deal with it competently. Instructions for the preparation of theses in acceptable form may be obtained from the Graduate School Office or the library. At the time of the student's admission to candidacy the Dean of the Graduate School will designate, with the advice of the department, a special thesis-reading committee; the members of the reading committee give a written report of their judgment of the thesis which will be bound with the thesis for deposit in the library. This report should state briefly the bases on which the readers find the thesis acceptable or unacceptable. A warrant for the final examination will be issued only after the written report from the reading committee has been filed with the Graduate School; the report must be filed at least two weeks before the candidate's final examination. Immediately after the examination, the thesis in its final form must be presented to the Graduate School Office for approval of its mechanical form and execution. When it is approved, an official certificate of Graduate School approval is attached to the thesis and it is deposited in the library.

FINAL EXAMINATION. The warrant for the final examination is issued by the Graduate School Office upon receipt of a favorable report from the thesis-reading committee. The examination is scheduled by the Graduate School Office and conducted by the candidate's supervisory committee, one member of which is designated the special representative of the Graduate Faculty. It is ordinarily confined to the dissertation and immediately related fields. A certificate indicating that the final examination has been successfully passed must be returned to the Graduate School Office two weeks before the date on which it is expected that the degree will be conferred. If the examination is unsatisfactory, the applicant may, upon recommendation of his supervisory committee and with the permission of the Dean of the Graduate School, be granted a second examination after a period of additional study.

SCHOLARSHIP

If students are to make satisfactory progress toward advanced degrees, success in their courses of study must be assumed. Grades as such are not matters of emphasis in graduate work; the graduate student should see his grades merely as an indication of whether his general progress is satisfactory or unsatisfactory. For this reason there is no calculation of the grade-point average in graduate study. However, in the major field, no grade of less than B is acceptable; in related fields, a lower grade may occasionally be accepted but only if the student's record is of generally high quality. Students whose work is not of approved quality may be asked to withdraw from the Graduate School.

SECOND BACHELOR'S DEGREES

Students who wish to obtain a second bachelor's degree must register in the college from which they expect to obtain the degree, not in the Graduate School.

ADMISSION OF SENIORS

Students who are within 6 credits of completing their undergraduate work, and who otherwise meet the requirements for admission to the Graduate School with full standing, may register for as much as 6 credits in graduate courses, in addition to the undergraduate work, but remain in the undergraduate classification until the bachelor's degree is granted. Only under these circumstances may work taken as an undergraduate be counted toward a graduate degree. Further registration in the Graduate School is contingent upon completion of the requirements for the bachelor's degree.

SCHOOL OF LAW

Dean: **GEORGE N. STEVENS, 205 Condon Hall**

Professors: H. M. Cross, J. G. Gose, M. D. Green, A. Harsch, C. E. Martin, R. H. Nottelmann, J. W. Richards, W. L. Shattuck, J. B. Sholley, G. N. Stevens, R. L. Taylor.

Professor Emeritus: E. Levy.

Associate Professors: M. Gallagher, J. W. Hawley, I. C. Rutledge.

Assistant Professors: L. V. Rieke, D. H. Wollett.

Lecturer: H. Shefelman.

Associate Judges of the Practice Court: Hodson, Meakim, Roney, Shorett, Wilkins.

Lecturers in Estate Planning: Allison, Bernbaum, Cooper, Crosby, Judson, Karr, Mackenzie, Osborn, Palmer, Ransom, Stone.

THE School of Law offers a three-and-one-third-year curriculum which prepares students for the practice of law in any state or jurisdiction where the Anglo-American legal system prevails. Particular attention is given to statutes, special doctrines, and rules of practice in the state of Washington. Admission to the Washington Bar, however, or that of any other state, is conditional upon a state examination.

The School of Law is a member of the Association of American Law Schools, and is approved by the Council on Legal Education and Admission to the Bar of the American Bar Association.

Law courses are generally taken only by students who have been admitted to the School of Law; however, with the permission of the School, graduate students may take courses for graduate credit.

ADMISSION

To be regularly admitted to the School of Law a student must either have a bachelor's degree from a college or university of recognized standing, or have completed 135 academic quarter credits with a scholarship average of 2.5, together with the required quarters in physical education and/or military training.

Students who take their prelaw preparation at the University of Washington may enter one of the prelaw curricula offered in the College of Arts and Sciences and the College of Business Administration (see pages 115 and 184).

Transfer credit is possible only from schools which are members of the Association of American Law Schools; credit for not less than one year's work and not more than two and one-third years' work is acceptable. The Dean of the School determines the amount of credit granted to a transfer student.

First-year students are admitted only at the beginning of Autumn Quarter. An application blank should be obtained from and filed with the Dean of the Law School, together with complete transcripts of college and other law school work when that work has been completed.

Students who do not intend to work toward a degree may request admission as special students. These applicants must be at least twenty-three years old and their general education must be equivalent to that required for admission to the freshman class at the University. Admission as a special student is granted only upon vote of the faculty, and the number of those who may receive this privilege is restricted.

To be eligible to take the Washington State Bar examination, a student must have completed two years of college work *before* beginning his professional law study. Students who intend to qualify for the Washington State Bar examination are, therefore, advised not to request admission as special students.

SCHOLARSHIP

Students placed on probation for low scholarship at the end of their first year of law study must attend the following Summer Quarter and remove the deficiencies in order to be eligible for admission to the second-year class.

In courses which extend through more than one quarter, no examination for credit is given until the end of the entire course.

BACHELOR OF LAWS

Ten quarters are required for completion of the law curriculum. The seventh quarter, between the second and third years, consists of a required Summer Quarter. The three quarters immediately preceding the conferring of the Bachelor of Laws degree must be spent in residence at the University of Washington Law School. The degree is conferred on *regular* students who complete 140 credits in professional law subjects.

Bachelor's degrees with majors in law are offered by the College of Arts and Sciences and the College of Business Administration (see pages 115 and 184). These degrees are granted upon successful completion of 138 undergraduate credits in the college and the first year of Law School.

The first and second year of law study are composed of a program of required courses. Courses numbered from 100 through 299 are required, except 202 and 280. Enrollment in these two courses is permissive, based on academic background, and second-year students must enroll in one or the other. The program of the third year (seventh to tenth quarters) is primarily elective.

COURSES

- 100 **Contracts (3-3-3; A-W-S)** **Shattuck, Rieko**
Williston, Cases on Contracts, fifth edition. Formation, incidents, and termination of contracts, including mutual assent, consideration, parol evidence rule, statute of frauds, assignments, beneficiaries, conditions, breach, and remedies.
- 110 **Legal Administration (3; A)** **Goso, Sholley**
Materials to be announced. Structure and operation of the judicial system, including common law pleading, introductory material on equity jurisdiction, development of code pleading, a survey of administrative tribunals, and a preliminary study of statutory materials.
- 120 **Personal Property (3; A)** **Cross, Hawley**
Bigelow, Cases and Other Materials on the Law of Personal Property, third edition. First five weeks: formation of quiz sections; study of cases on possession, finders, and satisfaction of judgments as a vehicle of orientation to the study of law; last five weeks: confusion, accession, and fixtures, with continuing emphasis on case preparation and comparison.
- 121 **Real Property (3-3; W-S)** **Cross, Hawley**
McDonal and Haber, Property, Wealth, Land: Allocation, Planning, and Development. Real property, including estates in land, waste, emblements, easements, licenses, concurrent ownership, and introductory future interests.
- 122 **Gratuitous Transfers (3; W)** **Harsch, Hawley**
Bigelow, Cases and Other Materials on the Law of Personal Property, third edition; Mechem and Atkinson, Cases on Wills and Administration, second edition. Gifts, wills, intestate succession, and basic concepts of the law of trusts.
- 130 **Criminal Law (2-2; A-W)** **Green**
Harno, Cases on Criminal Law, second edition, and Green, Washington Materials on Criminal Law. Origin and purposes of criminal law; the elements of criminal liability; mental states bearing upon criminal responsibility, such as negligence, specific intent, insanity, and intoxication; solicitation; attempts; and major crimes.
- 140 **Torts (3-3-3; A-W-S)** **Richards, Wollett**
Seavey, Keeton, and Thurston, Cases on Torts. Intended interference with the person or tangible things: the wrong and the defenses; unintended interference with the person or tangible things: negligence, the extent of liability, the effect of special relationships, contributory fault, liability without fault; interference with intangibles: misrepresentation, defamation, and interference with advantageous relations.
- 141 **Agency (3; S)** **Goso, Taylor**
Conard, Cases on Business Organizations, 1950 edition. Vicarious liability; the employment relationship; the scope of employment; contractual rights and liabilities in relation to third parties; relations between principles and agents.
- 160 **Legal Research and Writing (1-1; W-S)** **Gallagher, Staff**
Materials to be announced. Organization of the library; research techniques; preparation of letters, office briefs, and simple legal documents.
- 200 **Commercial Transactions (3-2-2; A-W-S)** **Rieko, Taylor**
Sutherland and Willcox, Cases and Materials on Commercial Transactions. Transfer of ownership; bona fide purchaser; limitations on the power of transfer; warranties; anatomy of payment; remedies to enforce ownership; enforcement of promises; rescission and reformation.
- 201 **Business Associations (3-3; A-W)** **Goso**
Gilmore, Cases on Partnership, third edition; Berle and Warren, Cases on Business Organization. Partnerships, corporations, and related forms of business organizations, with special attention to Washington cases and to the Uniform Partnership Act, the Uniform Limited Partnership Act, the Uniform Business Corporations Act, and other applicable statute law of the state of Washington. A problem in the organization of a simple business corporation is included.
- 202 **Insurance (3; A)** **Taylor**
Casebook to be selected. Scope and function of insurance; insurable interest; creation of the insurance contract; ascertainment and control of the risk; waiver and estoppel. Not a required

course; second-year students who have an adequate accounting background may substitute this course for 280.

- 210 Evidence (2-2-2; A-W-S)** **Richards**
McCormick, Cases on Evidence. Preparing and presenting evidence; examination of witnesses; admission and exclusion; competence of witnesses; privileges; relevancy; demonstrative evidence; writings; the hearsay rule and exceptions; burden of persuasion, presumptions; judicial notice.
- 211 Code Pleading (3; S)** **Green**
Cathcart and Howell, Cases on Code Pleading, supplemented by the Washington Code and Washington Cases. Nature and function of the code; parties to the code action; general rules of pleading; the complaint; demurrers; the answer; the reply.
- 212 Equity (3-3; A-W)** **Nottelmann**
Cook, Cases on Equity. Nature of equitable jurisdiction; powers of equity courts; principles governing exercise of equitable powers; injunction against torts; specific performance of contracts; law of vendor and vendee; reformation and rescission for mistakes; equitable servitudes on land and chattels.
- 230 Constitutional Law (3-2-3; A-W-S)** **Sholley**
Sholley, Cases on Constitutional Law. Historical consideration of basic doctrines of American constitutional law as developed by the United States Supreme Court, with special emphasis upon the contract, commerce, and due process clauses.
- 231 Taxation (2-3; W-S)** **Harsch**
Griswold, Cases on Federal Taxation, second edition. Federal estate, gift, income, and miscellaneous taxes; federal tax procedure.
- 280 Legal Accounting (2; A)** **Staff**
Textbook to be selected. The balance sheet; statement of profit and loss; theory of debit and credit; merchandise accounts and transactions; accounting for partnership and corporations; introduction to federal income tax; accounting for fiduciaries; accounting for law office. Prerequisite, permission.
- 300 Credit Transactions (3-3; A-W)** **Shattuck**
Shattuck, Washington Materials on Security Transactions, revised edition 1947. Personal and property security, including suretyship, accommodation parties and instruments, pledges, conditional sales, trust receipts, chattel mortgages, real property mortgages, and security assignments of choses in action.
- 301 Corporation Finance and Related Tax Problems (2-2; W-S)** **Harsch, Goso**
Problems of the practicing lawyer in forming corporations and in the legal supervision of their internal affairs, with special reference to the effect of federal tax laws on this operation. Individual research problems in the field, including forms of capital structure, corporate finance, and general concepts of corporate accounting. Each student must prepare a complete set of corporate papers, covering the typical problems which may arise from the time of organization to dissolution.
- 302 Creditor's Rights (3; Summer)** **Rieko**
Moore and Countryman, Debtors' and Creditors' Rights; Cases and Materials. A study of attachments; liens; executions; creditor's suits and supplementary proceedings; fraudulent conveyances; compositions; assignments for the benefit of creditors; state insolvency laws. Comparison and general examination of federal bankruptcy proceedings.
- 310 Trial and Appellate Practice (3-2; Summer-A)** **Green, Goso, Hodson, Meakim, Richards, Roney, Shorett, Wilkins**
Sunderland, Cases and Materials on Trial and Appellate Practice, second edition, supplemented by the Washington Code of Procedure and Washington cases. Proceedings in the trial of a civil action from the discovery procedure prior to trial to the judgment: discovery techniques; pretrial hearings; continuances; selection of the jury; conduct of counsel; nonsuits and directed verdicts; instructions; verdict; motion for new trial; judgments. Appellate practice: methods of review; parties; laying a foundation for review; transferring the case to the appellate court; record on appeal; assignment of errors; briefs; disposition of the case upon review. Each student participates in the trial of a case in moot court.
- 311 Probate Practice (2; Summer)** **Richards**
Mechem and Atkinson, Cases on Wills and Administration, second edition, supplemented by the Washington Probate Code and Washington cases. A study of the practice, procedure, and substantive law involved in the probate of wills and the administration of decedents' estates. Each student is required to draft all papers necessary to carry a typical estate through the entire course of probate or administration and to participate in moot probate hearings conducted in accordance with the Probate Code of the state of Washington.
- 312 Damages (2; W)** **Taylor**
McCormick, Cases and Materials on Damages. A study of the money judgment as a remedy, with particular emphasis on the principles which control the computation of damages for breach of contract, and for invasion of person or property.
- 313 Restitution (3; S)** **Nottelmann**
Thurston, Cases on Restitution. Principles and remedies at law and in equity, to accomplish the reformation or rescission of contracts, the restitution of property, or other relief appropriate to prevent unjust enrichment of one person at expense of another as a result of mistake, fraud, duress, impossibility or illegality of performance, or breach of fiduciary duty.
- 315 Criminal Procedure (3; W)** **Groon**
Harno, Cases and Materials on Criminal Law and Procedure, third edition. Supplemented by a study of Washington Statutes and Court Rules governing criminal procedure. Individual research topics are assigned.

- 320 Trusts and Fiduciary Administration (3-3; A-W)** **Nottelmann**
 Scott, Trusts, third edition, and selected materials. Disposition of real and personal property for individual and charitable objects by testator or settlor. Duties of administrator and trustee; creation and elements of trust; resulting and constructive trusts; administration of trusts; termination and modification; obligation of trustee as fiduciary; liabilities to and of third persons. Drafting of trust instrument.
- 321 Land Transactions (3-2; Summer-A,W-S)** **Cross**
 Martin on Conveyances, 1939 edition; supplemented by selected materials. Study of the legal and practical problems of land transactions, from the first employment of a broker, through closing, to final perfection of title by recording, with particular emphasis on the conveyancing problems; execution and types of deeds, descriptions, covenants for title, recording, estoppel by deed, and evidence of title (abstracts, title insurance, and title registration); employment and responsibility of real estate broker, negotiations and contracts preliminary to conveyance, and closing problems including a brief survey of Washington land taxation; adverse possession and prescription.
- 322 Future Interests (2-2; Summer-A)** **Cross**
 Casebook to be announced. Study of types of future interests in property and characteristic problems; construction of limitations creating future interests; powers of appointment; the rule against perpetuities; restraints on alienation.
- 323 Community Property (2; Summer,W)** **Hawley, Rieko**
 Marsh, Cases on Washington Law of Community Property. Nature and types of community property; management and control, liabilities, and power of dispositions; effect upon agreements and dissolution. Special emphasis upon Washington law.
- 324 Landlord and Tenant (3; A)** **Hawley**
 Casebook to be announced. Study of farm, residential, and commercial leaseholds, including regulation and taxation problems, special protections for landlord and tenant, and use of long-term leases.
- 325 Estate Planning (2-2; W-S)** **Harsch, Hawley, Allison, Bernbaum, Cooper, Crosby, Judson, Karr, Mackenzie, Osborn, Palmer, Ransom, Stone**
 Shattuck, Estate Planner's Handbook; Warren and Surrey, Federal Estate and Gift Taxation. A study of the use of wills, trusts, and insurance devices in planning an individual's estate; the impact of federal and state taxation on such devices. Local attorneys, trust officers, insurance underwriters, and accountants discuss problems in their fields. Each student must prepare an entire estate plan and draft a will solving a designated problem.
- 326 Trust Administration (3; S)** **Nottelmann**
 Selected problems dealing with investment of trust funds and preservation of trust property; changes enforceable against trust assets; problem of apportionment between capital and income accounts; trustee accounting. Drafting problems.
- 330 Administrative Law (4, Summer; 2-2, W-S)** **Newman, Rutledge**
 Gellhorn, Cases on Administrative Law. Operation and powers of governmental agencies and legislative standards for delegation and due process; procedure; investigation, hearing, and determination; methods, timeliness, and scope of review; promulgation and informal settlement.
- 331 Legislation (2-2; Summer-A)** **Harsch**
 Read and MacDonald, Cases and Materials on Legislation. Formulation of legislative policy; legislative organization and procedure; statutes and their interpretation.
- 332 State and Local Taxes (3; S)** **Harsch**
 Materials to be announced. Jurisdictional problems; constitutional limitations, state and federal; study of some important aspects of state property taxes. Assigned topics for individual research.
- 333 Advanced State and Local Taxes (3; not offered 1952-53)**
- 334 Labor Law (2-2; A-W)** **Wollett**
 Selected problems concerning the formation and operation of labor organizations assigned for investigation, report, group discussion, and submission of final paper.
- 335 Municipal Corporations (3; W)** **Sheffelman**
 Tooke, Cases on Municipal Corporations, second edition. A study of the law governing the nature, organization, powers, and duties of local governmental units, including both municipal and quasi-municipal corporations and their relation to the state, with special attention to the problems of police power, revenue, indebtedness, property rights, city planning and zoning, and liability in contract, quasi-contract and tort.
- 337 Public Utilities (3; Summer)** **Nottelmann**
 A study of regulation and control by federal and state agencies of rates, services, facilities, and investment in railroads, shipping, communications, and power industries.
- 339 Labor Relations (3; S)** **Wollett**
 Special problems involved in the resolution of labor-management disputes, with emphasis on the negotiation and administration of collective bargaining agreements.
- 340 World Law (3; S)** **Rutledge**
 Dickinson, Cases and Materials on International Law. Organization of international agencies; existence, domains, and populations of national states; conflicts of jurisdiction; international intercourse; and selected problems such as the genocide convention and its relation to municipal law in the United States.
- 341 Office Management and Professional Responsibility (2; S)** **Gose**
 Lectures and assigned readings in law office management and practice; investigation and preparation of cases; attorney-client relationship; fee schedules and fixing of fees; professional ethics; and related subjects.

- 342 Admiralty (3; Summer)** **Richards**
Sprague and Healey, Cases on Admiralty. The admiralty jurisdiction; maritime liens; rights of maritime workers; carriage of goods; charter parties; salvage; general overage; pilotage; towage; collision; limitation of liability.
- 343 Conflict of Laws (2-2; A-W)** **Sholley**
Cheatham, Goodrich, Griswold and Reese, Cases and Materials on Conflict of Laws, third edition. Domicile; jurisdiction of courts; substance and procedure; choice-of-law rules.
- 344 Domestic Relations (2; W)** **Richards**
Shattuck, Washington Materials on Domestic Relations. Marriage, divorce, and annulment; the personal and economic relations of the spouses; the effect of marriage on the ordinary rules relating to contracts, torts, and crimes.
- 352 Comparative Law (3; Summer)** **Nottelmann**
Selected problems in the field of private law to be discussed under American and English, French and German laws as the chief representatives of the Common and Civil Law systems respectively. Each student reports on his specific research problem, submits a final paper, and participates in group discussion of other problems.
- 398 Research Problems in Law (1-3 per quarter; AWS)** **Staff**
Qualified third-year students may, with the consent of a member of the law faculty and the Dean of the Law School, receive from 1 to 3 credits for individual research in any of the major fields in the law curriculum.
- 470 Advanced Problems in Security (3; S)** **Shattuck**
Detailed study of selected specialized problems in credit transactions.
- 484 Social Legislation (3; S)** **Sholley**
Employer's liability acts, workmen's compensation, unemployment insurance, old-age insurance, and wage-and-hour laws.
- 487 Government Regulation of Business (3-5; Summer)** **Nowman**
Legislative and administrative techniques in the regulation of business practices, such as pricing, with respect to antimonopoly, antidiscrimination, and anti-inflationary policy. Term paper in lieu of examination.

SCHOOL OF LIBRARIANSHIP

Director: ROBERT L. GITLER, 112 Library

Acting Director: GLADYS BOUGHTON, 112 Library

Professor: H. C. Bauer.

Associate Professors: R. L. Gitler, M. G. Gallagher.

Assistant Professors: L. D. Bevis, G. Boughton, E. A. Groves, M. E. Peterson, M. A. Turner.

Supervisor, I.M.C.: J. W. Brown.

THE School of Librarianship offers four-quarter professional curricula in general library work, library work with children and young people, school library work, and law librarianship. All curricula lead to the degree of Master of Librarianship.

For undergraduate students in other schools and colleges of the University, the School offers these courses: Librarianship 100, for new students at the University; and Librarianship 451, 452, 460, 461, 462, 463, 464, and 470, primarily for upper-division students who plan to enter the School of Librarianship after graduation. Education students who choose librarianship as a second teaching area may elect 18 credits from among these courses. Those who plan to enter high school library work in the state of Washington should meet requirements for the provisional general teaching certificate, which is issued through the College of Education (see page 202).

ADMISSION

Admission to the School is granted to graduate students who have a bachelor's degree from a college or university of good standing, whose undergraduate work has included at least 20 quarter credits in one modern foreign language, and who have made an average grade of B in their undergraduate work. Students who plan careers in scholarly libraries and scientific fields should have a reading knowledge of French and German before applying for admission, and those who plan to do library work with children and young people should have completed at least one course in child psychology. All entering students will find the ability to use a typewriter an advantage.

Admission to the course in law librarianship is granted to graduate students who have completed a law course at a school accredited by the Association of American Law Schools. Applications with full official transcripts of law courses must be sent to the Dean of the Law School and the Director of the School of Librarianship.

Admission to the School of Librarianship is effected, as a rule, only in Autumn or Summer Quarter. Admission at other times may be granted to students who plan to carry their work on a part-time basis. Since the courses are heavy, full-time students are advised not to plan for outside work; however, it is frequently possible to enroll for a portion of the curriculum and carry the program over a two-year period while working part-time as a professional library assistant.

Application for admission should be made to the School of Librarianship before May 30 if the student intends to enter Autumn Quarter, or before March 30 if he intends to enter Summer Quarter. Opportunity to enter at a later date may depend upon withdrawal of previously accepted applicants. Copies of transcripts of academic records must be filed with the Registrar of the University and the Director of the School of Librarianship. Graduate standing is determined by the Registrar, admission to the School by the Director. *An admission slip from the Registrar's Office indicating classification as a graduate student does not entail admission to the School of Librarianship. The student must make sure that his acceptance is clear in both offices.*

When possible, applicants are urged to arrange for a personal interview with the Director of the School.

In general, persons over thirty-five years of age will not be considered for admission to the School unless special circumstances warrant, and since no one with serious physical defects, personality difficulties, or ill health can readily secure a position in library service, such persons should not ask admission.

SCHOLARSHIP

A 3.0 grade-point average must be maintained throughout the course.

MASTER OF LIBRARIANSHIP

A thesis and satisfactory standing on a comprehensive examination are included in the requirements of all librarianship curricula.

GENERAL CURRICULUM. Preparation for professional service in most types of libraries is offered in this curriculum. A total of at least 45 credits is required, including 35 credits in graduate library studies and 10 credits in graduate electives (librarianship or other approved courses). With the permission of the Director of the School, students may elect additional nonlibrary courses in lieu of Librarianship 509 if they attain 35 credits in other graduate librarianship courses.

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS
Libr. 500	2	Libr. 502	3
Libr. 510	4	Libr. 511	3
Libr. 530	4	Libr. 531	4
Libr. 599	2	Libr. 550, 470, or nonlibrary course	3
	<u>12</u>		<u>13</u>
THIRD QUARTER	CREDITS	FOURTH QUARTER	CREDITS
Libr. 501	2	Libr. 470 or nonlibrary course	3
Libr. 503, 513, 532, or nonlibrary course	2	Libr. 514	3
Libr. 509	4	Libr. 600	4-6
Libr. 512	3		<u>10-12</u>
	<u>11</u>		

CURRICULUM FOR LIBRARY WORK WITH CHILDREN AND YOUNG PEOPLE. Intensive and detailed study of this phase of library service is provided. A total of 46 credits in graduate library studies is required. Other library courses may be substituted with faculty approval.

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS
Libr. 500	2	Libr. 511	3
Libr. 510	4	Libr. 531	4
Libr. 530	4	Libr. 550	3
Libr. 599	2	Libr. 553	2
	<u>12</u>		<u>12</u>
THIRD QUARTER	CREDITS	FOURTH QUARTER	CREDITS
Libr. 452	3	Libr. 462	3
Libr. 501	2	Libr. 514	3
Libr. 509	4	Libr. 600	4-6
Libr. 554	3		<u>10-12</u>
	<u>12</u>		

CURRICULUM FOR SCHOOL LIBRARY WORK. Preparation for school librarianship at the secondary level is offered for students with teaching credentials. A total of 47 credits in graduate library studies constitutes this program. Substitution of other library courses may be allowed with faculty approval.

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS
Libr. 500	2	Libr. 470	3
Libr. 510	4	Libr. 511	3
Libr. 530	4	Libr. 531	4
Libr. 599	2	Libr. 550	3
	<u>12</u>		<u>13</u>
THIRD QUARTER	CREDITS	FOURTH QUARTER	CREDITS
Libr. 462	3	Libr. 460	3
Libr. 501	2	Libr. 514	3
Libr. 509	4	Libr. 600	4-6
Libr. 554	3		<u>10-12</u>
	<u>12</u>		

CURRICULUM FOR LAW LIBRARIANSHIP. An intensive program in law librarianship is provided for students who hold the Bachelor of Laws degree. These courses are given by the faculty of the School of Librarianship and the Law School.

FIRST QUARTER		CREDITS	SECOND QUARTER		CREDITS
Libr. 500	.....	2	Libr. 511	.....	3
Libr. 510	.....	4	Libr. 531	.....	4
Libr. 530	.....	4	Libr. 542	.....	5
Libr. 540	.....	2			12
		12			
THIRD QUARTER		CREDITS	FOURTH QUARTER		CREDITS
Libr. 501	.....	2	Libr. 470	.....	3
Libr. 509	.....	4	Libr. 541	.....	4
Libr. 513	.....	2	Libr. 543	.....	5
Libr. 532	.....	2			12
		10			

COURSES FOR UNDERGRADUATES

- 100 The Use of Books and Libraries (2; AWS)** **Staff**
Lectures and discussions illustrating the use of libraries, general reference materials and aids, and reference books in various subject fields. Open to any student but designed primarily for freshmen, sophomores, and new students.
- 451 Children's Books (3; WS and Summer)** **Groves**
Introduction to the field of children's books, with special emphasis on their selection and application to the school curriculum and to the child's recreational reading interests.
- 452 Story Telling (3; AS)** **Groves**
The art and materials of story telling in public libraries, schools, and recreational centers. Folk and fairy tales, myths, epics, picture books, and realistic materials are studied, evaluated, and adapted. Open to undergraduates and nonlibrary school students Autumn Quarter only; for School of Librarianship students Spring Quarter.
- 460 School Library Administration (3; WS and Summer)** **Turner**
Methods of developing a strongly functioning library as an integral part of the school. Planning the library; public relations; personnel; routines in care and circulation of materials.
- 461 School Library Materials (3; AS and Summer)** **Turner**
Study of reference materials and basic books in subject fields, with special attention to their use in correlation with the school curriculum. Primarily for teacher librarians.
- 462 Reading of Young People (3; AWS and Summer)** **Turner**
Principles of evaluation and selection of books for young people. Study of available materials, sources of information about books and reading interests.
- 463 Elementary Classification and Cataloging (4; A and Summer)** **Turner**
Simple cataloging techniques suitable for the school or small library.
- 464 Elements of Technical Processes (3; W and Summer)** **Turner**
Techniques of acquisition, processing, and circulation of library materials; practice in cataloging. Prerequisite, 463.
- 470 History of the Book (3; W and Summer)** **Bevis**
History of the written and printed book from pre-alphabet days to the present, including a survey of modern presses and publishing.

COURSES FOR GRADUATES ONLY

- 500 Libraries, Librarians, and Society (2; A and Summer)** **Bevis**
An overview of the library profession, with consideration of the types of libraries and trends in their development. Attention is given to personality factors and their relation to successful professional practice, and the future of libraries and their place in a changing society is examined.
- 501 Libraries, Librarians, and Society (Part II) (2; S)** **Staff**
Continuation of 500. Prerequisite, 500.
- 502 Library Organization and Administration (3; W)** **Bauer**
Study of public and academic library service, including a consideration of legal structure; finance and statistics; buildings and equipment; personnel; public relations; and other phases of library management. The extension of library service is also considered.
- 503 Special Libraries (2; S)** **Bauer**
Overview of the organization and establishment of public and private special libraries; handling of materials; provision for specialized services; finance; personnel and reports. Case studies of various special libraries are included.
- 509 Directed Field Work (4; S)** **Staff**
Four weeks—forty hours a week—of professionally supervised field work in varying types of libraries.
- 510 Evaluation of Library Materials (4; A and Summer)** **Bevis**
Sources of information about books; criteria of evaluation for selection; evaluation of general reference materials; procedures of reader's services.
- 511 Library Materials in the Humanities and Social Sciences (3; W)** **Bevis**
Survey and evaluation of library resources in these fields. Included are reference tools, bibliographies, landmark books, and contemporary literature, with reference to the needs of different kinds of readers. Prerequisite, 510.

- 512 Library Materials in Science and Technology (3; S)** **Bevis**
Continuation of 511. Prerequisite, 510.
- 513 Government Publications (2; S)** **Bevis**
Government publications of the United States and foreign countries—their acquisition, organization, and use.
- 514 The Library and Audio-Visual Materials (3; Summer)** **Staff**
Types, cost, utility, and characteristics of modern sensory aids employed in communicating ideas: organization for handling films, film-strips, recordings and transcriptions, slides, pictures, exhibits, and similar materials in the library; experience in operating various types of equipment; techniques in extending the use of audio-visual materials by community groups; sources of information about materials and equipment.
- 530 Organization of Library Materials: Theory and Principles (4; A)** **Peterson**
The organization of library materials for use; principles of cataloging, classification and subject analysis; study of the Dewey Decimal and Library of Congress schemes of classification.
- 531 Organization of Library Materials: Comparative Methods (4; W)** **Staff**
Cataloging practices and methods employed to meet varying needs. Prerequisite, 530.
- 532 Organization of Library Materials: Advanced Problems (2; S)** **Boughton**
Cataloging of special materials; maps, music, microfilm, and rare books; special classification schemes. Prerequisite, 531.
- 540 Advanced Legal Bibliography (1; A)** **Gallagher**
Bibliographical data and use of federal and state law reports and statutes; quasi-legal and commissioners' reports of the states; bar association records, legal periodicals, indexes and digests, and cooperative bibliographies of law collections.
- 541 Selection and Processing of Law Library Materials (2; Summer)** **Gallagher**
Aids to selection, processing, microphotography of legal material, etc.
- 542 Legal Reference and Research (5; W)** **Gallagher**
Bibliographical lists, law reference questions, briefing, and annotations.
- 543 Law Library Administration (5; Summer)** **Gallagher**
Staff; patrons and public relations; circulation; architecture; book arrangements; equipment; rules; publicity; publication; budgets; reports; professional societies; regional service.
- 550 Introduction to Library Service for Children (3; W)** **Groves**
The philosophy, organization, and administration of a children's department in a public library, together with an examination of its relationship to other social agencies in the community.
- 553 Library Work with Children (2; W)** **Groves**
Further study of the organization and function of a children's department in a public library, with special attention to the study of reference books, periodicals, library publicity, and co-operation with the schools. Includes actual practice in conducting library lessons and book talks. Prerequisite, 550.
- 554 Children's Literature (3; S)** **Groves**
Reading and discussion of children's books of all levels; examination of tools and review media for selection, with practice in selection for various fields of interest. Prerequisite, 550.
- 599 Methods of Research in Librarianship (2; A and Summer)** **Boughton**
A survey of problems and methods.
- 600 Research (*; WS and Summer)** **Boughton, Staff**
Systematic investigation under faculty direction of a special project approved by the Director and the instructors concerned.
- Thesis (*; AWS)** **Boughton, Staff**

SCHOOL OF MEDICINE

Dean: EDWARD L. TURNER, C308 Health Sciences Building

THE School of Medicine is a part of the Division of Health Sciences, which includes the School of Dentistry, the School of Nursing, and the College of Pharmacy. Courses in the four-year program of the School of Medicine are divided into three general areas, the first of which is Basic Medical Sciences. The Departments of Anatomy, Biochemistry, Microbiology, Pathology, Pharmacology, Physiology and Biophysics, and Public Health and Preventive Medicine offer courses in this area for medical students, for students in other sections of the Division of Health Sciences, and for students in certain undergraduate and graduate curricula of the University. The second area consists of Conjoint Courses. Each course in this series is sponsored by more than one department and is designed to integrate teaching in various fields of medicine. The third area, Clinical Sciences, consists of courses in departments that offer clinical study in general medical practice and in the various fields of specialization.

The library, auditorium, Basic Medical Science departments, and research facilities of the Clinical Science departments are in the Health Sciences Building. Clinical teaching is conducted in hospitals affiliated with the University. The chief center for clinical instruction is King County Hospital, where the clinical department heads of the School of Medicine act as chiefs of staff in their respective departmental activities. Clinical instruction is also conducted in the Children's Orthopedic Hospital, the U. S. Public Health Service Hospital, Firland Sanatorium, the U. S. Veterans Administration Hospital, and Madigan Army Hospital. Students in the fourth year of medicine serve externship periods in affiliated state mental institutions, including Western State, Northern State, and Eastern State Hospitals.

The objectives of the School of Medicine are to prepare a selected group of medical students for the practice of medicine through the use of the best educational techniques in this field; to develop a continuing education program of the highest possible caliber for graduate and postgraduate physicians; and to conduct an active program of research and investigation. Actual admission to the practice of medicine in any state is conditional upon the requirements of a state board of medical examiners.

The School of Medicine is approved by the Council on Medical Education and Hospitals of the American Medical Association and by the Association of American Medical Colleges.

ADMISSION

Applications and pertinent material should be sent to the Committee on Admissions of the School of Medicine. Before January 1, each applicant must submit the following material: (1) formal application for admission on the form furnished by the University of Washington; (2) official transcript of previous college record (sent directly from the registrar of the institution where preprofessional training was taken to the Committee on Admissions); (3) two unmounted recent photographs, 2 by 3 inches; (4) a copy of a university entrance certificate, if premedical training was taken in Canada; (5) a list of three science and three nonscience instructors to act as references; (6) a short autobiography in the student's own handwriting; and (7) the score of the special medical college admission test conducted by the Education Testing Service, P. O. Box 592, Princeton, New Jersey. This test may be taken at all colleges and universities where premedical work is given.

The Admissions Committee will consider as candidates for entrance to the School of Medicine individuals who have completed three years of premedical training (135 academic quarter credits, together with the required quarters of physical education activity and/or military training) with a grade-point average of 2.5 or above. All applicants must have completed the minimum premedical course requirements specified by the Association of American Medical Colleges: 9 quarter credits in English com-

position, 12 in inorganic chemistry, 6 in organic chemistry, 12 in physics, and 12 in biology.

The Committee recommends electives in the general fields of the humanities, including literature, modern languages, music, and art; in the social sciences, including economics, history, philosophy, political science, psychology, and sociology; and in the physical sciences, including physical chemistry, mathematics, cellular physiology, and genetics.

At the end of the first year's work in the School of Medicine, the degree of Bachelor of Science in Basic Medical Science may be granted by the College of Arts and Sciences to applicants who completed three years of study in that college before entering medical school, and have maintained a 2.5 grade-point average during all four years of work (see page 59).

DOCTOR OF MEDICINE

To receive the degree of Doctor of Medicine, the candidate must give evidence of good moral character; spend the last two years of the medical course as a regularly matriculated student; satisfactorily complete the course, including a thesis; and fulfill all additional requirements of the University.

During the first two years in the School, students' schedules and classes conform to the quarter system in use throughout the University. During the third and fourth years the work is organized on a nine-month basis, with schedules and classes divided into four nine-week terms. Courses designated by both terms and quarters are given for third- and fourth-year medical students and for students in other schools and colleges of the University. Courses designated by terms alone are primarily for third- and fourth-year medical students.

GRADUATE STUDY

Short courses designed primarily for the physician in general practice are given at various times throughout the year. These courses provide an opportunity to review fundamental concepts and recent advances in diagnosis and treatment.

The School makes available gross and microscopic material for study by physicians who are preparing for specialty boards.

Students who intend to work toward advanced degrees must fulfill the requirements of the Graduate School (see page 261) and of the department in which they expect to major. Courses leading to the degrees of Master of Science and Doctor of Philosophy are offered in the Departments of Anatomy, Biochemistry, Microbiology, Pharmacology, and Physiology and Biophysics.

RESEARCH

The laboratories of the School of Medicine offer physical facilities not only for fundamental research but also for clinical investigation both in the basic medical sciences and in the clinical departments. The faculty is actively engaged in these pursuits, and in the brief existence of the School their work has brought grants in excess of \$2,000,000 to assist in the prosecution of various research projects. Integration of this active research program into the teaching program enhances the value of each while not permitting either phase to be overshadowed by the other.

ANATOMY

Executive Officer: H. STANLEY BENNETT, G511 Health Sciences Building

Professors: H. S. Bennett, R. J. Blandau.

Associate Professors: N. B. Everett, R. J. Johnson.

Assistant Professors: Q. B. DeMarsh, E. P. Lasher, P. H. Ralph, J. G. Skahan.

Instructors: S. Inoue, L. H. Jensen, D. L. Odor.

Clinical Associate Professor: H. B. Kellogg.

Clinical Instructor: A. I. Sheridan.

Clinical Associates: K. Anderson, A. Bill, J. J. Bonica, J. L. Carney, H. E. Emmel, B. L. Finlayson, B. T. Fitzmaurice, G. Haffly, F. C. Henry, F. C. Kanwit, W. R. King, W. W. Klemperer, W. W. Lindahl, J. R. McCulloch, E. G. McElmeel, M. Norgore, L. J. Rosellini, E. R. Sanderson, W. E. Watson.

Research Associate: R. M. Watts.

In the Department of Anatomy, instruction is given in gross human anatomy, microscopic anatomy, submicroscopic anatomy, embryology, and neurology, so as to

present an orderly picture of the structural organization of the body. Opportunities are afforded for advanced work and investigation in these subjects.

Students who intend to work toward the advanced degree of Master of Science or Doctor of Philosophy must meet the requirements of the Graduate School (see page 261).

COURSES

- 301 General Anatomy (3 or 5; S)** **Odor**
Elementary work in human anatomy with lectures, correlated laboratories, and demonstrations. For health education, anthropology, physical education, and speech students; others by permission of instructor. Not open to premedical, pre dental, or nursing students.
- Conjoint 317-318 Elementary Anatomy and Physiology (see Conjoint Courses)**
- 328-329 Gross Anatomy (6-4; A-W)** **Blandau, Everett**
Lectures and dissection. The first quarter is devoted to a study of the entire human body except the head and neck areas, with emphasis on the thoracic and abdominal regions, and the second quarter to an intensive study of the head and neck areas. For dental students; others by permission.
- 330 Microscopic Anatomy (4; A)** **Ralph**
Lecture and laboratory work in microscopic anatomy. For dental students; others by permission.
- 331 Neuroanatomy (2; W)** **Staff**
Lecture and laboratory work in neuroanatomy. For dental students; others by permission.
- Conjoint 350-351 Human Function and Structure (see Conjoint Courses)**
- 365 Orthopedic Anatomy for Nurses (4; S)** **Staff**
Surface and functional anatomy. For graduate nurses.
- 401-402-403 Gross Anatomy (8-4-4; A-W-S)** **Johnson**
Intensive lectures and dissection accompanied by roentgenographic demonstrations. Study of the entire human body except the brain and spinal cord. Required for first-year medical students. Prerequisite for nonmedical students, permission.
- 404 Human Embryology (3; A)** **Blandau**
Lectures and laboratory demonstrations covering the development of the human embryo and fetus, with emphasis on abnormal development; special attention to problems of maturation, fertilization, and physiology of the gametes. Required for first-year medical students. Prerequisite for nonmedical students, permission.
- 405-406 Microscopic and Submicroscopic Anatomy (4-4; A-W)** **Bennett**
Essentials of microscopic, submicroscopic, and chemical anatomy. Required for first-year medical students. Prerequisite for nonmedical students, permission.
- Conjoint 407 Basis of Neurology (see Conjoint Courses)**
- Conjoint 408 Endocrinology (see Conjoint Courses)**
- 410 Cytochemistry (4; terms 1,2,4—AS)** **Bennett**
The finer distribution of chemical substances in cells and tissues; methods of cytochemistry and their theoretical basis and validity. Prerequisite, permission of instructor.
- 415 Biological X-ray Structure Analysis (3; terms 1,2—A)** **Jensen**
Theory of X-ray diffraction, with emphasis on applications to biological systems. Prerequisite, permission of instructor.
- 421 Seminar in Molecular and Submicroscopic Anatomy (2; term 3—W)** **Bennett**
The molecular and micellar basis of bodily structure. Prerequisite, permission of instructor.
- 425 Brain Dissection (2; term 4—S)** **Everett**
Laboratory work in dissection of the human brain, supplemented by lectures emphasizing developmental and functional aspects of neurology. Prerequisite, permission of instructor.
- 430 Biological Tracer Techniques (4; term 3—W)** **Everett**
Techniques of using radioactive isotopes as tracers in biological research. Prerequisite, permission of instructor.
- 435 Histogenesis and Organogenesis (2; term 4—S)** **Blandau**
Laboratory study and conferences dealing with the ontogenetic maturation of tissues and organs during fetal life. Prerequisite, permission of instructor.
- 440 Prenatal Anatomy I (4; not offered 1952-53)**
- 441 Prenatal Anatomy II (4; term 4—S)** **Johnson**
Study of dissection of the fetus and the newborn, emphasizing the spine and extremities. Prerequisite, permission of instructor.
- 442 Prenatal Anatomy III (4; S)** **Johnson**
Dissection of the fetus and newborn, emphasizing head and neck. Prerequisite, permission of instructor.
- 450 Biological Polarization Microscopy (4; terms 1,2—A)** **Bennett**
Theory, technique, and application of polarization microscopy in biological studies. Prerequisite, permission of instructor.

- 455 Mammalian Reproduction (3; term 4—S)** **Blandau**
Fundamental processes of reproductive anatomy and physiology of laboratory animals. Prerequisite, permission of instructor.
- 460 Connective Tissue Reactions (2; term 4—S)** **Ralph**
Reactions of the cells of connective tissue under various experimental conditions. Prerequisite, permission of instructor.
- Conjoint 481, 482, 483, 484 Regional Surgical Anatomy (see Conjoint Courses)**
- 497 Senior Medical Students' Elective (*; all terms)** **Staff**
Work in any of the following fields: Biological polarization microscopy, cytochemistry, biological X-ray structure analysis, prenatal anatomy, mammalian reproduction, biological tracer techniques, connective tissue reaction, molecular and submicroscopic anatomy, cytology, tissue fine structure, embryology, endocrinology, neuroanatomy, gross anatomy, X-ray diffraction, hematology, brain dissection, histogenesis, and organogenesis. Prerequisite, permission.
- 498 Undergraduate Thesis (*; all terms)** **Staff**
For medical students. Prerequisite, permission.
- 499 Undergraduate Research (*; all terms)** **Staff**
For medical students. Prerequisite, permission.

COURSES FOR GRADUATES ONLY

- 600 Research (*; AWS and Summer)** **Staff**
Prerequisite, permission.
- Thesis (*; AWS)** **Staff**

BIOCHEMISTRY

Executive Officer: HANS NEURATH, D417 Health Sciences Building

Professors: H. Neurath, E. R. Norris.

Assistant Professors: W. B. Dandliker, D. J. Hanahan, F. M. Huennekens, E. G. Krebs, P. E. Wilcox.

Instructor: F. Tietze.

Research Associates: N. M. Green, J. M. Junge.

Biochemistry is the study of the chemical structure and properties of substances important to animal and plant life and of the chemical processes of living systems. Training in biochemistry begins at the advanced undergraduate or graduate level, and studies toward the degree of Doctor of Philosophy are recommended for students planning a career in this field. Biochemists occupy positions in academic teaching and research institutions, in hospitals, and in industry and government laboratories.

The Department offers courses in basic biochemistry for students in various areas of study in the University, including the natural sciences, medicine, dentistry, and others. Students who intend to work toward the advanced degrees of Master of Science or Doctor of Philosophy must meet the requirements of the Graduate School (see page 261). They must present a bachelor's degree with a major in chemistry or its equivalent, and some background in biology is desirable. Applicants should communicate with the Executive Officer of the Department before registration.

COURSES

- 361 Biochemistry (3; S)** **Staff**
Lectures covering the basic principles of biochemistry, including the structure and metabolism of biologically important compounds. For dental students; recommended for home economics, forestry, and fisheries students. Prerequisite, Chemistry 230 or 232.
- 362 Biochemistry Laboratory (3; S)** **Staff**
Laboratory exercises and conferences. Certain experimental aspects of biochemistry of special interest to dental students are considered. For dental students.
- 363 Biochemistry Laboratory (2; S)** **Staff**
Laboratory exercises in general biochemistry for home economics students and others. Prerequisite, 361 (which may be taken concurrently).
- 401, 402 Biochemistry (3,3; A,W)** **Staff**
Lectures in the first quarter cover an introduction to physical biochemistry, a review of the properties of biologically important compounds, and metabolism at a cellular level; those of the second quarter emphasize metabolism in the intact mammal, including man. Required for first-year medical students and medical technology students; open to a limited number of students with allied interests. Prerequisites, Chemistry 242 for 401; 401 for 402; and permission.

- 403, 404 Biochemistry Laboratory (3,3; A,W)** **Staff**
Laboratory exercises and conferences. Required for first-year medical students and medical technology students. 401 to be taken concurrently with 403, 402 concurrently with 404.
- Conjoint 408 Endocrinology (see Conjoint Courses)**
- 481, 482 Biochemistry (3,3; A,W)** **Staff**
Structure, metabolism, and function of substances pertinent to animal and plant life. A basic course for graduate or advanced undergraduate students of chemistry, biochemistry, and various biological sciences; recommended also as a preparation for those intending to take advanced biochemistry courses. Prerequisites, Chemistry 337 for 481; 481 or permission for 482; introductory physical chemistry is recommended for 1953-54.
- 483 Biochemistry Laboratory (3; A)** **Staff**
Laboratory exercises and conferences. For students of biochemistry, chemistry, and various biological sciences. Prerequisite, 481 (which may be taken concurrently).
- 498 Undergraduate Thesis (*; all terms)** **Staff**
For medical students. Prerequisite, permission.
- 499 Undergraduate Research (*; all terms)** **Staff**
Investigative work on enzymes, proteins, lipides, intermediary metabolism, physical biochemistry, and related fields. For medical students. Prerequisite, permission.

COURSES FOR GRADUATES ONLY

- 520 Seminar (1-3, maximum 9; AWS)** **Staff**
Prerequisite, permission.
- 562 Physical Biochemistry (2; A, offered alternate years, not offered 1952-53)** **Staff**
This course acquaints the student with certain specialized applications of physical chemistry and their use in biochemical research. Quantitative aspects of methods especially applicable to the study of high molecular weight compounds and systems of biological interests are considered. Prerequisite, 482 and Chemistry 357 or permission.
- 563, 564 Proteins (2,2; W,S, offered alternate years, not offered 1952-53)** **Staff**
The chemistry and biological activity of proteins and naturally occurring protein structures is considered from the viewpoints of the properties of protein solutions, molecular structure and biological function. Proteins found in a wide variety of tissues, both plant and animal, are discussed. Prerequisite, 562 or permission, 563 for 564.
- 565, 566 Enzymes and Enzyme Action (2,2; A,W)** **Huennkens, Krebs, Neurath**
Preparation and properties of enzymes and enzyme systems, including methods of measurement, kinetic analysis, and theory of enzyme catalysis; classification and properties of individual enzymes, coenzymes, and enzyme systems. Prerequisites, 482 and Chemistry 357, or permission, for 565; 565 for 566.
- 567 Biochemistry of the Lipides (2; S) *Enzymes & Enzyme Action*** **Hanahan**
Structure and metabolism of sterols, steroids, fatty acids, and the complex lipides. Prerequisite, 482 or permission.
- 583 Advanced Biochemistry Laboratory (3; W)** **Staff**
Biochemical preparations and investigations of physical and chemical properties by special techniques, including spectrophotometry, polarimetry, manometric method, electrophoresis, isotope tracer applications, etc. Prerequisite, 483 and permission.
- 600 Research (*; AWS)** **Staff**
Prerequisite, permission.
- Thesis (*; AWS)** **Staff**

MICROBIOLOGY

Executive Officer: CHARLES A. EVANS, G305 Health Sciences Building

Professors: C. A. Evans, B. S. Henry, R. S. Weiser.

Associate Professors: H. C. Douglas, E. J. Ordal.

Assistant Professor: P. V. Gustafson.

Instructors: N. B. Groman, H. P. Klein.

Associate: E. A. Duchow.

Microbiology is the science of microscopic organisms, their biological characteristics, chemical activities, industrial uses, and disease-producing mechanisms. The related fields concerned with parasites, viruses, and immunity are included in the work of this department.

In addition to courses for medical students, the Department of Microbiology offers programs in microbiology and food technology leading to bachelor's degrees in the

College of Arts and Sciences (see pages 92 and 124). Students who intend to work toward the advanced degree of Master of Science or Doctor of Philosophy must meet the requirements of the Graduate School (see page 261). The fields of specialization for either degree are: general bacteriology, immunology, parasitology, medical mycology, virology or physiology of bacteria. Course requirements vary according to the field chosen.

COURSES

- 204 Medical Parasitology for Sanitarists (4; S)** **Gustafson**
Consideration of medically important parasites with emphasis on public health aspects. Offered last eight weeks of quarter. For nonmedical students. Prerequisites, 301 or equivalent and permission.
- 235 Microbiology for Students of Dentistry (6; A)** **Groman**
Lecture and laboratory work introducing the student to the principles of microbiology. Major emphasis is on taxonomy, morphology, physiology, immunology, and infectious properties of the bacteria, but other microbiological groups are considered. Prerequisites, Chemistry 232; Biochemistry 361 or its equivalent; 10 credits in botany or zoology; and, for nondental students, permission of the instructor.
- 236 Applied Dental Microbiology (1; W)** **Groman**
Specific applications of microbiology to dental problems. Prerequisite, 235.
- 300 Fundamentals of Bacteriology (*, maximum 6; A)** **Ordal**
Basic bacteriology; comparative morphology, taxonomy, and physiology of bacteria. For non-medical students. Prerequisites, Chemistry 232, 10 credits in botany or zoology, and permission.
- 301 General Bacteriology (5; WS)** **Klein**
Bacteria and their activities. For nonmedical students. Prerequisite, two quarters of general chemistry.
- 320 Media Preparation (5; AWS)** **Duchow**
Practical work in the preparation of culture media and solutions. Nutritional requirements of microorganisms are considered. For nonmedical students. Prerequisite, permission.
- 322 Applied Bacteriology (5; AWS)** **Staff**
Practical experience in a public health laboratory; 15 hours per week. For nonmedical students. Prerequisites, permission and letter to laboratory director.
- 430 Industrial Microbiology (3 or 5; A)** **Douglas**
Microbiological and biochemical aspects of industrially important fermentative and oxidative processes. For nonmedical students. Prerequisites, 300 or 301, and Chemistry 221 and 232.
- 431 Food Spoilage (3 or 5; offered alternate years, not offered 1952-53)**
Microbiological, enzymatic, and auto-oxidative factors involved in food spoilage. For nonmedical students. Prerequisites, 300 or 301, and Chemistry 232.
- 441-442 Microbiology for Students of Medicine (*, maximum 6-*, maximum 6; A-W)** **Evans**
Henry, Weiser
441 includes a survey of microorganisms and a general consideration of the morphology and physiology of bacteria; an introduction to immunology, formation and properties of antibodies, nature of antigen-antibody reactions, blood groups, allergies, and an analysis of factors of innate and acquired immunity. During the last part of 441 and throughout 442, specific pathogenic bacteria and viruses are studied in detail. Students who have had previous work in bacteriology may by special permission be allowed to take 441 or 442 for less than the full 6 credits. Required for second-year medical students. Open to nonmedical students.
- 443 Medical Mycology (2; S)** **Henry**
Consideration of morphology, physiology, immunology and epidemiology of the medically important fungi. Offered first three weeks of quarter. Required for second-year medical students. Prerequisites, 441-442 or equivalent, and permission.
- 444 Medical Parasitology (4; S)** **Gustafson**
Consideration of medically important parasites with emphasis on pathology, immunology, life cycles, and epidemiological and public health aspects. Offered last eight weeks of quarter. Required for second-year medical students. Open to nonmedical students. Prerequisites, 441-442 or equivalent, and permission.
- 497 Senior Medical Students' Elective (*; all terms)** **Staff**
Prerequisite, permission.
- 498 Undergraduate Thesis (*; all terms)** **Staff**
For medical students. Prerequisite, permission.
- 499 Undergraduate Research (*; AWS)** **Staff**
Specific problems in industrial, medical, and general microbiology.

COURSES FOR GRADUATES ONLY

- 510 Physiology of Bacteria (4; S)** **Ordal**
Fundamental physiological and metabolic processes of bacteria. Prerequisite, permission of instructor.
- 520 Seminar (1; AWS)** **Staff**

- 544 Adv. Parasitology (4)
- 530 Comparative Morphology and Physiology of the Higher Bacteria** (4; offered alternate years, not offered 1952-53) **Ordal**
Enrichment, isolation, and comparative morphology and physiology of selected representatives of the following groups of bacteria: Nitrobacteriaceae, Rhodobacteriaceae, Caulobacteriaceae, Actinomycetales, Myxobacteriales, Chlamydo bacteriales, Caryophanae, and Borrelomycetaceae. Prerequisite, permission.
- 540 Filterable Viruses** (4; offered alternate years, not offered 1952-53) **Evans**
Consideration of the physical, chemical, and biological properties of viruses and methods of working with them. Prerequisites, 452 and permission; histology is recommended.
- 550 Advanced Immunology** (*, maximum 4; S) **Weiser**
Prerequisites, 451 and permission.
- 600 Research** (*; AWS) **Staff**
- Thesis** (*; AWS) **Staff**

PATHOLOGY

Executive Officer: STUART W. LIPPINCOTT, D509 Health Sciences Building

Professor: S. W. Lippincott.

Associate Professors: L. D. Ellerbrook, J. B. Thiersch.

Assistant Professors: E. McPeak, J. B. Thiersch.

Instructors: S. A. Creighton, R. F. Hain, R. H. Reiff, L. Stefan.

Clinical Assistant Professors: C. R. Jensen, C. P. Larson, P. K. Lund, D. G. Mason, T. L. Perrin.

Clinical Instructors: J. G. Bennett, E. Bitar, D. V. Brown, S. K. Davis, H. W. Jones, J. B. Spielholz, G. E. Tooley.

Junior Research Associates: N. Eriksen, C. T. O. Fong, A. C. Peacock, M. C. Rhees, H. Thornton.

In addition to courses for medical students, the Department of Pathology offers courses for a curriculum leading to the degree of Bachelor of Science in Medical Technology. This curriculum is given through the College of Arts and Sciences (see page 121). All pathology courses are listed in this section.

COURSES

- 231 General Pathology** (5; W) **Staff**
This course is open to dental students and to selected graduate students in the basic sciences. The objective is to cover in a more brief form the basic work covered in detail in 441, 442, and 443. The method of presentation is therefore the same as in those courses. A reasonable knowledge of histology, anatomy, and physiology is essential to understanding the principles underlying the fundamental alterations in tissues and organs in disease processes and the results of these changes. While the general tissue and systemic manifestations are considered by processes, the applications of these diseases to the mouth, teeth, and neck are particularly stressed. For dental students; graduate students by permission.
- 301 General and Clinical Pathology for Nurses** (2; AS) **Ellerbrook, Thiersch**
The first part of the course is a series of lectures and demonstrations concerned with the practical aspects of clinical pathology as they involve the nurse in her hospital duties. The principles and uses of certain tests are discussed, as well as the function of the nurse in collection of specimens, handling of material, and liaison with the clinicians and laboratory personnel. A few of the more common tests are demonstrated and students participate in the performance of some of these. In the second part of the course, each class includes a didactic lecture, a laboratory demonstration, and a laboratory discussion. The material presented shows the causes, processes, and effects of a number of important diseases and demonstrates the basic underlying principles involved in the most important diseases. Congenital lesions and inflammatory, circulatory, neoplastic, and degenerative diseases are considered. One or more autopsies are demonstrated to show the relationship of pathology to the practice of medicine. For nursing students; others by permission.
- 302 General Pathology for Dental Hygiene Students** (2; A) **Staff**
This course covers the same material in pathologic anatomy given in 301 but includes no clinical pathology.
- 321, 322-323-324-325, 326 Medical Technology** (5, 6-6-6-6, 16; AWS, AWS-AWS-AWS-AWS, AWS) **Ellerbrook, Staff**
During this eighteen-month period, medical technology students become familiar with the common clinical laboratory procedures and with the interpretation of the results obtained. They perform the tests used in the laboratories of physiological chemistry, urinalysis, hematology, serology, microbiology, and pathology. Practical experience is obtained in the laboratories of the School of Medicine and of one or more hospitals. For medical technology students. Prerequisites, completion of three-year prescribed curriculum (in the College of Arts and Sciences) and permission. 321 only may be taken by microbiology students; permission is required.

441-442-443 General and Special Pathology (5-5-5; A-W-S)**Staff**

Didactic lecture followed by tutorials in the laboratory. Pathogenesis, pathological physiology, experimental background, and laboratory tests where indicated, are stressed. Comprehensive lantern slide presentations, demonstrations of gross pathology to small groups, and Scopicon microprojection of pertinent material are used in the presentation of subject matter. Time is available for the study of the histopathology of diseases and discussion of problems with staff members. Each day's activities are ended by a review of the material. Participation by students at autopsies is included at scheduled intervals throughout the course. The technique of the dissection and protocol writing are demonstrated, as well as how to correlate clinical and laboratory data with findings. At the completion of the course the student should be thoroughly familiar with the causes, processes, and effects of the major diseases. Required for second-year medical students; graduate students by permission.

Conjoint 445-446-447 Laboratory Procedures (see Conjoint Courses)**460 Autopsy Technique (*; all terms—AWS)****Staff**

Participation in at least six autopsies, particularly in cases the student has studied in his ward work and in cases of special interest to him. The primary aim is to teach the student how he can obtain the most information at autopsy concerning the development of disease processes in his patients. Required for third-year medical students; graduate students by permission.

470 Surgical Pathology (*; all terms—AWS)**Thiersch**

Students participate in this course during the period in which they are taking the regular course work in surgery. The objective is to demonstrate as much fresh gross surgical material as is available together with a review of microscopic sections from the more interesting material. Students describe and classify the lesions and sometimes demonstrate the specimens. Specimens are obtained from hospitals contributing to the Washington State Tumor Registry and comprise not only the common important lesions but frequently those that are rare and of unusual interest. Required for third-year medical students; graduate students by permission.

476 Clinical Pathological Conference (*; all terms—AWS)**Staff**

Interesting, unusual, or provocative diagnostic cases are taken from the files of King County Hospital each week for clinical review, discussion, differential diagnosis, and correlation with the pathological findings. Required for fourth-year medical students; graduate students by permission.

483 Oncology (2-5, maximum 10; all terms—AWS)**Staff**

Interesting, rare, and controversial tumors selected from the files of the Washington State Tumor Registry are given to students for preliminary study and diagnosis. This is followed by discussion and correlation of diagnoses by members of the pathology staff. For fourth-year medical students; graduate students by permission.

498 Undergraduate Thesis (*; all terms)**Staff**

For medical students. Prerequisite, permission.

COURSES FOR GRADUATES ONLY**520 Seminar (2-5, maximum 10; AWS)****Staff**

Review of current problems of both research and practical nature by various members of the Department of Pathology with discussion of presentations by senior members of the Department. Prerequisite, permission of executive officer.

521 Seminar in Contemporary Professional Literature (1; AWS)**Staff**

A review of current literature as applied to the field of pathology. Discussion of presentations by senior members of the Department. Prerequisite, permission of executive officer.

551 Experimental Pathology (*; AWS)**Staff**

Assignments depend upon the background and interest of the individual. The objective is to teach the individual how to perform an experiment properly. Problems may be concerned with animal experimentation or with specimens obtained from human beings. Special techniques and usage of specialized equipment are utilized when indicated. Methods of keeping data and statistics are considered. Open only to graduate students and fellows who are assigned to work with senior members of the staff. Prerequisite, permission of executive officer.

552 Clinical Pathology (*; AWS)**Staff**

The principles of the techniques, the normal range of values, and the difficulties encountered in techniques. The individual performs all essential tests and at the end of the course should be competent to direct techniques in the running of the chemical section of a clinical pathological laboratory. For graduate students and fellows who are assigned to the laboratory in clinical biochemistry.

553 Cytological Diagnostic Procedures for Neoplastic Diseases (*; AWS)**Staff**

This course is arranged to meet the student's individual need depending upon his background of training in pathology and cytology. Prerequisite, permission of executive officer.

600 Research (*; AWS)**Staff**

Selected problems arranged in accordance with the student's needs. Prerequisite, permission of executive officer.

Thesis (*; AWS)**Staff**

PHARMACOLOGY

Executive Officer: JAMES M. DILLE, F421 Health Sciences Building

Professor: J. M. Dille.

Associate Professor: T. A. Loomis.

Assistant Professors: L. D. Fink, D. F. Magee.

Instructor: T. C. West.

Clinical Associate: R. S. Dille.

Pharmacology deals with the mechanisms whereby modification of physiological function is produced by drugs and the application of these drugs to the relief and treatment of disease.

The Department of Pharmacology provides courses for medical, dental, and pharmacy students, and for those doing graduate work in these fields. Students who intend to work toward the advanced degree of Master of Science or Doctor of Philosophy must meet the requirements of the Graduate School (see page 261). They must present a bachelor's degree with a major in pharmacology. Applicants should communicate with the Executive Officer of the Department before registration.

COURSES

- 234 General Pharmacology (4; S)** **Staff**
The action of drugs on physiological function, with special emphasis on agents which are important in the practice of dentistry. Laboratory experiments and demonstrations of the action of drugs. For dental students.
- 301, 302, 303 General Pharmacology (3,3,3; A,W,S)** **Staff**
The action of drugs on physiological function, with special reference to the use of drugs in the therapeutic treatment of disease. Toxicological manifestations of excessive doses of drugs; management and treatment of these poisonous effects. For pharmacy students.
- 304, 305 General Pharmacology Laboratory (1,1; W,S)** **Staff**
To be taken concurrently with 302 and 303. Prerequisite, 301.
- 442-443 General Pharmacology (5-4; A-W)** **Staff**
The action of drugs, with emphasis on their basic mechanisms and their application to the relief and treatment of disease. Toxicological manifestations of excessive doses of drugs; management and treatment of these poisonous effects. Laboratory experiments and demonstrations. Required for second-year medical students. Prerequisite for graduate students, a major or a minor in pharmacology.
- Conjoint 488 Pharmacotherapeutic Conference (see Conjoint Courses)**
- 497 Senior Medical Students' Elective (*; all terms)** **Staff**
The fields of basic pharmacology. Mechanisms of drug action and rational therapeutic applications of drugs.
- 498 Undergraduate Thesis (*; all terms)** **Staff**
For medical students. Prerequisite, permission.
- 499 Undergraduate Research (*; all terms)** **Staff**
Participation in departmental research projects. For medical students. Prerequisite, permission.

COURSES FOR GRADUATES ONLY

- 507 Journal Seminar (*, maximum 6; AWS)** **Staff**
Presentation of comprehensive reports on recent medical and scientific literature in fields of current importance. Prerequisites, 442, 443, and permission.
- 508 Research Seminar (0; AWS)** **Staff**
Research progress reports and reports on results of completed research. Prerequisites, 442, 443, and permission.
- 509 Pharmacology Laboratory Methods (*; AWS)** **Staff**
Advanced and special techniques of pharmacological investigation. Material is changed from quarter to quarter to fit students' needs, and the course may be repeated for credit provided the subject matter is not duplicated. Prerequisites, 442, 443, and permission.
- 600 Research (*; AWS)** **Staff**
Participation in research projects already set in progress by members of the department staff. Directed experience in research investigation. Prerequisites, 442, 443, and permission.
- Thesis (*; AWS)** **Staff**

PHYSIOLOGY AND BIOPHYSICS

Executive Officer: T. C. RUCH, G405 Health Sciences Building

Professor: T. C. Ruch.

Associate Professors: L. D. Carlson, H. D. Patton, R. F. Rushmer.

Assistant Professors: V. E. Amassian, J. G. Skahan, A. C. Young.

Instructors: A. M. Scher, J. W. Woodbury.

Clinical Associate: D. K. Crystal.

Physiology deals with the processes, activities, and phenomena incidental to and characteristic of life or of living organisms. Courses in this field are given for medical and dental students, and for graduate students in other areas of study.

Students who intend to work toward the advanced degree of Master of Science or Doctor of Philosophy must meet the requirements of the Graduate School (see page 261).

COURSES

- 126 Human Physiology (6; W)** **Scher, Woodbury**
Elementary work in human physiology stressing applications to dentistry. For dental students.
- Conjoint 317-318 Elementary Anatomy and Physiology (see Conjoint Courses)**
- Conjoint 350-351 Human Function and Structure (see Conjoint Courses)**
- 401-402 Advanced Human Physiology (7-7; W-S)** **Ruch, Staff**
Advanced work in physiology approached from the biophysical, mammalian, and clinical points of view. Small-group teaching and special laboratory problems. Required for first-year medical students; graduate students by permission.
- Conjoint 407 Basis of Neurology (see Conjoint Courses)**
- Conjoint 408 Endocrinology (see Conjoint Courses)**
- 416 Biophysics (5; S)** **Young, Woodbury**
Study of bioelectric phenomena in mathematical and physical terms: volume conductors, simple circuit theory, membrane and electrode potentials, and elementary servomechanism theory. Prerequisite, permission.
- 421 Instrumental Analysis of Cardiac Function (2; Summer)** **Rushmer**
Objective records of size, shape, electrical activity, and sounds of the heart obtained on patients with heart disease for correlation with the routine physical examination.
- 481 Pathological Physiology of Pain (2; Summer)** **Amassian, Ruch**
Systematic seminar discussion of pain components of clinical syndromes based upon the experimental and clinical literature. Prerequisite for graduate students, permission.
- 482 Cardiopulmonary Interrelations (2; Summer)** **Carlson, Rushmer**
Seminar discussion of interrelationships between mutually dependent circulatory and respiratory systems in terms of normal control and response to stress. Prerequisite for graduate students, permission.
- 483 Neurology of Emotional Behavior (2; Summer)** **Patton, Ruch**
Seminar survey of the experimental literature on the hypothalamus, orbitofrontal lobes, and rhinencephalon, with special reference to abnormal behavior. Prerequisite for graduate students, permission.
- 484 Endocrinological Reaction to Stress (2; Summer)** **Carlson, Patton**
Seminar survey of the literature concerned with the response of endocrine glands to physiological stresses and strains, such as exercise and extreme temperatures, in normal and diseased individuals. Prerequisite for graduate students, permission.
- 497 Senior Medical Students' Elective (*; all terms)** **Staff**
Topics in physiology and biophysics chosen according to the interests of the group.
- 498 Undergraduate Thesis (*; all terms)** **Staff**
For medical students. Prerequisite, permission.
- 499 Undergraduate Research (*; all terms)** **Staff**
Research problems in physiology and biophysics. Normally full-time but other electives may be taken by arrangement. Prerequisite, permission.

COURSES FOR GRADUATES ONLY

- 520 Seminar (2-5; AWS)** **Staff**
- 525, 526, 527 Advanced Mammalian and Clinical Physiology (*,*,*; AWS and Summer, AWS and Summer, AWS and Summer)** **Staff**
Guided study of the experimental literature of physiology and biophysics. Essays are written and discussed with the staff. Emphasis is placed on critical analysis, accuracy of expression, bibliographical technique, and other factors of good scholarship. Prerequisite, permission.

521 Biophysics Seminar (2-5)

- 532 Experimental Mammalian Clinical Physiology (*; A)** **Young, Woodbury**
Pulse generator; A.C. and D.C. high-gain amplifier circuits; oscilloscopes and oscillographs; recording of pressure, volume, and flow in liquids and gases; calorimetry and pyrometry; continuous gas analysis. Prerequisite, permission.
- 533 Applied Physiological Instrumentation (2-5; W)** **Amassian, Carlson, Rushmer, Scher**
Study and use of research instruments applicable to the nervous system (stimulators, amplifiers, and oscilloscopes), the cardiovascular system (cinefluorograph, electro- and stethocardiograph, oximeter, strain gauge manometers, etc.), and respiratory and metabolic activity (flow meters, minute volume integrator, infrared and paramagnetic gas analyzers, cardiometer, thermocouples, gradient calorimeter). Prerequisites, 532 and permission.
- 535 Operative Techniques in Neurophysiology (2-5; AWS and Summer)** **Patton, Ruch**
Deafferentation, decerebration, and Sherrington reflex preparation; osteoplastic bone flap, Horsley-Clarke apparatus, and reconstruction of lesions; primate colony and operating room management. Prerequisite, permission.
- 600 Research (*; AWS and Summer)** **Staff**
Prerequisite, permission.
- Thesis (*; AWS)** **Staff**

PUBLIC HEALTH AND PREVENTIVE MEDICINE

Executive Officer: LELAND POWERS, E301 Health Sciences Building

Professor: L. E. Powers.

Associate Professors: B. C. Houghton, A. S. Lazarus, G. S. Reeves.

Assistant Professors: A. W. Green, C. E. Vavra.

Clinical Assistant Professors: L. M. Farner, J. Kahl, S. P. Lehman, C. M. McGill, W. Sims, J. D. Wilkey.

Instructor: B. M. Bennett.

Clinical Instructors: L. A. Dewey, J. B. Drake, J. R. Erwin, J. H. Fountain, W. R. Giedt, E. C. Jensen, C. Northrop.

Acting Instructor: E. A. Johnston.

Clinical Associates: B. L. Kahn, D. V. McCallister, M. Mykut, L. Searing.

Clinical Affiliates: S. Bryson, N. P. Hall, A. M. Heath, J. E. Mathews, S. Reed, J. E. VanAmburgh, T. Wilson.

In addition to courses for medical students, the Department of Public Health and Preventive Medicine offers courses for a four-year elective curriculum leading to a Bachelor of Science degree with a major in public health. This curriculum is given through the College of Arts and Sciences (see page 156). All public health courses are listed in this section.

COURSES

Conjoint 295 Introduction to Normal Growth and Development (see Conjoint Courses)

- 301 Causes and Control of Communicable Diseases (3; W)** **Lazarus**
Introductory course for students without laboratory training. Prerequisite for nonmedical students, permission.
- 330 Introduction to Environmental Sanitation (3; A)** **Groon**
Environmental control of disease transmission.
- 402 Communicable Disease Control (3; AS)** **Lazarus**
Public health methods for the control of common communicable diseases. For science majors. Prerequisite, Microbiology 235 or equivalent.
- 409 Public Health Economics (1; W)** **Jared, Powers**
Public medical services and the problems involved in providing adequate medical care. Required for first-year medical students; others by permission.
- 410 Introduction to Medical Statistics and Medical Social Problems (1; S)** **Bennett, Powers**
Required for first-year medical students; others by permission.
- 412 Public Health Organizations and Services (3; AS)** **Powers**
Study of local, national, and international public health services. For nonmedical students. Prerequisite, 301 or 402.

- 425 Biostatistics (2; A)** **Bennett**
Statistical methods used in compilation, interpretation, and presentation of medical data. Required for second-year medical students; others by permission.
- 432 Food Sanitation (3; A)** **Green**
Public health methods of preventing transmission of disease through food. For nonmedical students. Prerequisite, 412.
- 434 Milk Sanitation (3; W)** **Green**
Methods of preventing transmission of disease through milk. For nonmedical students. Prerequisite, 412.
- 435 Vector Control (3; S)** **Green**
Current practical techniques of controlling rodent and insect factors in disease transmission. For nonmedical students. Prerequisite, 412.
- 438 Environmental Utilities (2; A)** **Green**
Plumbing, water, sewage, heating, ventilating, and lighting utilities in buildings: their design and operation for health and comfort. For nonmedical students. Prerequisite, 412.
- 439 Sanitation Facility Design (4; W)** **Green**
Mechanical design of public health facilities and equipment for sanitation. For nonmedical students. Prerequisite, 438.
- 444 Sanitation and Industrial Hygiene Laboratory (3; S)** **Green**
Field and industrial-laboratory testing procedures employed by sanitarians and industrial hygienists. For nonmedical students. Prerequisites, 439, and 451.
- 451 Industrial Hygiene (3; S)** **McGill**
Methods of preventing industrial and occupational diseases and accidents. For nonmedical students. Prerequisite, 412.
- 452 Introduction to Public Health and Preventive Medicine (*; all terms—AWS)** **Powers, Staff**
Public health organization and services. Required for third-year medical students; others by permission.
- 460J Field Training in Health Education (5; Summer)** **Vavra**
Six weeks of full-time supervised work experience in the health education division of a local official health agency. Offered jointly with the College of Education. For nonmedical students. Prerequisite, permission.
- 461 School and Community Health Programs (5; AWS and Summer)** **Reeves, Vavra**
Organizational structure, function, and services of official and nonofficial community and school health agencies, with particular attention to the interrelated roles of teachers, physicians, nurses, and sanitarians. For nonmedical students. Prerequisite, junior standing.
- 463 Community Organization for Health Education (3; W)** **Vavra**
Trends and problems in community health education, including community organization. For nonmedical students. Prerequisite, 412.
- 464 Community Health Education Techniques (3; W)** **Vavra**
Practice in the techniques of working with groups; preparation and use of visual education materials. For nonmedical students. Prerequisite, 412.
- 470 Introduction to Public Health Statistics (2; AS)** **Staff**
Statistical methods used in the compilation, interpretation, and presentation of vital data. For nonmedical students. Prerequisite, 412.
- 472 Applied Statistics in Health Sciences (4; A)** **Bennott**
Application of statistical techniques to biological and medical research; design and interpretation of experiments. For nonmedical students. Prerequisite, permission.
- 475 Clerkships and Seminar (*; all terms)** **Powers, Wilkey**
Three weeks of full-time work in various local public health agencies. In addition to this supervised field training and observation, the student is required to complete one social case study for presentation at a weekly seminar. Required for fourth-year medical students. Prerequisite, permission.
- 477 Statistical Methods in Biological Assay (3; S)** **Bennott**
Methods appropriate to estimation of the dose-effect relationship; biological standardization; microbiological assay; design of experiments. For nonmedical students. Prerequisite, permission.
- 480 Public Health Problems (2-6; AWS and Summer)** **Staff**
Special assignments for students who plan to enter the field of public health and have not had sufficient experience or training in a particular problem. For nonmedical students. Prerequisite, permission.
- 485 Field Practice in Public Health (4-12; AWS and Summer)** **Staff**
Assignment to a local health department for supervised application of public health practices. For nonmedical students. Prerequisite, permission.
- Conjoint 495 Prevention of Illnesses in Childhood (see Conjoint Courses)**
- Conjoint 496 Concept of the Child (see Conjoint Courses)**
- 497 Senior Medical Students' Elective (*; Summer)** **Sims, Fountain, McGill**
Work in the Venereal Disease Clinic, the Tuberculosis Clinic, or the Industrial Hygiene and Rehabilitation Clinic. Prerequisite, permission.
- 498 Undergraduate Thesis (*; all terms)** **Staff**
For medical students. Prerequisite, permission.
- 499 Undergraduate Research (*; all terms)** **Staff**
For medical students. Prerequisite, permission.

482 Field Practice in Public Health (2-6)
483 " " " " (6)
484 " " " " (3)

CONJOINT COURSES

Conjoint courses are offered cooperatively by departments in the School of Medicine. They are designed to help medical students integrate their basic medical training with clinical work, and, in some cases, to integrate basic medical training in two or more fields. In the descriptions of these courses, the name of the department with primary responsibility for each course precedes the names of the other sponsoring departments.

COURSES

- 295 Introduction to Normal Growth and Development (2; W)** **Deisher, Luce, Staff**
Study of the child from the standpoint of normal growth and development and nutritional and emotional needs. Offered by the Departments of Pediatrics and Public Health and Preventive Medicine. For nonmedical students. Prerequisite, permission.
- 317-318 Elementary Anatomy and Physiology (6-6; W and Summer-SA)** **Skahen, Staff**
Human physiology with anatomical demonstrations. An elementary course integrating anatomy, histology, physiology, and biochemistry of the human body. Offered by the Departments of Anatomy and Physiology. For nursing and dental hygiene students only.
- 350J-351J Human Function and Structure (6-6; W and Summer-SA)** **Skahen, Staff**
An intermediate course integrating anatomy, histology, physiology, and biochemistry of the human body. Offered by the Departments of Anatomy and Physiology. For master's degree candidates in psychology and other students not majoring in anatomy or physiology. Prerequisite, permission.
- 407 Basis of Neurology (9; S)** **Everett, Patton, Ruch**
An advanced course in the anatomy of the central nervous system and its correlation with neurophysiology. Offered by the Departments of Anatomy and Physiology. Required for first-year medical students. Prerequisite for graduate students, permission.
- 408 Endocrinology (2; S)** **Blandau, Patton**
Correlation of the histology, physiology, and cytology of the endocrines. Offered by the Departments of Anatomy, Biochemistry, and Physiology. Required for first-year medical students. Prerequisite for graduate students, permission.
- 426-427 Clinical Medicine (*-*; W-S)** **Staff**
Introduction to clinical medical specialties. The student is taught how to take complete histories and perform general physical examinations. Knowledge acquired in the basic medical sciences is used to explain the mechanism of development of cardinal symptoms and the signs of major diseases. Offered by the Departments of Medicine, Obstetrics and Gynecology, Pediatrics, Psychiatry, and Surgery. Required for second-year medical students.
- 445-446-447 Laboratory Procedures (*-*; A-W-S)** **Ellerbrook, Volwiler, Staff**
Lectures on the principles of some of the common clinical laboratory tests, to enable the students to interpret results correctly and to use the laboratory intelligently; laboratory work to demonstrate technical details, sources of error, and relative accuracy of certain of these tests, and to provide an opportunity for students to become rather proficient in performing tests they will use in ward duty. At frequent intervals "unknown" abnormal specimens are examined by these procedures and the proficiency of the students is gauged from the results they report. Offered by the Departments of Pathology and Medicine. Required for second-year medical students. Prerequisite for graduate students, permission.
- 481, 482, 483, 484 Regional Surgical Anatomy (3,3,3,3; A,W,S, and Summer)** **R. Johnson, Staff**
An intensive course of lectures and dissection devoted to one region of the body each quarter, i.e., thorax, abdomen, upper extremity, head and neck. Offered by the Departments of Surgery and Anatomy. Prerequisite for nonmedical students, permission.
- 488 Pharmacotherapeutic Conference (*; offered when demand is sufficient)**
One conference a week devoted to comprehensive reports by the participants on pharmacological aspects of therapeutic problems. Offered by the Departments of Pharmacology and Medicine.
- 495 Prevention of Illness in Childhood (*; all terms)** **Deisher, Staff**
Opportunity for more complete understanding of the well child and the factors contributing to his well-being. Participation in care of children at the University Child Health Center. Offered by the Departments of Pediatrics and Public Health and Preventive Medicine.
- 496 Concept of the Child (3; S)** **Deisher, Luce, Staff**
An advanced course for students who desire a more complete understanding of the child from the standpoints of pediatrics, public health, psychiatry, psychology, nutrition, social work, and nursery education. Offered by the Departments of Pediatrics and Public Health and Preventive Medicine. Prerequisite, permission.

MEDICAL PRACTICE AND PROBLEMS

Professor of Medicine: E. L. Turner.

Professor of Military Medical Science and Tactics: Colonel George F. Baier, III.

Lecturers in Medical Ethics and Medical Economics: F. B. Exner, M. S. Jared.

Lecturer in Forensic and Legal Medicine: G. E. Wilson.

Senior Consultant in General Practice: F. L. Scheyer.

Administrative Consultants: J. F. Van Ackeran, P. D. Mossman, E. S. Bennett.

Clinical Assistant Professor of Medicine and Administrative Consultant: D. E. Nolan.

Clinical Assistant Professor of Medicine: R. Davies.

Clinical Associate in Forensic and Legal Medicine: J. P. Brill, Jr.

Clinical Affiliates in General Practice: R. P. Atkinson, Prosser; R. A. Benson, Bremerton; M. E. Bryant, Colfax; R. L. Camber, Seattle; E. Ching, Seattle; O. H. Christofferson, Seattle; B. N. Collier, Shelton; R. S. Crist, Port Townsend; C. G. Day, Seattle; K. Drewelow, Kirkland; M. L. Dumouchel, Raymond; W. W. Ebeling, Mount Vernon; H. C. Eddy, Mercer Island; W. V. Frick, Dayton; H. D. Fritz, Cathlamet; J. E. Gahringer, Wenatchee; J. L. Greenwell, Pasco; P. B. Haggland, Fairbanks, Alaska; J. H. Harrison, Vancouver; R. H. Highmiller, Olympia; A. H. Johnson, Kodiak, Alaska; F. Judy, Spokane; H. E. Judy, Spokane; R. V. Kinzie, Tonasket; C. J. Klaaren, Moscow, Idaho; G. H. Knowles, Seattle; H. H. Kretzler, Edmonds; E. J. Laskowski, Cathlamet; J. S. Lingenfelter, Seattle; D. M. Loehr, Moscow, Idaho; L. F. Lundy, Seattle; C. E. McArthur, Olympia; L. E. McClenny, Klawock, Alaska; E. C. McCoy, Vancouver, B.C.; C. O. Mansfield, Okanogan; I. C. Munger, Vancouver; H. G. Plut, Port Townsend; E. W. Rawson, Seattle; J. P. Richardson, Ellensburg; L. M. Rosenblatt, Tacoma; E. R. Salter, Davenport; C. M. Schaill, Port Townsend; C. J. Scheyer, Puyallup; M. Shaw, Seattle; E. K. Stimpson, Bellingham; L. J. Sulkosky, Puyallup; R. L. Sweet, Seattle; J. E. Taylor, Kirkland; H. M. Templeton, Seattle; F. A. Tucker, Seattle; M. Turner, Pullman; B. J. Webster, Omak; J. I. Weston, Fairbanks, Alaska.

First-year medical students are required to take either Medical Practice 411, 412, and 413 (First Aid and Emergency Medical Care) or the Medical R.O.T.C. courses 111, 131, and 151 (Military Science I).

COURSES

- 401 Introduction to Medicine (*; A)** **Turner, Staff**
Survey of the objectives of medicine with an introduction to the historical background of medical ethics and economics. Medical historical material is used to illustrate the reflection of social and economic readjustments in the progress of medical knowledge. Required for first-year medical students.
- 411, 412, 413 First Aid and Emergency Medical Care (1,1,1; A,W,S)** **Baier, Staff**
Intensive lectures, demonstrations, and practice to train the medical student in the fundamentals of first aid and emergency medical care, with emphasis on the medical aspects of military and civilian disasters and atomic and biological warfare. This sequence is identical to R.O.T.C. 111, 131, and 151, and first-year medical students must enroll in one or the other.
- 475 Externship in General Practice (*; all terms)** **Schoyer, Staff**
Three weeks of work with a selected general practitioner to give a firsthand view of the interests and problems presented in medical practice. Required for fourth-year medical students.
- 481 Medical Ethics, Economics, and Public Relations (*; all terms)** **Turner, Staff**
Lectures and discussions by authorities in these fields on topics of current and practical interest for the future physician. Required for fourth-year medical students.
- 482 Forensic and Legal Medicine (*; all terms)** **Wilson**
Lectures and case descriptions which provide an introduction to the legal implications and responsibilities of physicians and medical practice. Required for fourth-year medical students.

MEDICINE

Executive Officer: ROBERT H. WILLIAMS, A407 Health Sciences Building

Professors: E. L. Turner, R. H. Williams.

Associate Professors: R. S. Evans, C. A. Finch, W. M. M. Kirby.

Assistant Professors: R. A. Bruce, W. Volwiler.

Instructors: J. L. Bakke, B. H. Scribner.

Associate: A. Stevens.

Clinical Professors: E. G. Bannick, B. F. Francis, L. J. Palmer, J. W. Shaw, C. E. Watts.

Clinical Assistant Professors: J. M. Bowers, G. D. Capaccio, E. M. Chew, J. H. Crampton, R. Davies, R. F. Foster, C. C. Goss, J. W. Haviland, A. G. Hildebrand, B. C. Houghton, K. E. Hynes, R. L. King, C. I. Krantz, M. Lincoln, J. K. Martin, D. E. Nolan, K. K. Sherwood, K. M. Soderstrom, J. E. Stroh, W. L. Voegtlin, B. M. Zimmerman.

Clinical Instructors: A. R. Altose, S. F. Aronson, C. E. Bender, J. B. Bingham, W. C. Bridges, N. M. Briggs, B. F. Bruenner, A. D. Campbell, J. D. Collins, E. F. Deppe, R. Eggers, E. Evans, L. D. Fey, L. Frayser, T. B. Garaghty, R. C. Greenleaf, R. L. Griffith, G. H. Hames, P. N. Hogue, E. Jobb, A. D. Johnson, E. H. Laws, W. E. Leede, C. N. Lester, W. W. Lindahl, R. C. Manchester, M. A. Mills, E. H. Morgan, C. L. Morrow, R. J. Morton, M. Mumby, A. M. Nelson, C. C. Pearson, P. L. Peterson, R. A. Pommerening, R. T. Potter, R. M. Rankin, L. R. Roll, S. T. Scudder, R. W. Simpson, K. B. Skubi, D. R. Sparkman, W. B. Spickard, I. Thompson, W. E. Watts, S. Weinstein, P. L. Williams, D. Zahn.

Clinical Associates: R. H. Barnes, A. Bobroff, G. D. Callaway, Jr., E. R. Clarke, Jr., F. E. Cleveland, F. Cline, Jr., O. A. Fodor, D. R. Kohli, H. G. Korey, M. M. Leder, J. Hans Lehmann, H. S. Marshall, W. R. Pace, Jr., C. T. Pierce, R. P. Pillow, E. C. Roll, H. C. Roys, E. Speer, M. P. Starr, Jr., D. M. Ulrich, D. L. Vorhies, W. A. Wolfe.

Research Associates: B. T. Gabrio, N. D. Lee, L. G. Savedoff.

Assistants in Medicine: J. J. Ahern, E. Berger, M. Burkland, J. M. Burnell, D. Coleman, H. DeYoung, N. R. Eade, K. Fremont-Smith, J. R. Hogness, F. Maple, H. B. Martin, L. Merryfield, J. C. Michel, L. Ormond, G. Paeth, R. M. Paine, J. Peters, D. L. Rodgers, N. Thal, W. S. Waddington, G. Welch, R. P. Wheat, B. T. Uveno.

In the second year the student is introduced to many problems of clinical medicine and the main avenues for their resolution; in the third year he becomes more adept in the complete work-up and therapy of problems in general internal medicine; in the fourth year emphasis is placed on the difficult and special problems.

COURSES

Conjoint 426-427 Clinical Medicine (see Conjoint Courses)

Conjoint 445-446-447 Laboratory Procedures (see Conjoint Courses)

465 Clinical Clerkships (*; all terms)

Staff

Approximately three hospital patients a week are assigned to each student for a complete work-up. Ward rounds are held daily; lectures, clinics, and conferences weekly. Two weeks are spent at Firland Sanatorium and two weeks with Neurology inpatients. Required for third-year medical students.

480 Clinical Clerkships (*; all terms)

Staff

Work in the Allergy, Arthritis, Cardiology, Chest, Dermatology, Gastrointestinal, Medicine, Metabolism, Neurology, and Psychiatry Clinics. Close physician-patient relationships are established. Tutorial sessions are held at least weekly, and there is some ward work, with weekly conferences. Special training in chest diseases is given by Dr. Davies and staff at Firland Sanatorium. Required for fourth-year medical students.

497 Senior Medical Students' Elective (*; all terms)

Staff

Elective work in any of the following clinics: Medical, Dermatology, Allergy, Arthritis, Metabolic, Cardiology, Neurology, Gastroenterology, Electrocardiography, or Hematology; clinical clerkship in King County or Veterans Administration Hospital, or other approved hospital.

498 Undergraduate Thesis (*; all terms)

Staff

For medical students. Prerequisite, permission.

499 Undergraduate Research (*; all terms)

Staff

Case studies, with laboratory research. For medical students. Prerequisite, permission.

OBSTETRICS AND GYNECOLOGY

Executive Officer: RUSSELL R. DE ALVAREZ, B528 Health Sciences Building

Professor: R. R. de Alvarez.

Assistant Professor: E. K. Smith.

Instructor: D. M. McIntyre.

Senior Consultant and Clinical Professor: G. G. Thompson.

Consultants: W. W. Bell, H. E. Harrison, C. M. Helwig, P. R. Rollins, G. N. Rotton, D. J. Thorp.

Clinical Instructors: G. Ahnquist, J. Clancy, C. W. Day, L. B. Donaldson, C. S. Fine, C. D. Kimball, A. F. Lee, H. H. Nuckols, P. G. Peterson, R. K. Plant, G. G. Rice, R. N. Rutherford, H. Schroeder, R. P. Smith, R. H. Stewart.

Clinical Associates: R. M. Campbell, J. F. Fiorino, E. B. Hauser, E. G. Layton, E. T. MacCamy, R. D. Reekie.

Clinical Assistants: H. C. Franklin, H. A. Kettering, W. C. Knudson, J. S. Woodruff.

Research Associates: W. F. Gabrio, H. G. Wadman.

The Department of Obstetrics and Gynecology represents the field of general obstetrics, diseases of women, endocrinology as it is peculiar to the female, and the preventive phases of obstetrics and gynecology.

COURSES

Conjoint 426-427 Clinical Medicine (see Conjoint Courses)

465 Clinical Clerkships (*; twice each term)

do Alvarez, Staff

With the exception of one weekly lecture, the work is almost entirely clinical and limited to the inpatient service of King County Hospital. The student spends two-thirds of his time on obstetrics and one-third on gynecology. On obstetric service, students work in obstetric wards, labor rooms, and delivery rooms. They are given instruction in the immediate care of the normal newborn infant and the obstetric implications reflected by the newborn infant. On gynecology service, the student spends his time with patients in the wards, making ward walks, and assisting in the operating room as well as performing examinations under ideal conditions. Part of the work emphasizes the application of obstetric and gynecologic endocrinology. Required for third-year medical students.

480 Clinical Clerkships (*; twice each term)

do Alvarez, Staff

The student spends his time equally in obstetrics and gynecology. The time in obstetrics involves being at King County Hospital on certain nights of the clerkship, being present at all deliveries, and closely following the management of all obstetric patients. In gynecology service the student makes ward rounds, studies the problems of inpatient gynecology and the phases of gynecologic endocrinology. In addition, he spends a certain proportion of his time in outpatient clinics devoting himself to the office problems of the specialty. Required for fourth-year medical students.

497 Senior Medical Students' Elective (*; all terms)

do Alvarez, Staff

Elective work in any of the following: vaginal cytology, endocrinology, Postoperative Gynecology Clinic, Gynecology Clinic, New Obstetrics Clinic, Prenatal Clinic, Postpartum Clinic, Tumor Clinic, gynecologic pathology, operative gynecology, planned parenthood, obstetrical and gynecological endocrinology, and Obstetric and Gynecologic Endocrinology Seminar. Prerequisite, permission.

498 Undergraduate Thesis (*; all terms)

do Alvarez, Staff

For medical students. Prerequisite, permission.

PEDIATRICS

Executive Officer: WALTER B. SEELYE, C520 Health Sciences Building

Professor: W. B. Seelye.

Associate Professor: F. C. Moll.

Instructors: G. E. M. Adkins, R. R. Luce, J. L. Tucker.

Senior Consultant: J. I. Durand.

Consultants: F. H. Douglass, V. W. Spickard.

Clinical Assistant Professors: S. M. Billington, N. W. Clein, R. W. Deisher, W. A. Jaquette, Jr., R. A. Tidwell.

Clinical Instructors: O. W. Anderson, J. M. Docter, B. M. Emerson, D. G. Evans, M. H. Grytbak, M. B. Guy, P. F. Guy, F. B. Joy, C. Kaplan, J. A. Sterner.

Clinical Associates: W. V. B. Deering, J. E. Haddon, D. A. Lagozzino, J. P. McDermott, P. R. Vandeman.

COURSES

Conjoint 295 Introduction to Normal Growth and Development (see Conjoint Courses)

Conjoint 426-427 Clinical Medicine (see Conjoint Courses)

465 Clinical Clerkships (*; all terms)

Seelye, Moll, Staff

Weekly lectures, thirty-three hours; clinical clerkship, four weeks, with students rotating between the Children's Orthopedic Hospital and the pediatric ward of King County Hospital. Required for third-year medical students.

480 Clinical Clerkships (*; all terms)

Seelye, Staff

Outpatient department, four weeks. Students are assigned patients in the outpatient departments of King County and Children's Orthopedic Hospitals, where they are responsible for the study of these patients under the supervision of an instructor. Special opportunities for observation of normal children are provided at the University Child Health Center, of spastic children at the Preschool Spastic Clinic, and of children with psychiatric problems at the Child Guidance and Psychiatric Clinics. Required for fourth-year medical students.

Conjoint 495 Prevention of Illness in Childhood (see Conjoint Courses)

Conjoint 496 Concept of the Child (see Conjoint Courses)

497 Senior Medical Students' Elective (*; Summer)

Staff

498 Undergraduate Thesis (*; all terms)

Staff

For medical students. Prerequisite, permission.

COURSE FOR GRADUATES ONLY

505 Physical Growth of the Well Child (2; S)

Moll, Staff

Weekly seminars, eighteen hours. The correlation between growth and development and diseases in the child as pertaining to dental health. For graduate students in dentistry. Prerequisite, permission.

PSYCHIATRY

Executive Officer: HERBERT S. RIPLEY, B516 Health Sciences Building

Professor: H. S. Ripley.

Professor of Clinical Psychology in Medicine: C. R. Strother.

Assistant Professors: S. Fleck, T. H. Holmes, S. H. Kaufman.

Instructors: N. C. Chivers, A. R. Leider, I. H. Weiland.

Instructor in Psychology: A. F. Ax, I. M. Steisel.

Clinical Professor: F. Lemere.

Clinical Assistant Professor: G. Heilbrunn.

Clinical Instructors: G. H. Allison, H. J. Anderson, W. Y. Baker, F. S. Bobbitt, J. A. Buchmeier, J. M. Casey, A. W. Freidinger, C. M. Gable, E. G. Goforth, E. W. Haertig, J. L. Henderson, R. C. Hendricks, E. D. Hoedemaker, C. M. Holmes, W. D. Horton, J. J. Klein, H. Krouse, J. H. Lasater, H. C. Leavitt, C. A. Mangham, D. W. Orr, F. M. Peters, J. B. Riley, R. M. Stolzheise, W. L. Strachan, T. W. Sugars, J. T. Thickstun, A. M. Whiting, R. L. Worthington.

Clinical Instructors in Clinical Psychology: W. H. Colley, W. S. Kogan.

Clinical Assistants: H. E. Heinemann, L. K. Pratum, R. J. Sayer.

Assistant in Clinical Psychology: C. Preston.

Clinical Affiliates: Eastern State Hospital: S. Levy (R. H. Southcombe, Supt.). Northern State Hospital: L. R. Hughes (C. H. Jones, Supt.), P. R. Newkirk, E. A. Posell. Rainier State School: (T. M. Barber, Supt.). Veterans Administration Hospital, American Lake, Washington: F. C. Bowers, L. S. Diamond (T. J. Hardgrove, Manager), R. E. Petrone. Western State Hospital: R. S. Brown, H. H. Dutton (F. E. Shovlain, Supt.).

The primary objective of the Department of Psychiatry is to provide the students of medicine, nursing, psychology, and social work with a scientific understanding of psychiatric principles, so they will be able to evaluate human problems and use their potentialities for dealing with personality problems to the greatest advantage.

Instruction in psychiatry is given during each of the four years of the medical course and is coordinated and integrated with the various disciplines in medicine. Thus from the beginning of his medical career the student is stimulated to think in terms of understanding the totally functioning human being.

COURSES

267 Introduction to Mental Hygiene (2; Summer, W)

Staff

A survey of the development of personality and a consideration of minor emotional problems in children and adults. Prerequisite, permission of instructor.

367 Fundamentals of Clinical Psychiatry (5; A)

Staff

Modern concepts of the fundamentals of clinical psychiatry and the role of the nurse as a clinical specialist in cooperating with dynamic programs of treatment and community facilities for the conservation of mental health. For nursing students. Prerequisite, permission.

400 Normal Personality Development (*; WS)

Ripley

Emotional and personality development from infancy through old age; the adaptation of the individual to his environment, with attention to the roles of heredity, constitution, physical changes, and family and social relationships as determinants in psychodynamics. A study of his own personality is used to give the student an awareness of his motivations, attitudes, strengths, and weaknesses. It also introduces him to a method for studying patients and gives him an appreciation of the doctor-patient relationship. Required for first-year medical students.

- 410 Introduction to Human Behavior (*; S)** **Lomere**
 Biologic and sociologic factors in human function. Comparative personality development is illustrated by animal and human behavior. Correlation is made between the growth of the nervous system and the action patterns and emotional reactions of the maturing organism. Required for first-year medical students.

Conjoint 426-427 Clinical Medicine (see Conjoint Courses)

- 430 Psychopathology (*; A)** **Ripley, Staff**
 Abnormalities of behavior, thinking, and feeling, and the structural and psychological factors that produce them. Reactions such as anxiety, depression, evasion, withdrawal, repression, compensation, rejection, and other defense mechanisms are discussed. Required for second-year medical students.

- 465 Clinical Clerkships (*; all terms)** **Staff**
 Four weeks of supervised work in an inpatient psychiatric service. The student is responsible for a psychiatric work-up of patients at King County Hospital and Veterans Administration Hospital. Clinical conferences with discussion of psychoses, psychoneuroses, and psychosomatic disorders are held. Required for third-year medical students.

- 468 Psychiatric Principles of Counseling (2; W)** **Kaufman**
 Case studies presented by individual students for discussion of the psychodynamics and methods of dealing with personality problems. Prerequisite, permission.

- 475 Psychiatric Externship (*; all terms)** **Staff**
 Three weeks of work at a state psychiatric hospital, where the student lives and has an opportunity to learn from firsthand experience and active participation the methods used in caring for a large number of seriously ill patients. Required for fourth-year medical students.

- 480 Clinical Diagnosis and Treatment (*; all terms)** **Staff**
 During the period devoted to pediatrics and obstetrics, half a day a week is spent in a psychiatric clinic for children. Emphasis is placed on an understanding of the total dynamics resulting in behavior problems of children; treatment including individual psychotherapy for the child and parents; the function of a psychiatric team composed of psychiatrist, social worker, nurse, and psychologist; and the utilization of community facilities. During the period spent on general medicine, half a day a week is spent in the psychiatric adult outpatient department of a general hospital. Required for fourth-year medical students.

- 497 Senior Medical Students' Elective (*; all terms)** **Staff**
 Instruction in outpatient psychiatric treatment and practical experience treating patients under supervision. Other elective work may be arranged to suit individual needs and interests. For medical students. Prerequisite, permission.

- 498 Undergraduate Thesis (*; terms 1, 2)** **Staff**
 For medical students. Prerequisite, permission.

- 499 Undergraduate Research (*; all terms)** **Staff**
 For medical students. Prerequisite, permission.

COURSES FOR GRADUATES ONLY

- 503 Personality Development (2; A)** **Heilbrunn**
 Development of the personality through consideration of physiologic, psychologic, anthropologic, and sociologic factors from infancy through old age. For graduate students in psychology and social work and advanced students in nursing. Prerequisite, permission.

- 504 Personality Development (2; W)** **Heilbrunn**
 Continuation of 503. For graduate students in psychology and social work and advanced students in nursing. Prerequisite, 503.

- 505 Clinical Psychiatry (2; A)** **Heilbrunn**
 Etiology, diagnosis, and treatment of personality illness with emphasis on the structural, physiologic, and psychodynamic aspects of the development of psychopathologic phenomena in the individual. For graduate students in psychology and social work and advanced students in nursing. Prerequisite, permission.

RADIOLOGY

Executive Officer: FREDERIC E. TEMPLETON, 415 Cobb Building

Professor: F. E. Templeton.

Assistant Professor: A. J. Benesh.

Instructor: J. R. Young.

Clinical Associate Professors: S. T. Cantril, M. T. Harris.

Clinical Assistant Professors: E. A. Addington, F. Buschke, T. B. Carlile, H. V. Hartzell, S. J. Hawley, H. M. Parker.

Clinical Instructors: R. A. Betts, E. L. Gilbertson, E. W. Roberts, J. H. Walker, B. H. Ward.

553.554 Psychodynamics & Psychopathology (2)

452J Survey of Psychodynamics & Psychopathology (3)
 557 Clinical Psychiatry (2)
 558 Seminar: Interviewing (2)

COURSES

- 465 Diagnostic and Therapeutic Radiology** (*; all terms) **Staff**
Lectures on the use of X-ray in diagnosis, the physical factors used in diagnostic roentgenology, the physical principles involved in therapeutic radiology, and the types of radiant energy with their effects on normal and abnormal tissue. Methods of measurement and protection are demonstrated. Required for third-year medical students.
- 480 Conferences and Seminars** (*; all terms) **Staff**
Students discuss their problems freely with instructors. Films and therapeutic problems are presented as a basis for these discussions. Required for fourth-year medical students.
- 497 Senior Medical Students' Elective** (*; all terms) **Templeton, Cantril, Addington, Buschke, Carlile, Gilbertson, Roberts, Walker, Ward**
Observations of and participation in the clinical work of everyday practice. The course is in two sections, therapeutic radiology and diagnostic radiology. Prerequisite, permission.
- 498 Undergraduate Thesis** (*; all terms) **Staff**
The student may write his thesis in either therapeutic or diagnostic phases of radiology.

RESERVE OFFICERS TRAINING PROGRAM

Professor of Military Medical Science: COLONEL GEORGE F. BAIER III
D212 Health Sciences Building

The Medical R.O.T.C. program is offered cooperatively by the School of Medicine and the Department of Military Science.

First-year medical students are required to take either the Medical R.O.T.C. courses 111, 131, and 151 (Military Science I) or courses 411, 412, and 413 (First Aid and Emergency Medical Care) offered in the Department of Medical Practice and Problems. This requirement applies equally to veteran and nonveteran medical students.

The complete Medical R.O.T.C. program is an elective course open to all physically qualified male medical students who are citizens of the United States. Students who decide to enter the program attend one class period a week for thirty-two weeks during each of the four years of medical school, except that veterans with one or more years of service and nonveterans with two years of Advanced R.O.T.C. training may be excused from the first two years of Medical R.O.T.C. work.

There are no drill, ceremony, or uniform requirements, but attendance at a six weeks' summer camp is required at some time during the four years of medical school.

When the program has been successfully completed, a commission as First Lieutenant, Medical Corps Reserve, in either the Army or the Air Force will be granted. Information about Army and Air Force internships and residencies is given as part of the course.

COURSES

- 111, 131, 151 Military Science I** (1,1,1; A,W,S) **Baier, Staff**
Basic (Medical Corps). Intensive lectures, demonstrations, and practice to train the medical student in the fundamentals of first aid and emergency medical care, with emphasis on the medical aspects of military and civilian disasters and atomic and biological warfare. This sequence is identical to Medical Practice 411, 412, and 413, and first-year medical students must enroll in one or the other.
- 211, 231, 251 Military Science II** (1,1,1; A,W,S) **Baier, Staff**
Basic (Medical Corps). Medical service in the field; leadership, personnel management, and duties of the military surgeon; radiological medicine; preventive medicine and aviation medicine.
- 311, 331, 351 Military Science III** (1,1,1; A,W,S) **Baier, Staff**
Advanced (Medical Corps). Military preventive medicine; field medicine and surgery; aviation medicine; military leadership.
- 411, 431, 451 Military Science IV** (1,1,1; A,W,S) **Baier, Staff**
Advanced (Medical Corps). Military preventive medicine; physical medicine; field medicine; aviation medicine; techniques of instruction; military psychiatry.

SURGERY

Executive Officer: HENRY N. HARKINS, B504 Health Sciences Building

Professor: H. N. Harkins.

Associate Professors: K. A. Merendino, A. A. Ward, Jr.

Assistant Professors: D. F. McDonald, J. T. Payne, R. D. Ray, L. B. Thomas.

Instructors: G. M. Bogardus, E. L. Foltz.

Senior Research Chemist: T. L. Fletcher.

Junior Research Chemist: D. H. Stedman.

Senior Consultants: R. Anderson, H. T. Buckner, H. E. Coe, R. D. Forbes, S. F. Herrmann, C. Jacobson, B. T. King, O. F. Lamson, J. F. LeCocq, J. C. Lyman, R. L. Zech.

Consultants: A. O. Adams, J. L. Ash, J. W. Baker, J. Blackman, A. J. Bowles, E. F. S. Chambers, J. A. Duncan, L. H. Edmunds, H. Haven, H. W. Humiston, W. B. Hutchinson, F. J. Jarvis, C. D. F. Jensen, R. C. Laughlin, D. G. Leavitt, H. L. Leavitt, E. A. LeCocq, H. P. Lee, R. H. Loe, I. O. McLeMORE, D. Metheny, B. P. Mullen, W. L. Spaulding, E. B. Speir, W. J. Stellwagon, C. S. Stone, Jr., J. F. Tolan, J. I. Tuell, P. Walker, F. H. Wanamaker, C. P. Wangeman, J. A. Weber.

Clinical Instructors: E. M. Burgess, R. A. Campbell, D. K. Crystal, W. R. Duncan, D. T. Hall, C. Hutchinson, O. Jensen, E. P. Lasher, C. E. MacMahon, E. F. McElmeel, J. W. Miller, C. B. Moore, J. N. Nelson, A. C. Ohman, P. M. Osmun, D. Parker, R. D. Pinkham, A. C. Powell, J. F. Ramsay, D. E. Stafford, R. E. Tyvand, R. O. Wyrens, W. P. Yunck.

Clinical Associates: E. L. Barrett, A. H. Bill, Jr., D. W. Compton, M. J. Dirstine, H. E. Eggers, H. E. Emmel, M. H. Evoy, F. L. Flashman, R. E. Florer, L. R. Foxworthy, A. B. Gray, G. N. Haffly, A. G. Hanson, R. T. Haverstock, R. B. Hearne, R. H. Johnson, W. W. Klemperer, I. K. Loughlen, V. O. Lundmark, J. T. Mason, J. E. Mathwig, B. E. McConville, H. Olson, G. B. O'Neil, J. W. Phillips, J. Y. Phillips, E. A. Rogge, L. J. Rosellini, P. E. Ruuska, E. R. Sanderson, L. J. Sarro, A. Sheridan, J. M. Shlach, E. E. Sprecher, J. E. Stewart, W. E. Watson, D. K. Worgan.

Assistant in Surgery: H. G. Moore, Jr.

Junior Researchers: E. Hoag, F. L. Jenkner, E. Kanar, L. Sauvage, E. J. Schmitz.

COURSES

Conjoint 426-427 Clinical Medicine (see Conjoint Courses)

465 Inpatient Surgical Clinical Clerkship (*; all terms)

Harkins, Merendino, Ward,
McDonald, Ray, Staff

Four equal periods in the divisions of general surgery, neurosurgery, urology, and orthopedics in King County and Veterans Administration Hospitals. The student is assigned interesting cases in rotation and is responsible for a complete work-up of the patient, including the routine laboratory examination. The patient is followed by the student from admission until discharge. Bedside clinics with discussions of the student's write-ups and differential diagnoses, as well as ward rounds, are conducted daily. The basic science approach is correlated with the mechanisms of clinical disease. Scrubbing in the operating room is optional. Special instruction in technique is a prerequisite to operating room participation. Instruction also includes practical experience in anesthesia, surgical pathology, and formal lecture periods in the surgical specialties. Required for third-year medical students.

480 Outpatient Clinical Clerkship (*; all terms) Harkins, Merendino, Ward, McDonald, Ray, Staff
Time is divided among the outpatient service departments of the divisional specialties of surgery; the Emergency Room; and the inpatient and outpatient services of the divisions of Eye and Ear and Nose and Throat. Clerkships are in King County, U. S. Public Health Service, and Madigan Army Hospitals. This experience is similar to office practice. The interview is conducted by the student, a review of the case and final recommendations are made by the student with staff supervision. Formal lectures are presented in Eye and Ear, and Nose and Throat. Required for fourth-year medical students.

Conjoint 481, 482, 483, 484 Regional Surgical Anatomy (see Conjoint Courses)

497 Senior Medical Students' Elective (*; all terms)

Staff

Experimental surgery: operative technique, anesthesia; clinical problems in surgery: difficult and interesting ward cases; record and cast study: for those doing clinical theses in surgery; advanced experimental surgery: assisting staff members in animal operations.

498 Undergraduate Thesis (*; all terms)

Staff

499 Undergraduate Research (*; all terms)

Staff

COURSES FOR GRADUATES ONLY

520 Seminar (5; all terms)

Harkins, Merendino

Conferences, seminars, and round-table discussions of advanced surgical topics and recent literature in the field.

590 Surgical Experimental Techniques (5; all terms)

Harkins, Merendino

Basis for graduate research and advanced thesis work.

591 Applied Basic Sciences in Orthopedic Surgery (*; all terms)

Ray, Staff

Lectures, demonstrations, and laboratory periods devoted to the application of anatomy, physiology, and pathology to clinical problems in orthopedic surgery.

594 Seminar in Orthopedic Surgery (*; all terms)

Ray, Staff

Discussions of recent literature, experimental work, and relative clinical problems.

598 Seminar in Urology (*; all terms)

McDonald, Staff

Problems in the field of urology discussed by various visiting members of the faculty of urology and of other departments, to provide a well-rounded basic scientific and clinical presentation.

600 Research (*; all terms)

Harkins, Merendino, Ward, Ray, McDonald, Staff

SCHOOL OF NURSING

Dean: LILLIAN B. PATTERSON, C303 Health Sciences Building

Professors: K. M. Leahy, E. S. Soule (Dean Emeritus).

Associate Professors: K. J. Hoffman, V. Olcott, L. B. Patterson, M. S. Tschudin.

Assistant Professors: H. Anderson, J. Anderson, J. E. Boyle, A. E. Burke, K. M. Chinque, H. Cross, H. I. Eklind, M. A. Gadacz, D. E. Glynn, S. Heitman, C. E. Kinney, T. M. Morgan, H. Smith, K. G. Svelander, M. J. Thompson.

Instructors: A. M. Airth, I. E. Aitken, K. M. Andrews, E. M. Beckwith, H. M. Blackman, G. M. Bruggeman, M. L. Crawford, W. V. Cushing, R. W. Dean, E. Elwood, M. E. Gannon, E. Giblin, F. I. Gray, G. Jahncke, N. Kintner, M. A. Lankford, K. Lewis, D. Little, G. Luby, M. MacIvor, A. Mendenhall, S. Mercer, E. L. Mitchell, L. Murray, M. E. Nielsen, M. W. Northrop, F. G. Pinyan, H. E. Rainey, E. L. Reitz, A. W. Rohweder, F. M. Seels, H. G. Tillotson, G. A. Warren, L. Wasson.

THE School of Nursing is a part of the Division of Health Sciences, which also includes the Schools of Dentistry and Medicine and the College of Pharmacy. Four curricula are offered by the School of Nursing: a basic curriculum of three and one-half calendar years, leading to the degree of Bachelor of Science in Nursing; a curriculum of approximately ten quarters for graduate nurses, leading to the degree of Bachelor of Science in Nursing; a certificate program in public health nursing; and programs for graduate students, leading to the Master of Nursing or Master of Science in Nursing. All curricula are approved by the National Nursing Accrediting Service, the sole accrediting agency recognized by the nursing profession.

Graduates of the basic curriculum are eligible to take the state examinations which admit nurses to professional practice. With accreditation by the National Nursing Accrediting Service, these graduates are prepared for beginning positions in public health nursing.

Nurses who complete a program in the graduate nurse curriculum are prepared for administrative and educational positions as head nurses, supervisors, teaching supervisors, or clinical or nursing arts instructors, depending upon previous preparation, experience, and ability. Those who complete the program of study in public health nursing are prepared for beginning positions in public health nursing.

The School of Nursing is a member of the Association of Collegiate Schools of Nursing.

ADMISSION

Candidates for admission to the basic curriculum must have completed one year's work (45 academic quarter credits, together with the required quarters of physical education activity) at an accredited college or university. Applicants must have completed the following course requirements: 9 quarter credits in English composition, 10 in chemistry, 5 in psychology, and 5 in either sociology or anthropology.

Students who take their prenursing preparation at the University of Washington should follow the prenursing curriculum in the College of Arts and Sciences (see page 133).

Candidates for admission to the graduate-nurse curriculum must be graduates of approved schools of nursing with a minimum daily average of one hundred patients and with service in at least five clinical areas: obstetrics, medicine, surgery, operating room, and pediatrics. Deficiencies in any one of these services must be made up prior to advanced clinical or field practice. Candidates must already have had a basic course in the clinical field in which they intend to specialize. Achievement tests in various fields of nursing may be required of students entering this curriculum; the results of the tests may be used as a basis for planning individual programs.

Nurse registration in the state of Washington is required by law for students who plan to work part-time as registered nurses while in the School of Nursing.

All students entering the School of Nursing are required to take a special health examination, chest X-rays, and inoculation for smallpox, typhoid, and diphtheria before hospital entrance or field practice. Defects must be corrected at the student's own expense. Serious defects will bar the student from entrance to the clinical division or field agency and may terminate her course at any time on recommendation of the University Health Service.

Medical and health care for students in the basic curriculum, including annual physical examination and hospitalization not to exceed two weeks at any one time, are provided during the clinical practice. Hospitalization is given subject to institutional rule. No responsibility is assumed in case of illness arising from defects which existed at the time of entrance, and students must sign statements releasing the hospital from any responsibility at the time of admission to the clinical division. Students are responsible for their own eyeglasses and dental care.

SCHOLARSHIP

Students in both curricula must maintain a 2.0 grade-point average throughout their course.

BACHELOR OF SCIENCE IN NURSING

BASIC CURRICULUM The requirements are as follows:

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Chem. 230 Organic.....	5	Conjoint 317 Elem. Anat. & Physiol.....	6	Conjoint 318 Elem. Anat. & Physiol.....	6
Nursery Sch. 305 Presch. Child.....	3	Micro. 301 Gen. Bacteriol.....	5	Nursing 290 or 291.....	4 or 5
Physics 170 For Nurses.....	5	Pharm. 251 Elem.....	2	Pathol. 301 General.....	2
Electives.....	3	Psychiatry 267 Mental Hygiene.....	2	Pharm. 261 Pharmacol. and Therapeutics.....	3
P.E. Activity.....	1	P.E. Activity.....	1	P.E. Activity.....	1
	17		16		16 or 17
FOURTH QUARTER	CREDITS	FIFTH QUARTER	CREDITS	SIXTH QUARTER	CREDITS
Nursing 295.....	3	Nursing 300.....	5	Nursing 302.....	4
Nursing 296.....	5	Nursing 301.....	5	Nursing 303.....	5
Nursing 297.....	2	Home Ec. 305 Diet Therapy.....	3	Social Work 300 Field of.....	3
Home Ec. 119 Nutrition.....	5		13		12
	15				
SEVENTH QUARTER	CREDITS	EIGHTH QUARTER	CREDITS	NINTH QUARTER	CREDITS
Nursing 304.....	2	Nursing 306.....	5	Nursing 220.....	3
Nursing 305.....	5	Nursing 330.....	5	Nursing 331.....	5
Electives.....	5	Nursing 339.....	2	Nursing 332.....	5
	12		12		13
TENTH QUARTER	CREDITS	ELEVENTH QUARTER	CREDITS	TWELFTH QUARTER	CREDITS
Nursing 333.....	5	Nursing 400.....	5	Nursing 402.....	2
Nursing 340.....	3	Nursing 401.....	5	Nursing 403.....	3
Electives.....	2		10	Nursing 404.....	3
	10				8
THIRTEENTH QUARTER	CREDITS	FOURTEENTH QUARTER	CREDITS		
Nursing 405.....	3	Nursing 407.....	3		
Nursing 406.....	5	Nursing 408.....	5		
Electives.....	2	Nursing 409.....	2		
	10		10		

CURRICULUM FOR GRADUATE NURSES. The programs in this curriculum provide a broad general background and prepare the student for a position of educational or administrative leadership in a special field of nursing. The curriculum has been made as flexible as possible in order that the program of the individual student may be adjusted to her educational and professional background and to her needs and interests.

Majors are offered in public health nursing, industrial nursing, orthopedic nursing (not offered 1952-53), nursing arts, nursing service administration and teaching, and supervision and administration in a clinical specialty. In the latter the student may select one or more of the following clinical services: medicine, surgery, operating room, obstetrics, pediatrics, psychiatry and mental health, tuberculosis nursing, and

outpatient service. The first five clinical and outpatient services are available at the 575-bed Harborview-King County Hospital; tuberculosis nursing in the 1200-bed Firland Sanatorium; and psychiatric nursing and mental health in Pinel Foundation or Northern State Hospital. The teaching staff in each unit holds University faculty appointment.

For a major in nursing education, the student selects the clinical specialty in the field of her major interest. While the average length of the total course is ten university quarters, this time will vary with each individual, depending upon the credit allowed by the University for previous education.

The student should select proportionately those professional, scientific, and cultural courses which will strengthen her major field and establish a supporting field as a basis for future graduate study. The program is set up within the following framework, which allows adaptations to meet individual needs and interests and assures a broad general education.

	CREDITS		CREDITS
English composition	9	Professional courses	36-45
Biological and physical sciences	15-24		
Social sciences	15-24	Electives as necessary to total	180

A total of 180 academic credits and the required quarters in physical education activity courses are necessary for graduation. From 24 to 48 credits are allowed for graduation from an accredited school of nursing, 6 credits being allowed for each major service.

The student in the curriculum for graduate nurses must attain junior standing at the University and remove all entrance deficiencies before registering for courses numbered 415 and above. Permission of the School of Nursing faculty is required for admission to the hospital teaching unit.

Professional courses are to be selected from the following areas:

PUBLIC HEALTH NURSING. Nursing 361, 381, 382, 383, 384, 440, and 442; Public Health 402 (Communicable Disease Control), 412 (Public Health Organizations and Services), and 470 (Introduction to Public Health Statistics); Social Work 300 (Field of Social Work); and Home Economics 350 (Managing Family Finances).

INDUSTRIAL NURSING. Nursing 361, 380, 442, 443, and 490; Home Economics 350 (Managing Family Finances); Physical Education 292 (First Aid and Safety); Public Health 402 (Communicable Disease Control), 451 (Industrial Hygiene), and 470 (Introduction to Public Health Statistics); and Social Work 300 (Field of Social Work).

NURSING SERVICE ADMINISTRATION. This program prepares graduate nurses for general supervision or administration of nursing service, or the combined position of director of a school of nursing and nursing service in a hospital or other agency where the major emphasis is on administration rather than on the practice or teaching of nursing in a special field. It also assists in preparation for positions of supervisory or administrative responsibility in a clinical field. The emphasis is on general nursing service administration with field practice planned according to each student's need, ability, and future plans. Essential courses include the following, with additional electives arranged individually: Nursing 361, 380, 417, 418, 428, 432, 435, 455, 456, 459, and 463; Human Relations 460 (Human Relations in Industry and Business); Political Science 470 (Introduction to Public Administration); Psychiatry 467 (Introduction to Mental Hygiene); and Sociology 240 (Group Behavior).

TEACHING AND ADMINISTRATION IN CLINICAL SPECIALTIES. Nursing 360, 361, 381, 417, 418, 420, 421, 422, 423, 424, 425, 427, 430, 432, 435, 455, 456, and 459.

TEACHING NURSING ARTS. Nursing 361, 381, 417, 418, 420 or 421, 432, 435, 455, 456, 459, 462, and 463; Education 209 (Educational Psychology) or 401 (Advanced Educational Psychology), and 447 (Principles of Guidance).

ORTHOPEDIC NURSING (not offered 1952-53). (Either hospital or public-health nursing emphasis is provided.) Nursing 361, 381 or 494, 417 or 442, 418 or 498, 432, 434, 435, 459 or 441, 455, 456, 460, and 461; and Anatomy 465 (Orthopedic Anatomy for Nurses).

PSYCHIATRIC NURSING, MENTAL HEALTH. Nursing 361, 363, 381, 417, 418, 430, 432, 435, 455, 456, and 457; and Psychiatry 367 (Fundamentals of Clinical Psychiatry).

The program for this certificate, which may be taken as a part of the degree curriculum for graduate nurses, requires that 90 credits be earned in five quarters of academic work in the School of Nursing and one quarter of field work, or in four quarters of academic work and two quarters of field work, depending upon the experience the individual student needs in the public health field. These courses are required: Nursing 381, 382, 383, 384, 440, and 442; Public Health 402 (Communicable Disease Control) and 412 (Public Health Organizations and Services); Sociology 310 (General); Psychology 100 (General); and Home Economics 350 (Managing Family Finances).

Students who plan to work toward the advanced degree of Master of Nursing or Master of Science in Nursing must fulfill the requirements of the Graduate School (see page 261).

MASTER OF NURSING. Candidates for this degree choose a minor in a field such as education, social work, psychiatry, sociology, economics, or creative writing. Knowledge of a foreign language is not required.

MASTER OF SCIENCE IN NURSING. Candidates for this degree choose a minor in a biological or physical science, such as physiology, anatomy, microbiology, or chemistry. Knowledge of a foreign language is required.

100 Care and Prevention of Illness in the Home (3; AS)

Health and safety factors in the home and community; recognition of early symptoms of physical or mental illness as an important factor in the prevention of disease or disability. First aid in the home; conditions commonly treated at home; medications and supportive treatments; care before and after pregnancy; infant care; child growth and development; common psychological reactions to illness or disability; choosing a doctor and a hospital; consideration of community health resources.

220 History of Nursing (3; W)

A study of nursing from earliest times, with emphasis on the place of nursing in world history and the present social order.

225 Introduction to Clinical Nursing (3; not offered 1952-53)

250 Introduction to Psychiatry and Psychiatric Nursing (5; AWS)

Elementary psychiatric nursing and mental health concepts used in the nursing care of mentally ill patients, including special therapies and rehabilitation programs. Lectures and demonstrations.

251 Selected Psychiatric Nursing Practice (6; AWS)

Orientation to the nursing care of selected patients. One quarter clinical practice with rotation through departments of the mental hospital: men's and women's active and continued treatment patient services; special medical and rehabilitative therapies departments; one-hour ward clinic, one-hour nursing conference, and thirty-six hours of hospital practice weekly, with psychiatric staff conferences.

252 Introduction to Nursing Care and Treatment of Tuberculosis (2; AWS) Cushing, Medical Staff
Basic concepts of treatment, rehabilitation, prevention, and control. Lectures and demonstrations.

253 Selected Tuberculosis Nursing Practice (3; AWS)

Elementary principles of care applied to treatment and management of selected patients with tuberculosis. Five or six weeks of clinical practice in the medical and surgical treatment of tuberculosis, with planned rotation through the departments in a tuberculosis sanatorium, including use of community agency and clinic. One hour ward clinic, one-hour conference, and thirty-six hours hospital practice weekly, with nursing care study and staff conferences.

290 Elementary Nursing Arts (4; AS)

Continued elementary nursing techniques and patient care. Two lectures, one two-hour laboratory period, and four hours of supervised hospital practice weekly. Not open to students who have taken 291.

267 Intro. to Mental Hygiene (2)

222 Basic Elem. Nursing (5)
254 Intro to Medical-Surgical Nursing (3)
255 " " Nursing Practice (2)
256 selected Medical " (6)
257 " Surgical " (6)

- 291 Principles and Practices of Elementary Nursing (5; AS)** Gray, Rainey
Elementary nursing techniques; practice in elementary nursing care. Two lectures, two two-hour laboratory periods, and four hours of supervised clinical practice weekly. Not open to students who have taken 225 or 290.
- 295 Advanced Nursing Procedures and Methods of Planning Individualized Nursing Care (3;W)** Gray, Rainey
Advanced general nursing procedures; clinical nursing care study; practice in planning nursing care with reference to physical, emotional, social, and economic needs of patients.
- 296 Principles of General Medicine, Surgery, Otolaryngology, and Nursing Care (5; W)** Elwood, Reitz, Thompson, Wasson
Diseases of the cardio-vascular system; malignant neoplasms; diseases of the blood; diseases of the gastro-intestinal system; diseases of the endocrine and integumentary system; medical conditions of the genito-urinary tract; eye, ear, nose, and throat conditions. Survey of fields, with etiology, pathology, symptoms, complications, treatment, prevention, and specialized nursing care of each condition. Medical lectures; nursing demonstrations; recording and nomenclature.
- 297 Practice in Elementary Nursing and Special Hospital Departments (2; W)** Gray, Rainey
Elementary surgical nursing practice correlated with laboratory, X-ray, pharmacy, and central supply experience. Ten hours of hospital practice weekly.
- 300 Principles of Medical and Surgical Specialties and Their Nursing Care (5; AS)** H. Anderson, Little, Reitz, Thompson, Wasson
Survey of the fields of ophthalmology, allergic conditions, dermatology, orthopedics, neurology and neurosurgery, surgical urology, and gynecology. Emergency and first-aid treatment. Etiology, pathology, symptoms, complications, treatment, prevention and specialized nursing care of the various conditions. Medical lectures, nursing demonstrations, and clinics; recording and nomenclature.
- 301 Medical Nursing Practice (5; AWS)** Reitz, Thompson
Application of principles of nursing care in medical diseases. One quarter of experience in general medical nursing including geriatrics and dermatology. Experience in teaching diabetic patient class. Case assignment and ward rounds. One-hour clinic, one-hour conference, and thirty hours of hospital practice weekly.
- 302 Principles of Preventive Medicine and Nursing Care in Communicable Disease (4; W)** Reitz, Seels
Etiology, modes of transmission, symptomatology, complications, treatment, and methods of prevention and control in acute communicable and venereal diseases. Emphasis is on medical aseptic technique and specialized nursing care as it relates to community health. Orientation to other community agencies concerned. Medical lectures, nursing demonstrations, and clinics.
- 303 Operating Room Practice (5; AWS)** Aitken, Giblin, Pinyan
One quarter of experience in operating room nursing, emergency and admitting department. Care of the anesthetized patient. One-hour conference, one-hour clinic, and thirty hours of hospital practice weekly.
- 304 Principles of Special Therapy (2; W)** H. Anderson
Use of light, electricity, heat, water, massage, exercise, and occupation for the prevention, care, and rehabilitation of disability. The interrelationship of nursing, physical therapy, and occupational therapy, and the correlated and cooperative responsibilities of personnel for patient care.
- 305 Communicable Disease Nursing and Dietary Practice (5; AWS)** Reitz, Seels
Northrop, Gannon
One quarter of experience, including four weeks of segregated acute communicable disease nursing, one week in formula room, and six weeks in diet therapy practice. One-hour clinic, one-hour conference, and thirty hours of hospital practice weekly.
- 306 Surgical Nursing Practice (5; AWS)** Airth, H. Anderson
One quarter of experience in general surgical nursing, including orthopedics and physiotherapy; outpatient clinics. Case assignment. One-hour clinic, one-hour conference, and thirty hours of hospital practice weekly.
- 330 Principles of Obstetrics and Obstetric Nursing (5; W)** Lankford, Warron
Anatomical, physiological, and psychological aspects of prenatal and postpartum periods; care during normal, operative, and complicated labor; nursing care of mother and baby in home and hospital; introduction to community agencies concerned with prenatal care. Medical lectures and nursing demonstrations.
- 331 Obstetric Nursing Practice (5; AWS)** Giblin, Lankford, Warren
One quarter of experience in obstetric nursing. Nursing care of patients during prenatal, labor, and postpartum periods, including care of the newborn; experience in prenatal and postpartum clinics. Case assignments, one-hour clinic, one-hour conference, and thirty hours of hospital practice weekly.
- 332 Principles of Pediatrics and Pediatric Nursing (5; AWS)** MacIvor, Murray
Development of well children; principles of care; prevention of illness. Medical and nursing care of sick infants and children in home and hospital; introduction to community agencies concerned with child care. Medical lectures and nursing demonstrations.
- 333 Pediatric Nursing and Nursery School Practice (5; AWS)** MacIvor, Murray
One quarter of experience in pediatric nursing, including nursery school; experience in related well-baby clinic. Case assignments; one-hour clinic, one-hour conference, and thirty hours hospital practice weekly.

- 339 Introduction to Health Teaching (2; A)** **Burke**
Orientation to teaching functions of the nurse in both hospital and community situations.
- 340 Public Health Nursing and Community Health Agencies (3; AWS)** **Burke**
Principles and trends in public health nursing as they affect the responsibilities of the nurse; the organization, the function and interrelation of community health agencies and the basic techniques used by the nurse as a community health worker in planning health programs and in acting as family health consultant and health teacher. Discussion, field trips, and demonstrations.
- 341 Nursing Practice in Outpatient Department (6; AWS)** **Airth**
One quarter of experience in outpatient clinics. For graduate nurses who wish to supplement experience in the basic program. Weekly conferences.
- 350 Principles and Theory of Community Nursing (3; AWS)** **Bruggeman, Burke**
Lectures, demonstrations, and family care studies involving use of community health and social agencies.
- 351 Community Nursing Practice (3; AWS)** **Bruggeman, Burke**
Six weeks of experience in a visiting nurse service, with responsibility for a selected case load in an assigned district. Two-hour conference weekly.
- 400 Principles of Psychiatry and Psychiatric Nursing (5; AWS)** **Tillotson, Beckwith, Rohwedor**
Major concepts of psychiatric nursing and mental health used in planning the nursing care of mentally ill patients, including special therapies and rehabilitation measures. Lectures, demonstrations, and nursing conferences.
- 401 Psychiatric Nursing Practice (5; AWS)** **Tillotson, Rohwedor, Beckwith**
Practical development of basic principles of psychiatric nursing; with supervision in solving selected patient care problems. One quarter of clinical practice with rotation through departments of the mental hospital: men's and women's active and continued treatment, patient services, and special medical and rehabilitative therapies departments. One-hour ward clinic, one-hour nursing conference, and thirty hours of hospital practice weekly, with psychiatric staff conferences and written projects.
- 402 Principles of Tuberculosis Nursing Care (2; AWS)** **Cushing**
Use of special therapies; rehabilitation; prevention and control; public health and social aspects. Lectures and demonstrations.
- 403 Tuberculosis Nursing Practice (3; AWS)** **Cushing, Mercer, Blackman**
Supervised experience in developing nursing care principles for solving selected problems in care of tuberculosis patients. Five to six weeks of clinical practice in the medical and surgical treatment of tuberculosis, with planned rotation through the departments in a tuberculosis sanatorium, including use of community agency and clinic. One-hour ward clinic, one-hour nursing conference, and thirty hours of hospital practice weekly, with nursing projects and staff conferences.
- 404 Nursing Practice in Surgical Specialties (3; AWS)** **Little, Wasson**
Five to six weeks of experience in urology, gynecology, eye, ear, nose, and throat, head injury, and emergency surgical nursing. Case assignment, one-hour clinic, one-hour conference, and thirty hours of hospital practice weekly.
- 405 Generalized Nursing in the Community (3; AWS)** **Burke, Bruggeman**
Presentation and analysis of community and family health problems by means of selected family care studies; consideration of health problems, community programs, nursing techniques in morbidity, in health supervision, and in care of the handicapped. To be taken concurrently with 406.
- 406 Visiting Nursing Practice (5; AWS)** **Bruggeman, Burke, Staff**
One quarter of experience in generalized public health nursing with opportunity to apply basic principles and skills as a family health consultant and health teacher in morbidity, including communicable and noncommunicable disease; maternal, infant, and child care; mental hygiene; and nutrition. Experience in homes and clinics, health conferences in schools, and health classes, as well as conferences with professional workers in related community agencies; participation in community health planning. Family case assignment. Thirty hours of field practice weekly. To be taken concurrently with 405.
- 407 Principles of Ward Management and Bedside Teaching (3; AWS)** **Hoitman**
Problems of ward administration. Emphasis is upon the supervisory and teaching functions of the charge nurse, with attention to provision for and the supervision of patient teaching; human relations in the ward situation are stressed. To be taken concurrently with 408.
- 408 Senior Nursing Practice (5; AWS)** **Hoffman, Svelander, Staff**
One quarter of advanced nursing practice in one field (of student's choice if possible). Opportunity for advanced patient care; experience as team leader and as assistant head nurse; charge nurse on days, evenings, and nights; experience in arranging basic clinics and in leading basic conferences. Individual projects, weekly conferences, and thirty hours of hospital practice weekly. To be taken concurrently with 407.
- 409 Professional Problems in Nursing (2; WS)** **Hoffman, Svelander**
Responsibilities of the professional nurse to the community. Study of professional organizations, opportunities in various fields of nursing, legislation, accreditation, and professional literature.

452 Survey Psychodynamics & Psychopathology (3)

COURSES FOR GRADUATE NURSE STUDENTS

- 360 Survey of Orthopedic Conditions and Nursing Problems (3; A)** **H. Anderson**
Principles of orthopedic nursing applied toward prevention, home care, and rehabilitation of persons with orthopedic and plastic defects.

365 Therapeutics & Nursing Care (2)
 366 Special Problems in Nursing Care (2)
 SCHOOL OF NURSING

- 361 Survey of Trends in Contemporary Nursing (3; W) Tschudin
 Emphasis on current problems.
- 363 Orientation to Psychiatric Nursing and Mental Hygiene (2; not offered 1952-53)
- 364 Integration of Mental Hygiene into Public Health Nursing (2; not offered 1952-53)
- 381 Principles, Organization, and Administration of Public Health Nursing (3; AS) J. Anderson
 Policies and developments in the principles, organization, and administration of public health nursing in national, state, and local public health nursing services in official and nonofficial agencies.
- 382 Field Practice in Public Health Nursing (5; AWS) J. Anderson, Dean, Andrews
 Health teaching and nursing. To be taken concurrently with 383 and 384.
- 383 Field Practice in Public Health Nursing (5; AWS) J. Anderson, Dean, Andrews
 Administrative activities and record work. To be taken concurrently with 382 and 384.
- 384 Field Practice in Public Health Nursing (6; AWS) J. Anderson, Dean, Andrews
 Family health planning. Use of social agencies and maintenance of community relationships. To be taken concurrently with 382 and 383.
- 417 Principles of Teaching Nursing and Health (5; A) (2 or 5) Tschudin
 Application of principles of learning to teaching methods and techniques effective in nursing, with opportunity for course planning, demonstration, and practice teaching. Prerequisites, Psychology 100 and Education 209 or 401.
- 418 Supervision in Nursing (5; S) (3) Smith
 Principles of supervision in nursing service and education in relation to administration of the nursing unit, with emphasis upon an understanding of the importance of interpersonal relations as well as the use of effective supervisory techniques. For graduate nurses preparing for supervisory responsibilities.
- 420 Advanced Nursing Practice in Medical Nursing (3; AWS) Heitman, Staff
 One quarter (eighteen hours weekly) of clinical experience in advanced medical nursing, including advanced nursing care and charge experience on days and evenings. Orientation to community social agencies in the field. Care study. Advanced clinics and conferences; individual conferences weekly.
- 421 Advanced Nursing Practice in Surgical Nursing (3; AWS) Heitman, Staff
 One quarter (eighteen hours weekly) of clinical experience in advanced surgical nursing, including advanced nursing care and charge experience on days and evenings. Orientation to community social agencies in the field. Care study. Advanced clinics and conferences; individual conferences weekly.
- 422 Advanced Nursing Practice in Pediatric Nursing (3; AWS) Heitman, Staff
 One quarter (eighteen hours weekly) of clinical experience in advanced pediatric nursing; including advanced nursing care and charge experience on days and evenings. Orientation to community social agencies in the field. Care study. Advanced clinics and conferences; individual conferences weekly.
- 423 Advanced Nursing Practice in Obstetrical Nursing (3; AWS) Heitman, Staff
 One quarter (eighteen hours weekly) of clinical experience on days and evenings. Orientation to community social agencies in the field. Care study. Advanced clinics and conferences; individual conferences weekly.
- 424 Advanced Nursing Practice in Operating Room (3; AWS) Heitman, Staff
 One quarter (eighteen hours weekly) of clinical experience in operating room nursing, including advanced nursing care and charge experience on days and evenings. Orientation to community social agencies in the field. Care study. Advanced clinics and conferences; individual conferences weekly.
- 425 Advanced Nursing Practice in Tuberculosis Nursing (3; AWS) Blackman, Cushing
 One quarter (eighteen hours weekly) of clinical experience in tuberculosis nursing, including advanced nursing care and charge experience on days and evenings. Orientation to community social agencies in the field. Care study. Advanced clinics and conferences; individual conferences weekly.
- 427 Advanced Outpatient Department and Emergency Nursing (3; AWS) Airth, Heitman
 One quarter (eighteen hours weekly) of clinical experience in outpatient department and emergency nursing, including advanced nursing care and charge experience on days and evenings. Orientation to community social agencies in the field. Care study. Advanced clinics and conferences; individual conferences weekly.
- 430 Advanced Psychiatric Nursing and Mental Hygiene (3; AWS) Morgan, Staff
 Practical development of advanced principles of psychiatric nursing, with supervision in solving selected patient care problems. One quarter of planned experience in selected psychiatric hospitals with men and women patients in active medical and rehabilitative treatment programs. Seminar-clinics, nursing conferences, and medical staff conferences.
- 432 Principles of Advanced Nursing (2; AWS) Heitman, Morgan, J. Anderson, Boyle
 Integration of all aspects of nursing in the solution of nursing problems in special clinical fields.
- 434 Advanced Orthopedic Nursing Practice (3; not offered 1952-53)
- 435 Practice Teaching and Ward Supervision in Hospitals (10; AWS) Heitman, Staff
 One quarter of experience in the student's major clinical field, with opportunity for supervised practice in administrative and teaching functions of the head nurse and supervisor, and for interdepartmental observation of hospital departments. Prerequisites, 417, 418, and one quarter of advanced nursing practice in a major field.

454 Administration in Nursing (2)

- 440 Special Fields in Public Health Nursing (5; W)** **J. Anderson**
Functions, objectives, and programs in special fields of public health nursing.
- 441 Advanced Field Practice in Public Health Nursing (12; AWS)** **J. Anderson, Jahncke**
Experience in public health nursing supervision or special fields. Prerequisite, permission of instructor.
- 442 Teaching Functions of the Public Health Nurse (5; AS)** **Leahy**
Principles of teaching as applied to the individual, the family, and group health conferences; analysis and interpretation of family health studies and methods of teaching health. Prerequisites, 381 and Psychology 100.
- 455 Administration of Schools of Nursing (5; W)** **Olcott**
Principles of organization and function of a school of nursing, including selection and organization of the faculty, student selection and welfare, health and guidance programs, curriculum planning and scheduling, and accreditation.
- 456 Nursing Service Administration (5; W)** **Smith**
Administration and organization of service in the hospital. Discussion of selection, assignment, supervision and evaluation of personnel, techniques for control of equipment and supplies, methods of communication, and interdepartmental and interpersonal relations.
- 457 Special Fields in Psychiatric Nursing (2; AWS)** **Morgan**
Special needs and therapies in the prevention and nursing care of mental illness. Individual assignments. Patients in psychiatric hospitals are available for demonstration and teaching. Prerequisites, 400, 401, and a major in psychiatric nursing.
- 458 Nursing and Psychiatric Disorders of Children (2; AWS)** **Morgan**
Work in the Child Psychiatric Clinic, which provides opportunity to understand the psychiatric problems of children by observing the relationships they form with adults; participation in diagnostic staff conferences with other agency members and student groups, and in nursing conferences; discussion of problems and their relationship to the health education and conservation functions of the nurse. Prerequisites, Psychiatry 367 or equivalent, and permission.
- 459 Current Literature in Clinical Nursing (2; AWS)** **Heitman, Morgan**
Reading and discussion of current literature in clinical nursing, including a survey of background material. Emphasis is on generally accepted concepts and on those which are developmental or experimental.
- 460 Body Mechanics in Nursing (3; not offered 1952-53)**
- 461 Advanced Orthopedic Nursing (5; not offered 1952-53)**
- 462 Teaching of Nursing Arts and Science (3; AS)** **Hoffman**
Principles and methods and their application to the specific field of nursing arts teaching; group development of objectives and course content; practice in pertinent methods, with emphasis on teaching of skills; techniques of ward follow-up; instructional aids; evaluation of textbooks in the field. Prerequisites, 417 and Psychology 100.
- 463 Personnel Guidance Programs in Nursing (3; W)** **Morgan**
The development, aims, and objectives of personnel guidance programs. Major areas are developed to enable the nurse to apply principles in the organization, administration, and function of guidance in nursing. Prerequisite, Education 147 or permission.
- 464 The Role of the Nurse in Mental Hygiene (2-3; S)** **Kinney**
Lecture and discussion in prevention of emotional problems as they relate to the role of the nurse in her contacts with families and community agencies. Three credits are allowed if an approved clinical or field project is completed.
- 490 Principles, Organization, and Administration of Industrial Nursing (3; W)** **Jahncke**
Policies and developments in industrial nursing services.
- 493 Public Health Nursing Aspects of Adult Hygiene (3; S)** **Kinney**
Community facilities and public health nursing care of the adult and aging population.
- 494 Reading in Current Literature in Public Health Nursing (2; AWS)** **J. Anderson**
Reading and discussion of current literature in public health nursing, with emphasis on newer developments and research. Prerequisites, 381 and permission of instructor.
- 496 Advanced Work in Special Field: of Public Health Nursing (3; AS)** **J. Anderson**
Group projects in special fields of public health nursing on the basis of student interest. Prerequisites, 381, 440, and permission of instructor.
- 498 Methods of Supervision in Public Health Nursing (3; W)** **Leahy**
Principles and methods of supervision in public health nursing and their relationship to administration. Prerequisites, preparation and experience in public health nursing and permission of instructor.

492 Problems in International Health (2)
COURSES FOR GRADUATES ONLY

- 506 Advanced Nursing Service Administration (3; S)** **Smith**
Over-all planning for the nursing department, with study of administrative problems, policy making, budget planning and control, and other administrative practices.
- 507 Seminar in Nursing Problems in Mental Hygiene (2; S)** **Kinney**
Nursing case material analyzed to provide a working concept of the principles of mental hygiene and to clarify the functions of the nurse in this area.
- 510 Curriculum Development in Nursing Education (5; S)** **Tschudin**
Current curriculum patterns and trends in nursing education; the development of curriculum materials; problems in the study and implementation of nursing curriculum. Prerequisite, 417 or equivalent.

511 Nursing & Psychosomatic Conditions (3)

- 521 Seminar in Nursing Problems (*; A) Patterson
Methods of research applied to the solution of problems in all fields of nursing.
- 522, 523 Seminar in Nursing Problems (*; *; W,S) Patterson
600 Research (*; AWS) Patterson, Staff
Open only to qualified graduate students.
- Thesis (*; AWS) Staff

COLLEGE OF PHARMACY

Dean: FOREST J. GOODRICH, 102 Bagley Hall

Professors: L. Fischer, F. J. Goodrich, E. M. Plein, L. W. Rising.

Associate Professor: H. W. Youngken.

Assistant Professors: E. Krupski, W. C. McCarthy, A. C. Neva.

Lecturer: H. A. Langenhan.

THE College of Pharmacy is accredited by the American Council on Pharmaceutical Education as a Class A college and is a member of the American Association of Colleges of Pharmacy. It is a part of the Division of Health Sciences, which also includes the Schools of Dentistry, Medicine, and Nursing. It offers courses leading to the degrees of Bachelor of Science in Pharmacy, Master of Science in Pharmacy, and Doctor of Philosophy. For undergraduate students it offers courses in the fields of pharmacy, pharmaceutical chemistry, pharmacognosy, and (through the Department of Pharmacology in the School of Medicine) pharmacology.

Some lower-division pharmacy courses are open to students in other schools and colleges of the University, but only students in the College of Pharmacy may register for professional courses without written permission from the Dean of the College and from the instructors.

ADMISSION

The University requirement for entrance is 16 high school units with a grade-point average of at least 2.0 (see page 15 for other admission regulations). The College of Pharmacy requires that the 16 units include 1 unit of elementary algebra and 1 unit of either plane geometry or advanced algebra.

Application for admission to the College of Pharmacy should be sent to the Registrar of the University. Each applicant must submit the following material before July 15: (1) formal application for admission on the special College of Pharmacy application blank, which is furnished by the Registrar or the Dean of the College, and (2) official transcript of high school and/or college work (sent directly from his high school to the Registrar). Personal interviews with the Committee on Admissions of the College are required. Appointments must be made for these interviews, which are held only during the weeks of May 19-23 and July 14-18.

Students whose applications and credentials have not been received in the Registrar's Office by July 15 will be accepted only if vacancies exist in the College.

The rules of the American Association of Colleges of Pharmacy require that transfer students who enter the College of Pharmacy with advanced standing may not graduate from the College in less than three years.

SCHOLARSHIP

Students must maintain a grade-point average of 2.0 in all course work to have clear status in the College. If the grade-point average falls below the minimum in any quarter, the student is placed on probation. One additional quarter only is allowed for the student to bring his cumulative average up to the College requirements. Failure to earn a cumulative grade-point average of at least 2.0 will be cause for dropping the student from the College.

Application for readmission at any subsequent time must be made through the Committee on Admissions. Grades earned at other institutions may not be used to raise the grade-point average at this college.

No student may register in pharmacy courses numbered 499 unless his cumulative grade-point average is 2.5 or above.

BACHELOR OF SCIENCE IN PHARMACY

The graduation requirements of the University are 180 academic credits (including Physical Education 110 or 175); the required quarters of physical education activity

and/or military training; the senior year spent in residence; and 60 upper-division credits (see page 28 for detailed information). The College of Pharmacy permits no more than 18 credits in upper-division R.O.T.C. courses to be included in the 60 upper-division credits, and no more than 6 credits in courses numbered 499 to be applied toward graduation.

For graduation, the pharmacy student must complete the outlined curriculum with an over-all grade-point average of 2.2 in courses in pharmacy, pharmaceutical chemistry, pharmacognosy, and pharmacology and a grade-point average of 2.0 in each of these fields.

The curriculum of the College of Pharmacy is as follows:

FIRST YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Pharm. 101	3	Pharm. 102	3	Pharm. 103	3
Pharm. 104	2	Botany 111 Elementary	5	Chem. 110 Gen. Chem. & Qual. Analysis	5
Chem. 108 Gen. Chem. & Qual. Analysis	5	Chem. 109 Gen. Chem. & Qual. Analysis	5	Engl. 103 Composition	3
Engl. 101 Composition	3	Engl. 102 Composition	3	Math. 122 Intermed. Algebra & Plane Trig.	5
P.E. 110 or 175 Health	2	P.E. Activity	1	P.E. Activity	1
P.E. Activity	1	R.O.T.C.	2 or 3	R.O.T.C.	2 or 3
R.O.T.C.	2 or 3				
	16-19		17-20		17-20

SECOND YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Pharm. 209	3	Pharm. 210	3	Pharm. 211	3
Pharmacog. 212	3	Pharmacog. 213	3	Pharmacog. 214	3
Chem. 237 Organic	5	Chem. 238 Organic	5	Chem. 239 Organic	5
Pharmaceutical	5	Pharmaceutical	5	Pharmaceutical	5
Physics 101 or 104 General	5	Physics 102 or 105 General	5	Zool. 208 Physiol.	5
P.E. Activity	1	P.E. Activity	1	P.E. Activity	1
R.O.T.C.	2 or 3	R.O.T.C.	2 or 3	R.O.T.C.	2 or 3
	17-20		17-20		17-20

THIRD YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Pharmacog. 304	3	Pharmacog. 411	3	Pharmacog. 412	2
Pharm. Chem. 325	5	Pharm. Chem. 326	5	Pharm. Chem. 328	3
Pharmacol. 301 General	3	Pharmacol. 302 General	3	Pharm. Chem. 340	3
Econ. 201 Principles	5	Micro. 301 General	5	Pharmacol. 303 General	3
	16	Bacteriol.	5	Electives	5
			16		16

FOURTH YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Pharm. 313	5	Pharm. 314	5	Pharm. 315	5
Pharm. 382	5	Pharm. 318	5	Pharm. Chem. 497	5
Pharm. Chem. 495	5	Pharm. Chem. 496	5	Electives	5
	15		15		15

ADVANCED DEGREES

Students who intend to work toward advanced degrees must fulfill the requirements of the Graduate School (see page 261). The College offers courses leading to the degrees of Master of Science in Pharmacy and Doctor of Philosophy, with majors in pharmacy, pharmaceutical chemistry, toxicology, pharmacognosy, and food chemistry.

RESEARCH

Pharmaceutical research is conducted by the members of the staff and graduate students. This work is directed toward the advancement of knowledge in pharmacy and is one of the requirements for advanced degrees.

Graduate scholarship awards and grants are available for students interested in work in the fields of pharmacy, pharmacognosy, and pharmaceutical chemistry.

The College maintains drug plant gardens of several acres, where many species of plants containing pharmaceutically important principles and plants of other economic value are grown. In conjunction there is a laboratory building which contains five greenhouses, three research laboratories, a classroom, drug driers and grinders, a dark room, and preparation rooms.

COURSES FOR UNDERGRADUATES

Pharmacy

- 101-102-103 Fundamental Principles and Processes of Pharmacy (3-3-3; A-W-S)** **Langenhan**
Manufacture of U.S.P. and N.F. galenic preparations; development of laboratory technique.
- 104 History of Pharmacy (2; A)** **Langenhan**
Development of the science and profession of pharmacy and its literature.
- 115 Home Remedies (2; W)** **Rising**
Remedies and cosmetic preparations commonly used in the home, from the point of view of composition, effectiveness, and safety. For nonmajors.
- 209-210-211 Prescriptions (3-3-3; A-W-S)** **Plein**
Fundamental principles of prescription compounding and dispensing, with emphasis on accuracy and technique. Pharmaceutical Latin and prescription reading are included. Prerequisites, 103, and Chemistry 110 or equivalent.
- 251 Elementary Pharmacy (2; W)** **Staff**
Fundamental theory of dispensing pharmacy and pharmacy arithmetic. For students in the School of Nursing.
- 261 Pharmacology and Therapeutics (3; AS)** **Staff**
General study of the action and uses of drugs. For students in the School of Nursing.
- 313-314-315 Advanced Prescriptions, Professional Pharmacy, Professional Management (5-5-5; A-W-S)** **Rising**
Principles of management and the laws governing the practice of pharmacy. The divisions of professional pharmacy are discussed under such headings as general practice, veterinary, and dental pharmacy. Advanced techniques in prescription practice are stressed. Prerequisite, 211.
- 318 Pharmaceutical Accounting (5; W)** **Freeman**
Basic principles of accounting as used in pharmacy, with emphasis on state and federal taxes and deductions and on fiscal reports for comparing business trends under accepted business procedures.
- 352 Pharmacy and Therapeutics for Dental Hygienists (3; S)** **Staff**
Principles of pharmacy; mathematics of pharmacy; pharmacological and therapeutic action of drugs pertaining to dentistry.
- 382 Modern Pharmaceuticals (5; A)** **Plein**
New and important pharmaceuticals found in modern practice considered from the standpoint of composition, manufacture, dosage, and properties. Prerequisites, 211, Chemistry 239 or equivalent, and senior standing.
- 473 Cosmetic Manufacturing (3; A)** **Rising**
Preparation of many types of cosmetics and study of their physical, chemical, and physiological properties. Prerequisite, Chemistry 239 or equivalent.
- 483 Hospital Pharmacy (3-5; WS)** **Plein**
Principles and techniques of hospital dispensing and dispensary management. Prerequisite, permission.
- 499 Undergraduate Research (1-5; AWS)** **Rising, Plein**
Research problems in manufacturing and dispensing pharmacy. Open to qualified juniors and seniors.

Pharmacognosy

- 212-213-214 Pharmacognosy (3-3-3; A-W-S)** **Goodrich, Youngken**
A general introduction to plant and animal products used in pharmacy. Emphasis is placed upon active principles, their sources, certain derivatives, production, and uses. Therapeutic and nontherapeutic agents are included. Prerequisite, Botany 111 or an equivalent course in biology.
- 304 Microscopy (3; A)** **Staff**
The application of microscopic and microchemical methods in the study of vegetable and animal drug principles. Prerequisites, 214 and Chemistry 239.
- 405 Advanced Pharmacognosy (3; W)** **Staff**
Identification, tissue staining reactions, and advanced microchemical examination of vegetable drug constituents, with emphasis upon adulteration and contamination factors. Prerequisite, 304 or permission.
- 406 Medicinal Plants (2; AS)** **Youngken**
Problems in drug plant cultivation and commerce, with considerable field work in the Drug Plant Gardens. Emphasis is placed upon alkaloid, glycoside, and oil-yielding plants. Weedicides and insecticides are included. Prerequisite, 214 or permission.
- 411 Hormones and Glandular Products (3; W)** **Youngken**
An advanced study of pharmaceutical products derived from animal exocrine and endocrine glands, with emphasis upon hormones and their chemical and physiological role as drugs. Prerequisites, 214, and Zoology 208 or equivalent.
- 412 Serums, Vaccines, and Allergens (2; S)** **Staff**
Production, quality, and use of serum, vaccine, virus, and allergenic products currently employed in the prevention and treatment of disease. Prerequisites, 214, 411, and Microbiology 301.
- 499 Undergraduate Research (1-5; AWS)** **Goodrich, Youngken**
Research problems in pharmacognosy. Open to qualified juniors and seniors.

Pharmaceutical Chemistry

- 301 Bibliography Technique (2; A)** **McCarthy**
Use of scientific literature, preparation of abstracts, and assignments in selected pharmaceutical topics.
- 325 Gravimetric Quantitative Analysis (5; A)** **Krupski**
Principles of gravimetric analysis, including its application to pharmaceutical compounds. Prerequisite, Chemistry 110.
- 326 Volumetric Quantitative Analysis (5; W)** **Krupski**
Principles of volumetric analysis, including its application to drugs and preparations of pharmaceutical importance. Prerequisite, 325.
- 328 Drug Assay (3; S)** **Krupski**
The assay of various official products involving the application of special analytical techniques and a study of the methods of standardization of pharmaceutical products. Prerequisites, 326 and Chemistry 239.
- 340 Organic Medicinal Products (3; S)** **Fischer**
Nomenclature, properties, reactions, and synthesis of organic medicinals. Prerequisite, Chemistry 239.
- 495-496 Pharmaceutical Chemistry (5-5; A-W)** **Fischer**
The pharmacy and chemistry of carbohydrates, proteins, fats, fixed and volatile oils, waxes, glycosides, and resins. Laboratory work on qualitative tests and quantitative methods for determining component parts. Prerequisites, 326 and Chemistry 239.
- 497 Pharmaceutical Chemistry and Toxicology (5; S)** **Fischer**
History, source, structure, synthesis, qualitative detection, and quantitative determination of alkaloids, including the separation and identification of poisons from animal tissues. Prerequisites, 326 and Chemistry 239.
- 499 Undergraduate Research (1-5; AWS)** **Fischer, Krupski, McCarthy**
Research problems in pharmaceutical chemistry. Open to qualified juniors and seniors.

COURSES FOR GRADUATES ONLY**Pharmacy**

- 520 Seminar (1, maximum 3; AWS)** **Staff**
Graduate students attend seminars every quarter while in residence, but a maximum of 1 credit per year is allowed.
- 540 Pharmaceutical Emulsions (2; A)** **Rising**
Problems in the preparation of emulsions in pharmaceutical manufacturing. Prerequisites, Chemistry 239 and either Chemistry 351, 352, or equivalent.
- 550 Solvents and Solvent Extraction (2; S)** **Plein**
Theories of solvent extraction and the use of solvents applied to pharmaceutical manufacturing. Prerequisite, permission.
- 604 Research (*, maximum 25 for M.S., 45 for Ph.D.; AWS)** **Plein, Rising**
Thesis (*; AWS) **Staff**

Pharmacognosy

- 520 Seminar (1, maximum 3; AWS)** **Staff**
Graduate students attend seminars every quarter while in residence, but a maximum of 1 credit per year is allowed.
- 604 Research (*, maximum 25 for M.S., 45 for Ph.D.; AWS)** **Goodrich, Youngken**
Thesis (*; AWS) **Staff**

Pharmaceutical Chemistry

- 511-512-513 Advanced Pharmaceutical Chemistry (3-3-3; A-W-S)** **Krupski**
pH determinations and buffer systems, fluorometry, and gasometric methods of analysis; chromatography, combustion analysis, spectroscopic methods, the use of various instruments for scientific investigations, and vitamin determinations.
- 520 Seminar (1, maximum 3; AWS)** **Staff**
Graduate students attend seminars every quarter while in residence, but a maximum of 1 credit per year is allowed.
- 521, 522, 523 Advanced Organic Medicinal Products (3,3,3; offered alternate years, not offered 1952-53)**
- 526, 527, 528 Advanced Organic Medicinal Products Laboratory (2,2,2; offered alternate years, not offered 1952-53)**
- 531 Plant Chemistry (3; A)** **Fischer**
Alkaloids, including methods of isolation, degradation studies, proof of structure, and synthesis of alkaloids, with emphasis on pharmaceutical compounds.
- 532 Plant Chemistry (3; W)** **Fischer, McCarthy**
Production, isolation, and chemistry of the volatile oils and of sterols, with emphasis on pharmaceutical compounds.
- 533 Plant Chemistry (3; S)** **McCarthy**
Glycosides and related compounds, including methods of isolation, proof of structure, synthesis, and activity, with emphasis on pharmaceutical compounds.
- 604 Research (*, maximum 25 for M.S., 45 for Ph.D.; AWS)** **Fischer, Krupski, McCarthy**
Thesis (*; AWS) **Staff**

RESERVE OFFICERS TRAINING PROGRAM

THE Departments of Air Science and Tactics, Military Science and Tactics, and Naval Science were established under the provisions of the National Defense Act of June 4, 1920, and function under directives from the United States Department of Defense. The respective secretaries of each service are responsible for the operation of the R.O.T.C. program. Within the University, this program is coordinated through the office of the Dean of the College of Engineering.

The Departments of Air Science and Tactics and Military Science and Tactics provide two years of basic military training for male University students and an additional two years of advanced training to prepare a selected group of students for regular or reserve commissions in the United States Army and Air Force. Those who take advanced training must agree in writing to accept a commission if offered, to serve on active duty, subject to the call of the Secretary of the Air Force or the Secretary of the Army, for not less than two years, and to remain in the Reserve until the eighth anniversary of the date of the commission. The Department of Naval Science provides four-year training programs for qualified students.

These departments do not offer curricula leading to a degree, but R.O.T.C. courses are included in the undergraduate curricula of all male students in the University. The first six quarters of study in either of the three departments satisfy the military training requirements of the University (see page 28).

AIR SCIENCE AND TACTICS

Professor of Air Science and Tactics: GEORGE H. DIETZ, Air Science Building

Professor: Colonel G. H. Dietz.

Assistant Professors: Lieutenant Colonels E. J. Boucher, D. P. Miller, Jr.; Majors G. R. Bensen, K. B. Clark, T. W. Kridler, C. M. Wood; Captains R. V. Bitney, F. H. Davis, R. P. Hixson, E. A. Valentine, R. C. Wilson, B. O. Younse.

Instructors: Master Sergeants C. C. Clifford, R. V. Craig, J. W. Elder, H. J. Fielder, C. A. Johnson, H. K. Lemcke, J. B. Martin, Jr., D. K. McGee, P. J. Minzenmeyer; Technical Sergeant W. R. Neal; Staff Sergeant R. M. Grund.

Eligibility to enroll in the Air Force Reserve Officers Training Corps, within quota limitations established by the Secretary of the Air Force, is limited to students who are citizens of the United States. Participation in the Air Force R.O.T.C. program may permit deferment from the draft under the Universal Military Training and Service Act of 1951.

Air Force R.O.T.C. instruction is divided into two phases, basic training and advanced training. Each phase consists of two academic years.

First-year students in the basic program take Air Science 131, 132, and 133, which give a general knowledge of the primary importance of geography in modern military operations and planning, including its significance in surface and aerial operations. This sequence of courses requires classroom attendance two hours each week. First-year students are also introduced to the principles of leadership and exercise of command through practice of basic elements of drill one hour each week.

During the second year of the basic program the emphasis in course work is shifted to subjects more closely associated with the United States Air Force, and students study aerodynamics, propulsion, weather, navigation, and applied air power.

Practice in leadership, drill, and exercise of command extends throughout the two years of Basic Air Force R.O.T.C. and continues two additional years for students in the Advanced Air Force R.O.T.C. program.

Each quarter, students who have completed the Basic Air Force R.O.T.C. program may make application to enter the Advanced Air Force R.O.T.C. program, which is designed to produce professionally qualified officers. A limited number of outstanding students are selected for the advanced program. These students may

choose their training in one of five options: communications, maintenance and engineering, administration and logistics, flight operations, and general technical training. These courses require classroom attendance four hours each week, plus one hour of practice in leadership, drill, and exercise of command.

Each student accepted for the advanced program must:

1. Successfully complete the two-year Basic Air Force R.O.T.C. program or receive equivalent credit for active service in the military forces of the United States.
2. Execute a written agreement with the government to complete the advanced program, contingent upon remaining in the University, and to attend the advanced program summer training camp at the time specified.
3. Request immediate discharge from any Reserve or National Guard organization (according to law, discharge from any Reserve unit must be granted).
4. Agree to complete all requirements for appointment as Second Lieutenant before his twenty-eighth birthday.
5. Successfully complete whatever general survey and screening tests are prescribed.
6. Be selected by the Professor of Air Science and Tactics and the President of the University.
7. Complete the advanced program as a prerequisite for graduation from the University, unless excused or dismissed from this requirement by authority of the Secretary of the Air Force.

Each Advanced Air Force R.O.T.C. student is paid a subsistence allowance of approximately \$27 per month during the two academic years of Advanced Air Force R.O.T.C.

Summer camp of six weeks' duration is provided for students who have completed the first year of the advanced program. While attending summer camp each student is paid at the rate of \$75 per month, and is furnished travel to and from camp, subsistence, housing, uniforms, and medical attention at government expense.

Students in both basic and advanced programs are furnished complete uniforms of the type worn by United States Air Force personnel. Students are normally required to wear the uniform on drill days; wearing it to Air Force R.O.T.C. classes other than drill is optional. Each student must make a \$25 uniform deposit to the University before registration. This deposit is refunded in full when the uniform is returned undamaged.

The United States Air Force furnishes all textbooks used in the basic and advanced programs.

Inquiries concerning enrollment or other matters should be addressed to the Professor of Air Science and Tactics.

COURSES FOR UNDERGRADUATES

- | | | |
|---------------|---|-------|
| 131, 132, 133 | Air Science I—Basic (2,2,2; A,W,S) | Staff |
| | World political geography—geographical and political features significant to surface and aerial operations; leadership, drill, and exercise of command. | |
| 231, 232, 233 | Air Science II—Basic (2,2,2; A,W,S) | Staff |
| | Introduction to the military airplane—how and why it flies, its structure and propulsive equipment; introduction to meteorology and navigation; development and application of air power; leadership, drill, and exercise of command. | |
| 351, 352, 353 | Air Science III—Advanced (Flight Operations) (3,3,3; A,W,S) | Staff |
| | Principles of flight; aircraft engineering for pilots; aircraft instruments and their uses; air navigation; meteorology; field laboratory for leadership. | |
| 361, 362, 363 | Air Science III—Advanced (Air Force General Technical Training) (3,3,3; A,W,S) | Staff |
| | Problem solving and writing; mission and function of the Air Force; the wing air base; technical careers in the Air Force; field laboratory for leadership. | |
| 371, 372, 373 | Air Science III—Advanced (Air Force Communications) (3,3,3; A,W,S) | Staff |
| | Air Force communications; wire communications; radio communications; radar; psychology of leadership; logistics; air operations; field laboratory for leadership. | |
| 381, 382, 383 | Air Science III—Advanced (Aircraft Maintenance Engineering) (3,3,3; A,W,S) | Staff |
| | Logistics; air operations; aircraft maintenance engineering—technical publications, aircraft maintenance inspection system, aircraft fuels and fuel systems, aircraft oil systems, aircraft electrical systems, aircraft propellers, aircraft structures, aircraft hydraulic systems, and instruments and miscellaneous systems; psychology of leadership; field laboratory for leadership. | |

301 Air Sci. III General (3)

- 388 **Air Science III—Advanced Camp (3; Summer)**
Six weeks' training at an Air Force base; intensive study in the field of specialization.
- 391, 392, 393 **Air Science III—Advanced (Administration and Supply) (3,3,3; A,W,S)** **Staff**
Logistics; air operations; administration—individual records, nonappropriated funds, and special administrative responsibilities; transportation; supply—Air Force supply and general supply; psychology of leadership; field laboratory for leadership.
- 451, 452, 453 **Air Science IV—Advanced (Flight Operations) (3,3,3; A,W,S)** **Staff**
Management methods; teaching methods; administration; logistics; air navigation; meteorology; theory of radar; electronic countermeasure methods; field laboratory for leadership.
- 461, 462, 463 **Air Science IV—Advanced (Air Force General Technical Training) (3,3,3; A,W,S)** **Staff**
Atomic theory and radiological defenses; guided missiles; new developments; familiarization and use of technical publications; field laboratory for leadership.
- 471, 472, 473 **Air Science IV—Advanced (Air Force Communications) (3,3,3; A,W,S)** **Staff**
Air Force management; military teaching methods; the Air Inspector General; military law and boards; officer development; career development; communications organization; command and administration; inspection; training; communications centers and systems; field laboratory for leadership.
- 481, 482, 483 **Air Science IV—Advanced (Aircraft Maintenance Engineering) (3,3,3; A,W,S)** **Staff**
Administration; teaching methods; management; aircraft maintenance engineering; the air inspector and service equipment; engine operation and conditioning; cruise control and test flight; field laboratory for leadership.
- 491, 492, 493 **Air Science IV—Advanced (Administration and Supply) (3,3,3; A,W,S)** **Staff**
Air Force management; military teaching methods; the air inspector general; military law and boards; officer development; career development; food services; staff; personnel administration; the air comptroller; field laboratory for leadership.

492-493 AirSci. IV General (3).

MILITARY SCIENCE AND TACTICS

Professor of Military Science and Tactics: RAY M. O'DAY, Army R.O.T.C. Building

Professors: Colonels G. F. Baier, R. M. O'Day.

Assistant Professors: Lt. Colonels D. M. Carter, A. P. Flanagan, G. B. Macaulay, E. R. Wahl, W. J. Wolcott; Majors P. F. Beaulieu, C. M. Hext, B. E. Johnson, Jr., F. R. Lamutt, R. W. Martin, V. D. Wood, Jr.; Captains B. Asher, C. H. Fischer, Jr., C. E. Miles, Jr., J. H. Noonan, Jr.

Instructors: Master Sergeants F. Galloway, R. H. Jones, Jr., L. LaBeur, B. G. Leverland; Sergeants First Class N. W. Bailey, R. C. Brownell, H. F. Cassel, J. B. George, R. H. Granger, R. F. Strojny; Sergeants W. H. Carnahan, C. W. Fitch.

Qualifications for entrance to the Army Reserve Officers Training Corps are in accordance with University requirements and Department of the Army regulations. Participation in the Army R.O.T.C. program may permit deferment from the draft under the Universal Military Training and Service Act of 1951.

The Department of Military Science and Tactics also offers a series of courses in Medical Corps subjects for students in the School of Medicine (see page 292).

Courses in the first year of the basic program require classroom attendance two hours each week. First-year students are also introduced to the principles of leadership and exercise of command through practice of basic elements of drill one hour each week.

Second-year students may choose their training in one of five branches: Infantry, Antiaircraft Artillery, Quartermaster Corps, Transportation Corps, and Corps of Engineers. Practice in leadership, drill, and exercise of command extends throughout the two years of Basic Army R.O.T.C. and continues two additional years for students in the Advanced Army R.O.T.C. program.

After completion of the basic program, students may apply for entrance to the Advanced Army R.O.T.C., which is designed to train professionally qualified officers. Students in the advanced course are chosen from the group of most highly qualified students who have completed the basic program of senior division R.O.T.C., or have had twelve months or more of honorable active service in the military forces of the United States. Each student accepted for the advanced program must:

1. Not have reached twenty-seven years of age at the time of initial enrollment in the advanced course.
2. Execute a written agreement with the government to complete the advanced course, contingent upon remaining in the University.
3. Be selected by the Professor of Military Science and Tactics and the President of the University.

4. Successfully complete whatever general survey and screening tests are prescribed.
5. Agree to complete the course as a prerequisite for graduation from the University, unless excused or dismissed from this requirement by authority of the Secretary of the Army.

Students accepted in the Corps of Engineers advanced program must also be enrolled in a curriculum leading to an engineering or other scientific degree.

Courses in the advanced program are continuations of the courses that students select in their second year. These courses require classroom attendance four hours each week, plus one hour of practice in leadership, drill, and exercise of command. In addition, summer camp of six weeks' duration is attended between the first and second years of the advanced program.

Students in the advanced program are paid a monetary allowance at a daily rate equal to the value of the commuted ration, which currently is 90 cents per day. The allowance is in addition to benefits received through the G.I. Bill.

Regulation R.O.T.C. uniforms are issued to students in the basic program, and special officer-type uniforms to those in the advanced program. Students are normally required to wear the uniform on drill days; wearing it to R.O.T.C. classes other than drill is optional. Each student must make a \$25 uniform deposit to the University before registration. This deposit is refunded in full when the uniform is returned undamaged.

The Department of the Army furnishes all textbooks and equipment used in the basic and advanced programs.

Inquiries concerning enrollment or other matters should be addressed to the Professor of Military Science and Tactics.

COURSES FOR UNDERGRADUATES

- | | | |
|---------------|---|-------|
| 101, 121, 141 | Military Science I—Basic (Infantry, Antiaircraft Artillery, Quartermaster Corps, Transportation Corps, Corps of Engineers) (2,2,2; A,W,S) | Staff |
| | Military organization; military policy of the United States; the National Defense Act and R.O.T.C.; evolution of warfare: maps and aerial photos; individual weapons and marksmanship; first aid and hygiene; leadership, drill, and exercise of command. | |
| 201, 221, 241 | Military Science II—Basic (Infantry) (2,2,2; A,W,S) | Staff |
| | Leadership, drill, and exercise of command; organization; weapons; marksmanship; technique of fire of the rifle squad; combat formations; scouting and patrolling; tactics of the rifle squad. | |
| 202, 222, 242 | Military Science II—Basic (Antiaircraft Artillery) (2,2,2; A,W,S) | Staff |
| | Leadership, drill, and exercise of command; introduction to antiaircraft artillery automatic weapons; characteristics, capabilities, and limitations of antiaircraft artillery automatic weapons; service of the automatic weapons fire unit; introduction to antiaircraft artillery guns; characteristics, capabilities, and limitations of 90-mm. antiaircraft artillery guns; service of 90-mm. antiaircraft artillery guns. | |
| 203, 223, 243 | Military Science II—Basic (Quartermaster Corps) (2,2,2; A,W,S) | Staff |
| | Leadership, drill, and exercise of command; organization for supply; organization and functions of the Quartermaster Corps; classification of supplies; use of supply catalogues and bases of allowances; property accountability and responsibility; research and development of supply in the Quartermaster Corps; organization, functions, and operation of quartermaster units; unit and organizational supply. | |
| 204, 224, 244 | Military Science II—Basic (Transportation Corps) (2,2,2; A,W,S) | Staff |
| | Leadership, drill, and exercise of command; introduction to the Transportation Corps; economics of military transportation; military highway transport; highway organization and operation. | |
| 205, 225, 245 | Military Science II—Basic (Corps of Engineers) (2,2,2; A,W,S) | Staff |
| | Leadership, drill, and exercise of command; history and traditions of the Corps of Engineers; characteristics of weapons; camouflage; defense against chemicals; explosives and demolitions; hand tools and rigging; mines and booby traps; organization and tactics of small units; organization of ground and field fortifications. | |
| 301, 321, 341 | Military Science III—Advanced (Infantry) (3,3,3; A,W,S) | Staff |
| | Leadership, drill, and exercise of command; organization; weapons; gunnery; communications; combat intelligence; estimates of battle situations and combat orders; field fortifications; tactics of the rifle and heavy weapons; squads, platoons, and companies. | |
| 302, 322, 342 | Military Science III—Advanced (Antiaircraft Artillery) (3,3,3; A,W,S) | Staff |
| | Leadership, drill, and exercise of command; antiaircraft artillery tactics; basic gunnery—antiaircraft guns and automatic weapons; communications; individual weapons and marksmanship; motors and transportation; organization; troop movements. | |
| 303, 323, 343 | Military Science III—Advanced (Quartermaster Corps) (3,3,3; A,W,S) | Staff |
| | Leadership, drill, and exercise of command; storage and warehousing; procurement, storage, and distribution of petroleum products; food service, bakery, commissary, laundry, and salvage operations; graves registration; station and depot supply; individual weapons and marksmanship. | |

418 Mil.Sci I Basic (Medical) (I)
 428 " " " " (I)
 458 " " III Adv. " (I)
 488 " " IV " " (I)

- 304, 324, 344 **Military Science III—Advanced (Transportation Corps)** (3,3,3; A,W,S) **Staff**
Leadership, drill, and exercise of command; organization of the transportation staff sections; organization and operation of railroads in the zone of interior; military railway service; troop movements; operation of ports of embarkation and debarkation; stevedore operations; harbor craft and marine maintenance; highway transport service organization in the theater of operations; individual weapons and marksmanship.
- 305, 325, 345 **Military Science III—Advanced (Corps of Engineers)** (3,3,3; A,W,S) **Staff**
Leadership, drill, and exercise of command; bridge design and classification; engineer signal communications; combat intelligence; engineer supply; military roads and runways; organization of engineer units; organization of combat divisions; tactics of engineer units; vehicle operation and maintenance; water supply; individual weapons and marksmanship.
- 360 **Military Science III—Advanced Camp** (3; Summer) **Staff**
Six weeks' training at an Army base; intensive study in the field of specialization.
- 401, 421, 441 **Military Science IV—Advanced (Infantry)** (3,3,3; A,W,S) **Staff**
Military administration; military law and boards; military teaching methods; psychological warfare; geographic foundations of national power; leadership, drill, and exercise of command; organization; command and staff; communications; motors and transportation; supply and evacuation; troop movements; new developments in weapons, aircraft, and naval craft; the military team; tactics; the infantry battalion in attack and defense.
- 402, 422, 442 **Military Science IV—Advanced (Antiaircraft Artillery)** (3,3,3; A,W,S) **Staff**
Military administration; military law and boards; military teaching methods; psychological warfare; geographic foundations of national power; leadership, drill, and exercise of command; antiaircraft artillery matériel; advanced antiaircraft artillery tactics; command and staff; combat intelligence; gunnery; the military team; new developments in artillery matériel and guided missiles; Air Force and Navy developments; supply and evacuation; field artillery capabilities and use.
- 403, 423, 443 **Military Science IV—Advanced (Quartermaster Corps)** (3,3,3; A,W,S) **Staff**
Military administration; military law and boards; military teaching methods; psychological warfare; geographic foundations of national power; leadership, drill, and exercise of command; fiscal procedures; procurement procedures; command and staff; combat intelligence; technical intelligence; organization and functions of the combatant arms; organization and functions of the technical services; quartermaster operations in the zone of the interior; quartermaster operations in the theater of operations.
- 404, 424, 444 **Military Science IV—Advanced (Transportation Corps)** (3,3,3; A,W,S) **Staff**
Military administration; military law and boards; military teaching methods; psychological warfare; geographic foundations of national power; leadership, drill, and exercise of command; military railway operations; highway transport in the theater of operations; highway regulations and control in the theater of operations; troop movement control in the theater of operations; logistics; supply and property; command and staff; combat intelligence; responsibilities of a transportation officer.
- 405, 425, 445 **Military Science IV—Advanced (Corps of Engineers)** (3,3,3; A,W,S) **Staff**
Military administration; military law and boards; military teaching methods; psychological warfare; geographic foundations of national power; leadership, drill, and exercise of command; engineer support for the Air Force; engineer support for the communication zone; engineer support for the field army; command and staff; construction, utilities, and job management; motor movements; river crossing operations.

NAVAL SCIENCE

Professor of Naval Science: ARTHUR C. WOOD, 309 Clark Hall

Professor: Captain A. C. Wood.

Associate Professor: Commander L. M. D. Ford.

Assistant Professors: Lieutenant Commander E. F. Leonard; Lieutenant J. L. Erickson.

The Department of Naval Science offers two Naval Reserve Officers Training Corps programs, both of which extend through four academic years.

Naval R.O.T.C. students may take any University course leading to a degree except premedicine, medicine, pharmacy, predentistry, dentistry, music, theology, art, and veterinary medicine. They must complete mathematics through plane trigonometry during their first two years, and 36 credits in naval science during the four years.

Students who plan to be commissioned in the Marine Corps or Marine Corps Reserve take Marine subjects during their third year and the first two quarters of their fourth year; those who plan to be commissioned in the Supply Corps of the Navy or Naval Reserve take Supply subjects.

REGULAR PROGRAM. At the beginning of Autumn Quarter each year a limited number of freshmen are appointed Midshipmen, U.S.N.R., and enrolled as Regular Naval R.O.T.C. students; these students are selected on the basis of a nationwide competitive examination held the preceding winter. They must meet these general qualifications:

1. Be eligible for admission to a Naval R.O.T.C. college.
2. Be male citizens of the United States between the ages of seventeen and twenty-one on July 1 of the year of entrance.
3. Meet physical requirements comparable with those for entry to the United States Naval Academy.
4. Be unmarried and agree to remain unmarried until commissioned.
5. With consent of parents, agree to complete the four-year course unless released for cause and to serve on active duty for three years as commissioned officers in the United States Navy or Marine Corps.
6. Agree to take three practice cruises of about eight weeks each during summer vacations.

Students with previous college attendance are eligible if they meet the above qualifications and agree to remain in college for four additional years.

In addition to the mathematics and naval science requirements applicable to both programs, students in the Regular program are required to complete one year of college physics by the end of their sophomore year.

The Navy furnishes books, tuition, incidental fees, and uniforms, plus \$600 a year retainer pay, for students in this program.

Inquiries about entrance to the Naval R.O.T.C. in the Regular program should be made in September or October of the year before college entrance. They should be addressed either to the Office of Naval Officer Procurement, 110 Union Street, Seattle 1, or to the Professor of Naval Science.

CONTRACT PROGRAM. At the beginning of Autumn Quarter each year the Professor of Naval Science selects a limited number of students to enter the Contract program of the Naval R.O.T.C. Contract students must meet requirements 1, 2, 3, and 4 of those outlined for the Regular program; agree to make one summer cruise of about three weeks between the junior and senior years; agree in writing to accept a commission if offered and to serve, subject to call of the Secretary of the Navy, for two years; and agree to remain active in the Naval Reserve for a total of eight years (including both active and inactive duty).

Students with not more than one year of previous college attendance are eligible if they meet the above qualifications and agree to remain in college for four additional years.

Entrance to the Contract program entitles students to deferment from the draft under the Selective Service Act of 1948 as amended.

Contract students have the status of civilians entering into a mutual contract with the Navy, and are in training for commissions in the Naval Reserve or Marine Corps Reserve. They pay their own college expenses but receive a subsistence allowance of 90 cents a day during their junior and senior years, including the intervening summer. The Navy furnishes uniforms and books used in naval science courses.

Application for entrance to the Naval R.O.T.C. in the Contract program should be made to the Professor of Naval Science in June of the year of college entrance.

COURSES FOR UNDERGRADUATES

- | | |
|--|--------------|
| 111, 112, 113 Naval Orientation (3,3,3; A,W,S) | Staff |
| Naval courtesy and customs; leadership; naval history; naval regulations; ship construction and characteristics; standard ship organization; orientation in underseas, amphibious, logistics, communications, security, intelligence, seamanship, and rules-of-the-road phases of the naval service. | |
| 211 Naval Weapons (3; A) | Staff |
| Principles of gun construction; ammunition components; gun assemblies; automatic guns; mines; introduction to fire control; aviation ordnance. | |
| 212 Fire Control (3; W) | Staff |
| Surface fire control; battery alignment; antiaircraft fire control. | |
| 213 Applied Naval Electronics (3; S) | Staff |
| Advanced fire control; radar; sonar; C.I.C.; shore bombardment; guided missiles; nuclear explosives; underwater ordnance; rockets. | |
| Line | |
| 311 Piloting (3; A) | Staff |
| Aerology; use of the maneuvering board; rules of the nautical road. | |
| 312 Navigation (3; W) | Staff |
| Piloting; nautical astronomy necessary for celestial navigation. | |

- 313 Celestial Navigation (3; S)** **Staff**
Daily work of the navigator at sea.
- 411 Naval Machinery (3; A)** **Staff**
Marine engineering installations: boilers, power plants, auxiliary machinery, turbines, distillers, refrigeration plants.
- 412 Diesel Engines and Ship Stability (3; W)** **Staff**
Diesel engines; aircraft engines; stability; damage control; loading conditions; buoyancy.
- 413 Naval Administration and Leadership (3; S)** **Staff**
Military law; practical application of leadership principles: duties and responsibilities of officers.

Marine Corps

- 311M, 312M History of the Art of War (3,3; A,W)** **Staff**
311M: introduction; a historical study of the causes and effects of war; the development of tactics and weapons as shown by specific battles in European history. 312M: battles from 1920 to 1945; introduction to United States military history and policy; campaigns and battles from 1776 to 1860.
- 313M United States Military History and Policy (3; S)** **Staff**
Development of United States military policy and tactics of United States forces in selected battles and campaigns from 1860 to 1920.
- 411M, 412M Amphibious Warfare (3,3; A,W)** **Staff**
411M: a brief history of amphibious warfare development; a detailed study of the principles of amphibious warfare techniques. 412M: continued study of amphibious warfare, logistics, and operation orders; the Gallipoli campaign and the amphibious campaigns of World War II.

Supply Corps

- 311S Introduction to Supply, Naval Finance, and Basic Naval Accounting (4; A)** **Staff**
Introduction to Supply Corps and accounting principles; national security organization; naval finance; appropriations; cost and fidelity accounting.
- 312S Advanced Naval Accounting, Basic Supply Afloat (4; W)** **Staff**
Reports and returns; property and stores accounting; organization and administration of supply afloat; material identification, classification, and allowance.
- 313S Supply Afloat, Intermediate (4; S)** **Staff**
Procurement and purchasing, receipt, surveys, and expenditure of special and regular naval materials.
- 411S Advanced Supply Afloat and Basic Ships' Stores (4; A)** **Staff**
Records, reports, and returns for supply afloat, and ships' store operating procedure.
- 412S Advanced Ships' Stores, Commissary, Clothing and Small Stores (4; W)** **Staff**
Records, reports, and returns for ships' store, commissary, clothing, and small stores.

GRADUATE SCHOOL OF SOCIAL WORK

Acting Director: WILLIAM H. McCULLOUGH, 500 Thomson Hall

Professor: G. B. Ferguson.

Associate Professors: M. Hunt, W. H. McCullough.

Assistant Professors: F. R. Breul, D. Inglis.

Lecturers: G. Heilbrunn, H. A. Kaufman.

Field Work Supervisors: M. W. Foster, M. F. Hoskins, C. J. Macdonald, G. D. Reiss.

THE Graduate School of Social Work provides training for positions of professional responsibility in public and private social agencies. It offers a two-year curriculum in social case work, community organization, and social research. Among the types of positions to which this training may lead are case work in family and children's agencies, in psychiatric clinics, and in courts; research positions in social agencies; and work in community organization and agency administration.

The School's two-year program leads to the degree of Master of Social Work. Students are encouraged to plan toward the full curriculum, but those unable to study longer than one year can complete in that time the necessary credits for certain positions. The student program includes a supervised field work assignment in a qualified social agency for two or three days each week for both the first and second year. The first-year field work placements are in social case work in family and child welfare agencies.

In the second year the student may specialize in social case work, including medical or psychiatric social case work, in research, or in community organization.

ADMISSION

Undergraduate courses are available for students who expect to enter employment in a social agency without graduate work or who wish to elect courses in the field of social work.

Admission is by approved application only. The student must be eligible for admission to the Graduate School (see page 261) and must have completed a well-rounded undergraduate program in the social sciences, including some work in each of the following: anthropology, economics, political science, psychology, and sociology. It is recommended that a course in statistical method and one in physiology be included in undergraduate preparation.

Admission procedure includes filing of application materials and a personal interview. Students living at some distance will be interviewed by a representative of the School. Persons under twenty-one or over thirty-five years of age are not encouraged to enter the profession.

Admissions are limited to the number of field work placements available. For this reason application should be made prior to June 1 for admission in Autumn Quarter. All inquiries and applications should be sent to the Director of the Graduate School of Social Work.

MASTER OF SOCIAL WORK

The requirements for this degree include: (1) completion of the prescribed curriculum; (2) a minimum of three quarters in residence at this school; (3) field work in all six quarters; (4) a comprehensive examination; and (5) completion of an individual thesis. The degree is awarded on the basis of the student's competence in both theory and practice. The comprehensive examination and the field work performance are tests of competence. There is no foreign language requirement.

The course plan for the two-year program is given below. The first-year curriculum is required of all students; the second-year curriculum is for students majoring in family social case work. Second-year requirements for other specializations are available upon request.

FIRST YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Social Work 510	3	Social Work 511	3	Social Work 512	3
Social Work 515	4	Social Work 515	4	Social Work 515	4
Social Work 556	2	Social Work 557	2	Social Work 521	3
Social Work 580	3	Social Work 572 or 599	3	Social Work 572 or 599	3
Psychiatry 503 Personality Development	2	Psychiatry 504 Personality Development	2	Social Work 587	2
	14		14		15

SECOND YEAR

FIRST QUARTER	CREDITS	SECOND QUARTER	CREDITS	THIRD QUARTER	CREDITS
Social Work 530	3	Social Work 531	3	Social Work 520	2-3
Social Work 535	4	Social Work 535	4	Social Work 532	3
Social Work 570	2	Social Work 546	2	Social Work 535	4
Psychiatry 505 Clinical	2	Social Work 582	3	Electives	2
Electives	3	Psychol. 599 Clinical Psychometrics	2		11-12
	14		14		

The following agencies cooperate with the School by providing field work placements: American Red Cross; Associated Lutheran Welfare; Catholic Charities; Children's Orthopedic; Family Society of Seattle; Federated Jewish Fund; Firlands Sanatorium; Florence Crittenton Home; Health and Welfare Council; Juvenile Court; King County Welfare Department; Medina Children's Service; Ryther Child Center; Seattle-King County Department of Public Health; Travelers' Aid Society; University of Washington Child Health Center, Counseling Center, Institute of Child Development, Office of Student Affairs, Psychiatric Clinic for Children, Psychiatric Clinic for Students; Veterans Administration Medical and Psychiatric Clinics; Washington Children's Home Society; and Young Women's Christian Association.

COURSES FOR UNDERGRADUATES

- 300 Field of Social Work (3; AWS)** **Reiss, Lecturers**
Principles and practices in the field of social work, with a comprehensive picture of available services and future needs. Prerequisite, permission.
- 301 Social Security and Social Work (3; W)** **McCullough**
Changing concepts as reflected in reports on and legislation for the care and treatment of dependent persons; development and present responsibility of welfare agencies, with special reference to the state of Washington. Prerequisite, permission.
- 302 Problems of Child Welfare (3; A)** **Foster**
Social welfare programs relating to the well-being of children, including standards and objectives of foster home care, adoptions, and institutional placements, as well as measures affecting children in their own homes. Prerequisite, permission.
- 303 Introduction to Case Work in Public Assistance (3; S)** **Staff**
Application of principles and policies in effective public assistance practice. Prerequisite, permission.
- 304 Case Work Interviewing (2; W)** **Staff**
The interview as a basic method in helping people. Analysis of interviews from case records with the objective of identifying the processes and techniques of skillful interviewing; ways in which the purpose and setting of the interview influence its nature and course. Prerequisite, permission.
- 305 Health Aspects of Social Work (2; S)** **Ferguson**
The role of social work in collaboration with medicine in the approach to problems of illness from the physical, emotional, and social aspects. Emphasis is on social factors in health problems and the social worker's responsibility. Prerequisite, permission.

COURSES FOR GRADUATES ONLY

- 505 History of Social Work (3; not offered 1952-53)**
Prerequisite, permission.
- 506 Social Work As a Profession (2; not offered 1952-53)**
- 509 Readings in Social Work (3; maximum 6; AWS)** **Staff**
Prerequisite, permission.
- 510 Social Case Work (3; A)** **Inglis**
The case work process in a variety of settings through the analysis and discussion of case records; consideration of basic interviewing principles; development of understanding of motivations in human behavior and application of this understanding in case work. Prerequisite, permission.
- 511 Social Case Work (3; W)** **Inglis**
Continuation of generic case-work theory, with emphasis on diagnosis and case-work treatment. Prerequisite, 510.

- 512 **Social Case Work (3; S)** Ingllis
Elaboration and intensification of basic case-work concepts and their application in practice in various types of agencies. Prerequisite, 511.
- 515 **Field Work: Social Case Work (4, maximum 16; AWS)** Staff
Prerequisite, permission.
- 520 **Seminar (*, maximum 6; S)** Kaufman, Staff
Prerequisite, permission.
- 521 **Social Group Work (3; W)** Staff
Professional group work as a method and process within the whole field of social work; objectives, techniques, skills, and media of group work, and criteria for evaluation of results. Prerequisite, permission.
- 530 **Advanced Case Work (3; A)** Hunt
Intensive study of the case-work process to deepen and broaden the case worker's knowledge and understanding of the dynamics of human behavior and to enable him to develop greater skill in interviewing. Prerequisite, permission.
- 531 **Advanced Case Work (3; W)** Hunt
Continuation of intensive study of case material, with emphasis on sound direction in case-work treatment. Prerequisite, 530.
- 532 **Advanced Case Work (3; S)** Hunt
Intensive drill in case analysis, seeing the case as a whole, achieving a balanced perspective on the relationship between inner and outer forces, and planning appropriate treatment. Prerequisite, 531.
- 535 **Field Work: Advanced Case Work (4, maximum 12; AWS)** Staff
Prerequisite, permission.
- 536 **Seminar: Supervision (3; S)** Staff
Functions of the supervisor in case-work agencies, as teacher, case consultant, and administrative officer; review of literature; study of supervisory processes and techniques through analysis of case material illustrating the three functions of the supervisors; the supervisory relationship—transference and counter-transference in supervision; management of supervisory load. Prerequisite, permission.
- 540 **Psychiatric Social Work (3; W)** Hunt
General introduction and orientation to the field of psychiatric social work; the relationship of psychiatric social work to generic case work, with emphasis on the relationship of the psychiatric social worker to the psychiatrist, and the role of the psychiatric social worker in the clinical child guidance team; the social worker's practice of psychiatric case-work treatment within the area of his professional competence in hospital or clinic. Case material from students' field-work placements is used, in addition to that selected by the instructor. Prerequisite, permission.
- 541 **Psychiatric Social Work (3; not offered 1952-53)**
- 545 **Field Work: Psychiatric Social Work (4, maximum 16; AWS)** Staff
Prerequisite, permission.
- 546 **Emotional Disturbances in Children (2; W)** Kaufman
Psychiatric problems of children; a discussion of the therapeutic process; the role of the social work therapist; the child's participation in treatment; types of play material used; interpretations and evaluations of progress. Prerequisite, permission.
- 550 **Medical Social Work (3; A)** Ferguson
Generic aspects of case work in the medical setting; integration of dynamic psychiatric theory of human behavior with medicine and case work; the role of the case worker in relation to that of the physician and other professional persons in the study and treatment of the social, emotional, and physical aspects of the ill person. Case material is used extensively. Prerequisite, 512.
- 551 **Medical Social Work (3; W)** Ferguson
Continuation of 550, with emphasis on analysis of student's own case material and correlation with original papers based on integration of data from current professional literature in case work and related fields; participation in clinical demonstration emphasizing the integration of case work, medicine, dentistry, nursing, and dietetics, as presented in the hospital setting and in the clinics. Prerequisite, 550.
- 555 **Field Work: Medical Social Work (4, maximum 12; AWS)** Ferguson, Staff
Prerequisite, 550.
- 556 **Medical Information for Social Work (2; A)** Ferguson, Medical Lecturers
Physical growth and change of the individual as correlated with factors of emotional and social development; consideration of specific medical problems. Prerequisite, permission.
- 557 **Medical Information for Social Work (2; W)** Ferguson, Medical Lecturers
Continuation of 556. Prerequisite, 556.
- 560 **Case Work with Children in Foster Care (2; A)** Foster
Prerequisite, permission.
- 561 **Seminar: Social Work with Children (3; W)** Foster
Prerequisite, permission.
- 565 **Field Work: Social Work with Children (4, maximum 12; AWS)** Foster
Prerequisite, permission.
- 570 **Administration of Social Agencies (2; A)** Staff
Problems of administration that confront the administrator and his staff in any public or private agency; relations with board and staff; problems of finance and budget making, office

management. Emphasis on dynamic principles of the administrative process. Prerequisite, permission.

- 572 Community Organization for Social Welfare (3; WS)** **Staff**
Problems of adjusting social welfare needs and resources; understanding the social forces of the community; methods used by public and private agencies to organize to meet social welfare needs; interpretation of agency programs to the community; the place of boards and committees. Prerequisite, permission.
- 575 Field Work: Social Agency Administration (4, maximum 12; AWS)** **Staff**
Prerequisite, permission.
- 580 Introduction to Public Welfare (3; A)** **McCullough**
Care of needy under poor laws, emergency relief, and modern public assistance programs; characteristics of state assistance plans; administration of work relief; federal grants-in-aid; adult probation and parole; vocational rehabilitation services. Prerequisite, permission.
- 581 The Child and the State (2; A)** **Broul**
The development of the rights of the child in relation to those of parents; the responsibility of the state in safeguarding children's rights through laws and their administration by agencies; the significance of these rights to family and children's social agencies. Prerequisite, 510.
- 582 Administration of Social Insurances (3; A)** **McCullough**
The social insurance movement in the United States and selected countries; present legislation and administrative problems in unemployment compensation and the insurances for the aged, survivors, disabled, and sick. Prerequisite, 580.
- 583 Public Welfare Administration (3; W)** **McCullough**
Administrative structure at federal, state, and local levels; federal and state responsibilities in supervision; financing welfare services; research and reporting by welfare departments. Prerequisite, 580.
- 584 Public Assistance Policy and Method (3; S)** **Staff**
Administrative aspects of a public welfare agency program as related to case work services; the development and effective use of policy in agency planning and provision of individualized services as applied to practice. Prerequisite, permission.
- 586 Statistics in Social Work (2; A)** **McCullough**
Elementary statistical method applied to social welfare problems; sources for continuing statistical reports; interpretation and use of statistics in welfare administration. Prerequisite, permission.
- 587 Law and Social Work (2; S)** **Broul**
The basis of law, its philosophy and development, its broad principles, and the procedure by which it operates; specific aspects of law pertinent to social work orientation, including law in relation to the family, children, guardianships, and acts against society, and property laws. Prerequisite, permission.
- 599 Methods of Social Work Research (3; WS)** **Broul**
Methods used in the study of social work practice, program evaluation, and community needs and resources; procedures in collection, analysis, and presentation of data. Prerequisite, 586.
- Thesis (*; AWS)** **Staff**

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